DETERMINING THE NEED FOR TEACHING ON PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES IN THE EMERGENCY MEDICAL CARE CURRICULUM IN SOUTH AFRICA

by

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2020

DECLARATION

I hereby declare that the work submitted here is the result of my own independent investigation. Where help was sought, it was acknowledged. I further declare that this work is submitted for the first time at this university/faculty towards a Magister degree in Health Professions Education and that it has never been submitted to any other university/faculty for the purpose of obtaining a degree.

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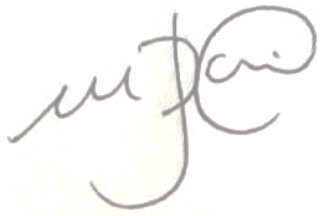

March 2020

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Mr J.D. Mothibi **Date**

DEDICATION

I would like to dedicate this mini-dissertation to my wife, Thuli, who has been my source of inspiration and strength from the inception of this study. Without her support and sacrifice this work would never have been possible. To my children, Neo and Lehakwe, this one is for you; your presence inspires me to reach greater heights.

God bless.

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LIST OF ACRONYMS

AEA:	**Ambulance Emergency Assistant**
ALS:	**Advanced Life Support**
BAA:	**Basic Ambulance Assistant**
BLS:	**Basic Life Support**
CC:	**Communication Centre**
CCA:	**Critical Care Assistant**
DoH:	**Department of Health**
ECA:	**Emergency Care Assistant**
ECP:	**Emergency Care Practitioner**
ECT:	**Emergency Care Technician**
EMC:	**Emergency Medical Care**
EMCE:	**Emergency Medical Care Education**
EMCET:	**Emergency Medical Care Education and Training**
EMCPs:	**Emergency Medical Care Providers**
EMS:	**Emergency Medical Services**
FSCOEC:	**Free State College of Emergency Care**
HPCSA:	**Health Professions Council of South Africa**
ILS:	**Intermediate Life Support**
NEMES:	**National Emergency Medical Education Standards**
NECET:	**National Emergency Care Education and Training**
NQF:	**National Qualifications Framework**
PTT:	**Planned Patient Transfer**
SAQA:	**South African Qualifications Authority**
WIL:	**Work Integrated Learning**

SUMMARY

Key words: Pre-hospital emergency care providers, Emergency Medical Services, Emergency Medical Care, Psychiatric Emergencies, South Africa.

In this research project, an in-depth study was conducted by the researcher to investigate the knowledge, attitude and practice (KAP) of pre-hospital emergency care providers (i.e. Advance life support, Intermediate life support and Basic life support providers), regarding pre-hospital management of psychiatric emergencies. This was done with a view to reveal any possible gaps in knowledge in the pre-hospital management of psychiatric emergencies by these pre-hospital emergency care providers, and to provide evidence for making informed recommendations for the need to strengthen the education and training of pre-hospital emergency care providers on pre-hospital management of psychiatric emergencies.

In this research project, the researcher utilised a quantitative, non-experimental design. A literature review on the principles and practice of managing psychiatric emergencies in the pre-hospital environment was conducted. A questionnaire survey was used to explore the knowledge, attitudes and practices of the pre-hospital emergency care providers on the management of psychiatric emergencies. The questionnaire included a mixture of closed-ended and open-ended questions. However, closed-ended questions made up the bulk of the questionnaire. Hard copies of the questionnaires were circulated to the participants, and information collected was analysed by the statistician and the researcher and interpreted to reveal meaningful data. This study found that some pre-hospital emergency care providers are not knowledgeable about the principles and practice of pre-hospital management of psychiatric emergencies and are not conversant with the provisions of the Mental Health Care Act 2002 (Act no. 17 of 2002) of SA.

In conclusion, the problem that was addressed by this study is the probable inadequate knowledge of some certain cadres of emergency care providers regarding pre-hospital management of psychiatric emergencies that result from the gap in EMC education and training. Based on the findings by this study, the researcher therefore made recommendations and motivations for the expansion of the teaching on the principles and practice of pre-hospital management of psychiatric emergencies in the current EMC higher certificate, diploma and degree curricula.

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

In this study, the researcher investigated the knowledge, attitude and practice (KAP) of pre-hospital emergency care providers on the pre-hospital management of psychiatric emergencies, with a view to determine the need for teaching on pre-hospital management of psychiatric emergencies in the Emergency Medical Care (EMC) curriculum in South Africa (SA).

Furthermore, the researcher described the various forms of psychiatric emergencies that can be encountered by the pre-hospital emergency care providers in practice and also reviewed the present international standards and guidelines for pre-hospital management of psychiatric emergencies by the pre-hospital emergency care providers. This descriptive review and findings by this study has enabled the researcher to make informed and evidence-based recommendations and motivations on the need to strengthen teaching and training on pre-hospital management of psychiatric emergencies in the EMC higher certificate, diploma and degree curricula in SA.

"A psychiatric emergency is defined as an acute onset or exacerbation of a mental illness that could threaten the life and health of the patient or others" (Pajonk, Schmitt, Biedler, Richter, Meyer, Luiz & Madler 2008:363). Furthermore, "psychiatric emergency" is a broad concept, consisting of various disorders which originate from different sources. In this respect, these disorders range from, for example, cognitive, thought, mood, neurotic, substance-related/addictive behaviour, personal, suicide, violence and so forth (US DoT 2009:166).

Pre-hospital emergency care providers are often the first healthcare professionals arriving at any scene of medical emergencies, including psychiatric emergencies. It is therefore of utmost importance that EMC graduates are well trained and equipped to manage any form

of medical emergency including those involving psychiatric patients. Resources such as clinical guidelines and a structured protocol on how to manage a patient with psychiatric management in the pre-hospital environment by pre-hospital emergency care providers may be useful. A review shows deficiency of training outcomes for psychiatric emergencies in EMC programmes in general (HPCSA 2016a: online; SAQA:online - a & b). More outcomes were noted in the bachelor's degree compared to the higher certificate and diploma programmes.

Therefore, this study aimed at investigating management of psychiatric patients in the pre-hospital environment by emergency medical care providers. In addition, the study aimed at identifying possible gaps in knowledge, attitude and practice amongst cadres of pre-hospital emergency care providers when attending to emergency situations that involve a psychiatric patient in the pre-hospital environment, with the view of conceptualising and contextualising the need for teaching and training on pre-hospital management of psychiatric emergencies in the EMC curriculum in SA. In order to achieve the above stated aims, the researcher utilised a comprehensive desktop review and questionnaire survey method of data collation to gather data.

Identifying gaps in KAP of pre-hospital emergency care providers in the pre-hospital management of patients with psychiatric disorders may initiate directives for the modification of EMC education and training to enhance the skills of pre-hospital emergency care providers in the management of these patients. As a result, the psychiatric patients within the demarcation of the study will benefit enormously from receiving quality pre-hospital emergency care. Furthermore, findings by this study can also help to strengthen the policies and procedures of the Department of Health (DoH) in S.A.

The aim of this chapter is to:

i. orientate the reader to the research that was conducted by briefly describing the following background to the research problem;
ii. problem statement and research questions;
iii. overall goal, aim and objectives of the study;
iv. demarcation of the field and scope of the study;
v. the researcher;
vi. time specification;
vii. value and significance of the study;

viii. research designs and methods of investigation;
ix. implementation of the findings;
x. arrangement of the report; and
xi. conclusion.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

The Emergency Medical Services (EMS) in S.A does not have a long standing history like other well established professions such as nursing and medicine. On the contrary, it started as an add-on responsibility of the fire departments but later separated to exist under the provincial department of health as a separate entity. However, some local governments at metropolitan level do have EMS structures as one of their responsibilities.

Since then, the EMS have become an important part of the health care system in terms of a holistic patient management and the referral system in S.A. Under these structures, pre-hospital emergency care providers continue to be called to attend to all forms of medical emergencies, which include the different psychiatric emergencies. There is, therefore, a need to train pre-hospital emergency care providers appropriately at all levels on how to manage psychiatric patients and psychiatric emergencies adequately in the pre-hospital environment in a professional and ethical manner.

Notwithstanding the various registration categories which are found in the South African pre-hospital environment, the EMS operate in a complex environment where there is potential hazards, limited manpower, resources and scope of practices. Therefore, all these factors contribute to the challenges that the pre-hospital emergency care providers encounter on a daily basis when attending and managing patients in the pre-hospital environment during emergency incidents. It is for these reasons that a functional emergency medical care system is desirable. Such a system would ensure that patients receive the appropriate pre-hospital care at the right time. Furthermore, according to MHCA 2002, section 4 (a,c), every organ of State including EMS must ensure that it determines and implement its policies to ensure that mental healthcare users receive treatment and that it promotes and uplifts the patients' rights and dignity (RSA Government 2002:14).

Globally, mental and behavioural disorders are estimated to account for 12% of the burden of disease (WHO 2001:3). According to Bradshaw, Norman and Schneider (2007:438) neuropsychiatric disorders are the third leading cause of death and disability in South Africa.

In addition, a study that was conducted over a period of twelve months by Williams, Herman, Stein, Heeringa, Jackson, Moomal and Kessler (2008:214) found a prevalence of psychiatric disorders to be 16.5% in South Africa. This percentage is regarded to be high when compared to other parts of the world including Japan (8.8%), Germany (9.1%), Italy (8.2%) and Spain (9.2%) (WHO 2004:2585).

1.2.1 History of emergency medical services in South Africa

According to Butler (2015:16) emergency medical services (EMS) originate from military operations during the time of war and has since become the first line of medical intervention for critically ill and injured patients throughout the world in the pre-hospital environment. In addition, EMS is playing a significant role within the health care system by providing medical services outside of a hospital setting, transportation of patients to the hospitals and inter-hospital transfer services. As a result, the EMS has become an integral component of the health care systems all over the world (Arnold 1999:97-98).

The provision of the EMS to South African citizens prior to 1970 was the responsibility of the local authorities (RSA NDoH 2015:1). Emergency medical services were then integrated into the fire departments' structures. The same structures still exist in some municipalities, however, most EMS in the country have separated from the fire departments. Consequently, that decision has contributed to the development of EMS as an entity on its own. Furthermore, this decision was necessitated by the gap that was created by the old South African government prior to 1994, which created segregations in the country and unfairly distributed the services amongst the communities. However, many organisations such as St. John, the Red Cross and the South African First Aid League filled in the void in many parts of the country with ambulances staffed predominately by volunteers (RSA NDoH 2015:1).

Post 1994, the new government had to redress the injustice that their predecessors have created. Emergency medical services were separated from the fire and rescue department. This was done to ensure that EMS could receive funding dedicated to developing and improving the EMS, and to ensure that EMS was expanded and strengthened to reach the previously disadvantaged areas, namely African communities and rural areas. However, according to MacFarlane, Van Loggerenberg and Kloeck (2005:148), equal dispensation of ambulance services have not yet been realised in most parts of South Africa, especially in rural areas. Aspects such as case load and under-financing can be attributed to the unequal

dispensation of EMS (MacFarlane *et al.* 2005:148).

Although EMS structures have changed, the link between firefighting, rescue and emergency care remains well established and there are still a number of large, integrated services who render all three functions both locally and internationally (Christopher 2007:10-12).

1.2.2 History of EMC education and training in South Africa

The history of EMC education and training in South Africa will be discussed under the following concepts:

1.2.2.1 *Non-NQF aligned EMC education and training*

The EMS profession owes its existence to the short courses (vocational qualification courses) such as Basic Ambulance Assistant (BAA), Ambulance Emergency Assistant (AEA) and Critical Care Assistant (CCA) that paved the way to the current structured profession (Dalbock 1996:119; MacFarlane *et al.* 2005:148).

Prior to 1980, emergency medical care education and training was fragmented and the method of training varied from one province to the other (Dalbock 1996:119; RSA NDoH 2011:online). There was no registered academic or professional qualification in existence and pre-hospital emergency care providers were not being registered by any professional board (Dalbock 1996:119-120). However, in 1985 some provinces established Provincial Ambulance Training Colleges which offered short training courses on Basic Life Support (BLS) and Intermediate Life Support (ILS) which were not aligned to the NQF (Dalbock 1996:118; RSA NDoH 2015:1; HPCSA 1999a, b, c).

In addition, more non-NQF aligned short courses such as BAA/BLS, AEA/ILS and CCA, also known as Advanced Life Support (ALS), were introduced by the Department of Health in order to make pre-hospital emergency care providers more competent to improve patient care (RSA NDoH 2015:1; HPCSA 1999a, b, c). None of these short training courses included psychiatric emergencies within their curriculum. After more than three decades since formalising EMS education and training with the introduction of short courses, the status quo remains in terms of the curriculum development of these courses and those which were developed since.

1.2.2.2 *NQF aligned EMC education and training*

Shortly after the introduction of short courses in EMC, it was recognised that a registered academic qualification has to be introduced to professionalise EMS in the same way as other allied health professions such as nursing and psychology (RSA NDoH 2011:online). In 1987, a registered academic qualification, the National Diploma in EMC (ND EMC) was introduced and offered only at the Universities of Technology previously known as "Technikon". However, the curriculum used in the ND EMC did not include training on the management of psychiatric emergencies.

Currently, emergency medical care education and training (EMCET) is undergoing a major transformation. The National Department of Health together with other role players took a stance to rescind short training courses so as to allow the full implementation of the three newly recommended tertiary qualifications (namely Higher Certificate, Diploma and Bachelor of Health Science in EMC) (RSA NDoH 2011:online).

Firstly, the Higher Certificate in Emergency Medical Care (HCEMC) will be registered at the level of Emergency Care Assistant (ECA) with the HPCSA. The HCEMC is a 120 credit course that will be offered over a duration of 1 year and it is registered at National Qualification Framework (NQF) level 5 with South African Qualifications Authority (SAQA). Moreover, this qualification will serve as an entry into EMS profession (RSA NDoH 2011:online). However, the HCEMC is expected to be offered at the universities level starting from the year 2019.

Secondly, the Diploma in Emergency Medical Care (DEMC) is already being offered at some Universities (e.g. Cape Peninsula University of Technology and University of Johannesburg). The DEMC is a 240-credit course that is offered over a period of 2 years and is registered as an NQF level 6 with SAQA. Furthermore, this qualification is registered at the level of Emergency Care Technician (ECT) with the HPCSA. As a result, an individual with DEMC qualification is regarded as a "mid-level health worker" by the NDoH (RSA NDoH 2011:online).

Lastly, the Bachelor of Health Sciences in Emergency Medical Care (BHSEMC) is registered at the level of Emergency Care Practitioner (ECP) with the HPCSA. In addition, this qualification is derived from the review of the old tertiary qualifications (NDip EMC and BTech EMC) which were merged to form this NQF level 8 bachelor's degree, which is offered over 4 years at the universities (RSA NDoH 2011:online; Vincent-Lambert 2011:31). So far, this qualification serves as the highest clinical scope of practice in the EMC profession.

Despite all these transition and qualification reviews, management of psychiatric emergencies has not received enough attention to ensure that EMC graduates are well equipped to manage such cases when they depart to serve this group of patients within the society. The only qualification which contains some elements of psychiatric emergencies is the Bachelor's degree programme. The current Mental Health and Wellness module in the NQF-aligned qualification concentrates only on the wellbeing of the pre-hospital emergency care providers, and subsequently this module does not incorporate outcomes on the management of psychiatric emergencies (HPCSA 2016a:online).

1.2.2.3 *Different EMC clinical qualifications and registration categories*

Given the history of South African EMC education and the transformation that has and continues to happen with regards to alignment of EMC qualification within NQF structures, Figure 1.1 illustrates allocation of qualifications within the three registration categories (BLS, ILS and ALS). For example, a provider with a BAA certificate is classified as BLS. The figure also shows that after the year 1985, NQF aligned courses started to be introduced. This development started with introduction of the N.Dip EMC in 1987. A provider with a N.Dip EMC would then fall under the ALS registration category.

Notably, Figure 1.1 shows that new development in terms of introduction of new courses has been taking place only in the ALS category. Currently five new courses (NDip EMC, BTech EMC, ECT NQF 5, BHS EMC and Dip EMC NQF 6) were introduced in the ALS category within three decades since the year 1987 (Figure 1.1). Thus suggesting that there are currently six certificates leading to ALS registration in South Africa. However, this is expected to change in the near future according to the new trends (stopping non-NQF qualifications; full implementation of NQF qualification; and re-alignment of qualification into a three tier system). It is expected that ECA will be registered under the BLS category and ECT under ILS and ECP under ALS as stipulated in the National Emergency Care Education and Training (NECET) policy (RSA NDoH 2017:7).

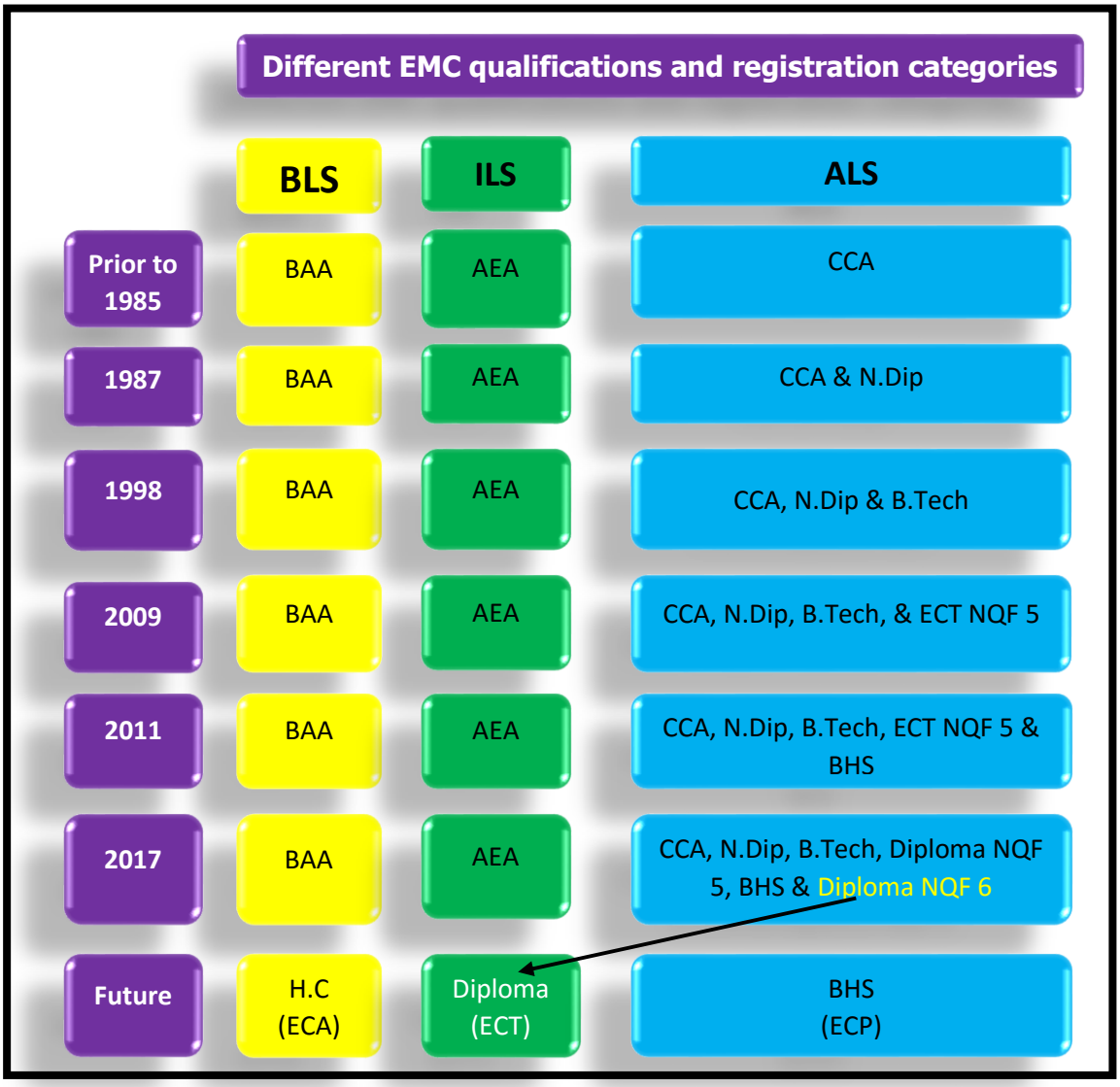

Figure 1.1: Different EMC qualifications and registration categories (Compiled by the researcher, Mothibi 2019)

1.2.3 International perspective on psychiatric education in EMC

In the United States of America (USA), paramedic education curriculums include psychiatric emergencies as stipulated in the National Emergency Medical Services Education Standards (US DoT 2009:165). In addition, the National Emergency Medical Education Standards (NEMES) include outcomes on mental examination and management of the psychiatric patient. As part of patient management, pre-hospital emergency care providers are allowed to administer antipsychotic agents. However, this curriculum is not followed by all states in the USA. Nevertheless, Lauro, Sullivan and Williams (2013:31) view these educational standards as a way of standardising the paramedics training in America. In light of this, many states have started to integrate these education standards in their paramedic education (Lauro *et. al* 2013:31).

Similarly, in a study aimed at investigating the perception of paramedics of their role, education, training and working relationships when attending cases of mental illness, Roberts and Henderson (2009:8) showed that Australian paramedics perceived their role as transportation medium only and without intervention for mental illnesses. In cases where treatment was offered, it was mainly for the sequelae of the mental illness rather than mental illness. In addition, paramedics and educators who participated in the study strongly agreed on development of training and education of mental illness in EMC education in Australia (Roberts & Henderson 2009:8-9).

1.2.4 South African perspective on psychiatric education in EMC

The South African paramedics' protocol/scope of practice of 2006 is silent on the issue of management of psychiatric emergencies in general. Meanwhile, the latest clinical practice guidelines (which are still being reviewed) stipulate in detail the management of various emergencies; however, with regards to management of psychiatric emergencies or abnormal behaviours there are no improvements - "*No deviation from current practice can be recommended at this time*" (HPCSA 2016b:72; HPCSA 2018:71). In light of this, it is not clear to which "current practice" the council (HPCSA) is referring to that should continue to guide the current practices regarding management of psychiatric patients in the pre-hospital setting.

Notwithstanding the council's directive, this lack of guidelines create room for different clinical practices within the profession possibly leading to malpractice. In addition, the lacuna in the curriculum of the EMC programmes further exacerbates this problem, since it does not prepare the pre-hospital emergency care providers adequately for this group of patients., There is an urgent need for clinical guidelines to address this lacuna in the curriculum of all EMC programmes in order to standardise the pre-hospital emergency care providers practice when it comes to attending to emergencies that involve psychiatric patients.

1.2.4.1 *Work Integrated Learning in EMC education and training*

"Work-integrated learning (WIL) is a curriculum design in which students spend time in professional, work or other practice settings relevant to their degrees of study and to their occupational futures" (Smith 2012:247). According to Cooper, Orrell and Bowden (2010:4) WIL was intended to create graduates who are "work-ready" and familiar with

organizational practices. After the pressure from the industry intensified, the universities were forced to produce graduates with some work experience (Cooper, *et al.* 2010:4).

According to Kaphagawani and Useh (2013:182) the WIL experience can contribute significantly to the development of a learner if the learners know what they are doing is right or wrong. This can only be achieved by willing supervisors at the WIL sites where the senior healthcare providers are expected to help the learners to bridge the gap between theory and practice.

Although WIL is a wonderful educational pedagogy which helps learners to integrate the classroom theory and the real word practical problem solving skills, there are several practical problems attributed to this pedagogical approach. These practical problems range from number of learners versus available WIL facilities, supervisors, case load and inclusion of a learner in patient care (Kaphagawani & Useh 2013:182-184; Boyle, Williams, Cooper, Adams & Alford 2008:online).

Notwithstanding the abovementioned challenges pertaining to WIL, Moodley (2016:48) states that real world experience is acquired during WIL under the guidance of a qualified registered healthcare providers. It is possible that this "real world" experience that Moodley is referring to can be beneficial to the EMC graduate to deal with the challenges that psychiatric patients can present, for example, violence - which can threaten the safety of the pre-hospital emergency care providers, the patient and others.

In South Africa, EMC graduates are not mandated to undertake an internship programme post qualification. Hence, the WIL programme is therefore regarded as an essential element of EMC education to ensure students' readiness post-graduation. In addition, real-life exposure and active learning provides the learner with a richer source of learning and experience (Boyle *et al.* 2008:online).

So far, the HPCSA requires that the WIL programme starts in the first year of the EMCET. These clinical practice schedules form part of the curriculum of EMC courses from the first year of study to the last year of study. In addition, the HPCSA stipulates minimum hours that the learner must work at a certain facility. However, the HPCSA does not stipulate a specific period and duration within a year for which WIL must take place. The decision is left to the training institutions to structure their programmes according to their circumstances; for example, block period or WIL occurring concurrent with theory;

however, the institutions must ensure that the students are rostered in such a way that they will complete their WIL requirements in time. The following table 1.1 shows the WIL placement areas for ECA, ECT and ECP programmes:

Table 1.1: EMC placement areas for work integrated learning

PLACEMENT AREA	ECA	ECT	ECP
Ambulance	✓	✓	✓
Emergency Department	✓	✓	✓
ALS Unit		✓	✓
Specialized Units e.g. ICU & high care		✓	✓
Theatre		✓	✓
Ante-Natal & Obstetric Units	✓	✓	✓
Neonatal and Paediatric Units		✓	✓
Primary Health Care Centre	✓	✓	✓
Communication Centre	✓	✓	✓

Adapted from (HPCSA 2015:online)

Outcomes-based Education (OBE) was launched in 1997 (Cross, Mungadi & Rouhani 2002:178). According to Harden, Crosby and Davis (1999:8), OBE is "an approach to education in which decisions about the curriculum are driven by the outcomes the students should display by the end of the course". In other words, the content that must be taught and assessed is informed and guided by the agreed outcomes.

The EMC students in South Africa do not have psychiatric posting as part of their WIL programme as specified in Table 1.1. Hence, expected outcomes for WIL in Emergency Medical Care Education (EMCE) does not include proficiency in the management of psychiatric emergencies - thus leading to a gap in knowledge in the field of practice. Thus paving the way for different forms of malpractice with adverse effects on the patient, meaning patients will not receive adequate care.

1.3 PROBLEM STATEMENT AND RESEARCH QUESTIONS

This study took place in the field of pre-hospital emergency medical care in the Free State Province of South Africa.

Currently, management of patients with psychiatric emergencies by pre-hospital emergency care providers in SA seems to be problematic as pre-hospital emergency care providers experience difficulties in managing these cases. Little is known about pre-hospital studies concerning psychiatric emergencies in South Africa. The problem that was addressed by

this study is the contextualisation of the possible gap in knowledge regarding management of a psychiatric emergency by pre-hospital emergency care providers, as a result of the gap in education and training of pre-hospital emergency care providers on how to effectively manage psychiatric emergencies. Thus, the study will serve to establish the need for teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum.

In order to address the problem stated, the following research questions were focused on by the objectives of this study:

i. *What are the variants of psychiatric emergencies that can be encountered by the pre-hospital emergency care providers in practice?*
ii. *What are the international standards and guidelines for the pre-hospital management of psychiatric emergencies by pre-hospital emergency care providers?*
iii. *What are the knowledge, attitudes and practices (KAP) of pre-hospital emergency care providers in South Africa regarding pre-hospital management of psychiatric emergencies?*

1.4 OVERALL GOAL, AIM AND OBJECTIVES OF THE STUDY

In order to give the reader a glimpse of what the study is trying to achieve, the overall goal, aim and objectives of the study need to be explained.

1.4.1 Overall goal of the study

The overall goal of the study was to make informed and evidence-based recommendations that will initiate the review of the EMC undergraduate training curriculum to include teaching and training on pre-hospital management of psychiatric emergencies. This could possibly ensure that EMC graduates are knowledgeable and competent to manage psychiatric emergencies and further ensure that psychiatric patients receive adequate and professional emergency care in the pre-hospital environment.

1.4.2 Aim of the study

The aim of the study was to determine the need for including teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum in S.A by investigating and elucidating deficiencies in the knowledge, attitude and practice of Emergency Medical Care

Providers with regards to managing psychiatric emergencies in the pre-hospital environment.

1.4.3 Objectives of the study

The following objectives helped to address the research questions in the study:

i. *To determine the different types of psychiatric emergencies that can be encountered by the pre-hospital emergency care providers in practice.*
ii. *To determine and review the various international standards and guidelines used for the management of psychiatric emergencies by pre-hospital emergency care providers worldwide.*
iii. *To determine the knowledge, attitude and practice of the pre-hospital emergency care providers on the management of psychiatric emergencies.*

1.5 DEMARCATION OF THE FIELD AND SCOPE OF THE STUDY

This study took place under the auspices of Health Professions Education. In addition, the focus of the study was to determine the need for teaching on pre-hospital management of psychiatric emergencies in the emergency medical care curriculum in South Africa. Furthermore, the study was limited to the emergency medical care providers. In light of this, the study can be classified as interdisciplinary since it falls under the field of emergency medical care and psychiatry/mental health and health professions education.

A questionnaire survey was circulated to the emergency medical care providers working in the Free State Province for completion. The participants who took part in this study were all registered with HPCSA and were either working for a private organisation (ER 24) or government EMS.

1.6 THE RESEARCHER

In a personal context, the researcher in this study is registered with HPCSA as an Emergency Care Practitioner (ECP) and has been a qualified Advanced Life Support (ALS) paramedic for the past 10 years. The researcher has been involved in the education and training of emergency medical care providers at different levels at the Free State College of Emergency Care for the past 8 years.

1.7 TIME SPECIFICATION

The study was conducted between January 2017 and August 2019, with the empirical research phase from March 2018 to June 2018.

1.8 VALUE AND SIGNIFICANCE OF THE STUDY

The value of this research study is that it supports the Constitution of South Africa with regards to section 27 which states that everyone has the right to health care services and specifically, no one (including psychiatric patients/mental health care users) may be refused emergency medical treatment. Furthermore, this study may ensure that emergency medical care providers receive training in the management of psychiatric emergencies, and that they are thus able to render appropriate emergency medical care to the psychiatric patients.

In addition, this study may contribute significantly to the pre-hospital management of psychiatric patients, because paramedics encountering patients suffering from psychiatric emergencies is inevitable. This study may also enhance both the safety of the emergency medical care providers and psychiatric patients by possibly identifying the need to teach emergency medical care providers the necessary skills for managing mental health care users. Most importantly, this study could pave a way to avoid discrimination against patients with psychiatric emergencies as seen when police are called upon to forcefully handle and transport psychiatric patients - particularly the violent patients.

1.9 RESEARCH DESIGN AND METHODS OF INVESTIGATION

The following concepts form an integral part of the study. A brief discussion on how these concepts assist and contribute to planning and data collection will be discussed in the following paragraphs.

1.9.1 Design of the study

A research design provides an approach for solving a research problem, thus serving as an outline for an action to be taken. Furthermore, a research design in totality explains the approaches that the researcher uses to develop correct, unbiased and explanatory evidence (Brink, Van der Walt & Van Rensburg 2012:121).

In this research project, the researcher utilised a quantitative, non-experimental design which is descriptive in nature. According to Brink *et al.* (2012:112) a study with a descriptive design may be utilised to identify problems with a current practice or to justify current practice. Based on the reasons why a descriptive design may be used, a descriptive design was found to be suitable for this study since it aims to investigate the management of psychiatric emergencies in the pre-hospital environment by pre-hospital emergency care providers.

1.9.2 Methods of investigation

Literature study and questionnaire survey are the two methods of investigation that were selected and used as the bases of the investigation.

The first method (literature study) aimed to conceptualise a research problem and locate it in a body of theory. This method further served to put the researcher's efforts into perspective, situating the topic in a larger knowledge pool, creating a foundation based on existing, related knowledge (De Vos, Strydom, Fouché & Delport 2011:134-135). In particular, the literature study served as a vital tool to enlighten the researcher about the status of the training on pre-hospital management of psychiatric emergencies on the emergency medical care curriculum in South Africa.

The literature study was followed by a questionnaire survey (second method) to gather relevant data about the knowledge, attitude and practices of the pre-hospital emergency care providers in the Free State Province which took three months to complete. The questionnaire included both opened and closed-ended questions. However, this questionnaire was mostly populated with quantitative closed-ended questions with few qualitative elements (open-ended questions). The participants included both private and government employees with different EMC qualifications and all are registered with the HPCSA.

A detailed description of the population, sampling methods, data collection and techniques for data analysis and reporting, and ethical considerations are discussed in Chapter 2.

1.10 A SCHEMATIC OVERVIEW OF THE STUDY

A Schematic overview of the study is depicted in Figure 1.2.

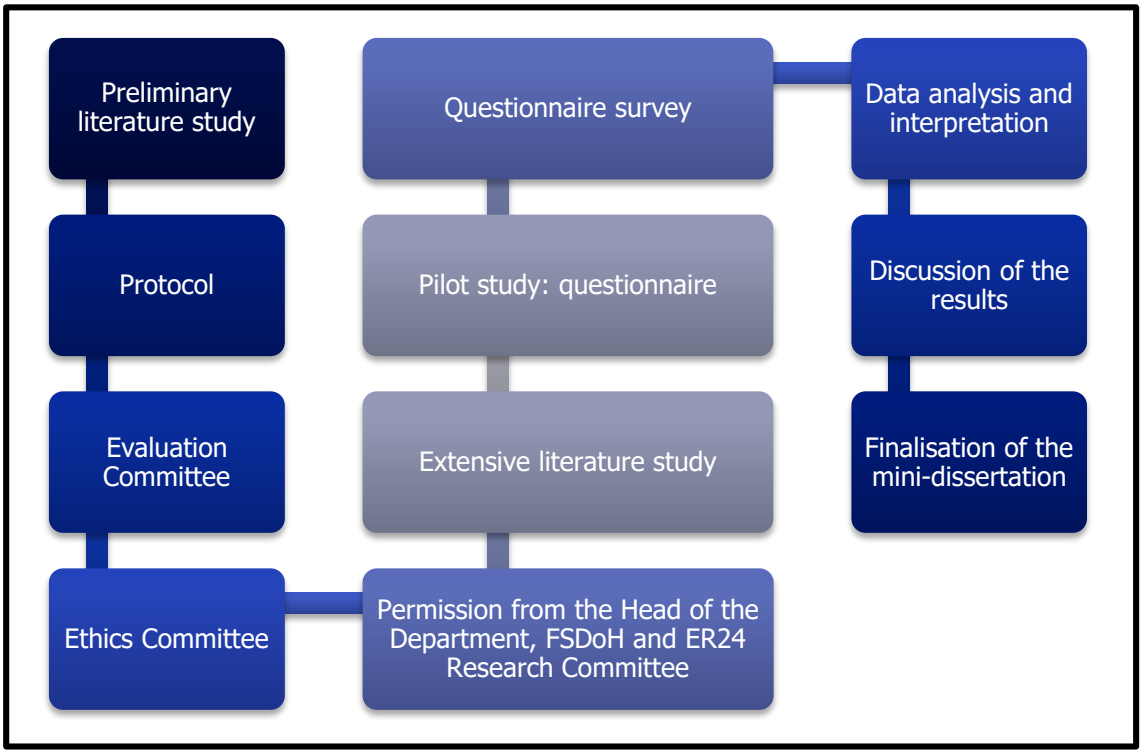

Figure 1.2: A schematic overview of the study

1.11 IMPLEMENTATION OF THE FINDINGS

The results of this study will be made available to the relevant stakeholders; for example, the National Department of Health, Health Professions Council of South Africa, Colleges of Emergency Medical Services and ER24. This study may contribute to the efforts of professionalising the Emergency Medical Services in the country. Furthermore, the findings of this research will be submitted to the academic journal with the view for publication in order to contribute to the body of knowledge.

1.12 ARRANGEMENT OF THE REPORT

This section provides a brief outline and layout of the mini-dissertation.

Chapter 1, **Orientation to the study**, provided the context and background of the study and the problem, and also stated the research questions. These were followed by a brief discussion on the overall goal, aim and objectives of the study and the demarcation and

scope of the study, value and significance of the study, to give the reader an overview of what the report contains. Furthermore, this chapter provided a brief discussion on the research design and methods that were utilised. Lastly, this chapter ended with the schematic overview of the study to illustrate the steps taken by the researcher to complete this report.

Chapter 2 (publishable article), **Assessing the knowledge, attitude and practice of pre-hospital emergency care providers in the Free State, South Africa, on aspects of pre-hospital management of psychiatric emergencies**, provides the theoretical orientation to the study and deals with a review of literature that describes the management of psychiatric emergencies in the pre-hospital environment, provides comprehensive details about the research design and methods that were employed in this study, and presents the analysis of the knowledge, attitude and practice survey data, the findings and the results of the questionnaire as the final outcome of the study.

An article from this study has already been accepted for publication by the Pan African Medical Journal (an international peer-review journal) titled "**Assessing the knowledge of emergency medical care practitioners in the Free State, South Africa, on aspects of pre-hospital management of psychiatric emergencies" (cf. Appendix A1-2).**

Chapter 3, **Conclusion, recommendations and limitations of the study**, provides an overview of the study, the conclusion reached, the limitations of the study and ends with the recommendations.

1.13 CONCLUSION

Chapter 1 provided an orientation to the study. This was achieved by providing background to the research problem. Following the background to the research problem was the problem statement and research questions. Then, the overall goal, aim, objectives of the study were presented. The field and scope of the study was demarcated. A brief discussion on the research design and presented the outline of the schematic overview of the study.

The following chapter, Chapter 2 (publishable article), **ASSESSING THE KNOWLEDGE, ATTITUDE AND PRACTICE OF PRE-HOSPITAL EMERGENCY CARE PROVIDERS IN THE FREE STATE, SOUTH AFRICA, ON ASPECTS OF PRE-HOSPITAL MANAGEMENT**

OF PSYCHIATRIC EMERGENCIES, will report on the research methods used and the findings of the study.

CHAPTER 2

ARTICLE 1: ASSESSING THE KNOWLEDGE, ATTITUDE AND PRACTICE OF PRE-HOSPITAL EMERGENCY CARE PROVIDERS IN THE FREE STATE, SOUTH AFRICA, ON ASPECTS OF PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES

The article was prepared according to the journal submission guidelines for the *Pan African Medical Journal* (cf. Appendix E).

DECLARATION

I hereby declare that I formulated the study, conducted the study, collected the data, analysed the data, interpreted the data and wrote the article with the editorial, supervisory and technical support from my study leader Dr AO Adefuye, Co-study leader Dr M Jama and the Biostatistician from the University of the Free State.

…… ……

JD Mothibi Date

…….. ……

AO Adefuye (Study leader) Date

…….. ……

M Jama (Co-study leader) Date

Assessing the Knowledge, Attitude and Practice of Pre-hospital emergency care providers in the Free State, South Africa, on Aspects of Pre-hospital management of Psychiatric Emergencies

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2.1 Abstract

2.1.1 Background: Studies have reported that pre-hospital emergency care providers encounter challenges when attending to psychiatric emergencies. The EMC provider's ability to understand, assess and manage psychiatric emergencies has been reported to be poor due to limited knowledge and insufficient training. In South Africa (SA), little is known about the knowledge, attitude and practice of pre-hospital emergency care providers on pre-hospital management of psychiatric emergencies. The objective of this study was to assess the knowledge, attitude and practice of pre-hospital emergency care providers working in the Free State province on aspects of pre-hospital management of psychiatric emergencies.

2.1.2 Methods: This descriptive study used a questionnaire survey to obtain data on the knowledge, attitude and practice of pre-hospital emergency care providers on aspects of pre-hospital management of psychiatric emergencies.

2.1.3 Results: Only 159 of the initial 192 questionnaires distributed were returned, giving a response rate of 82.8%. The majority (87.4%) of the participants reported inadequate knowledge of pre-hospital management of psychiatric emergencies (91.7 of BLS, 85.7% of ILS and 84% of ALS participants respectively reported lack of knowledge). More than a third of the participants reported that they are not knowledgeable on how to assess a psychiatric patient ($P < 0.01$), 64.2% and 73.6% ($P < 0.001$ in both cases) could not perform mental status examination and lack the knowledge of crisis intervention skills for managing a psychiatric emergencies. The majority (76.7%; $P < 0.001$) of the participants are not conversant with the Mental Health Care Act 2002 (Act no. 17 of 2002). Furthermore, the majority (65.4% and 81.8%) of participants reported that their organisations do not have a physical restraining policy for psychiatric patients and do not provide them with physical restraining equipment. More than a third of the participants indicated that they do not transport the psychiatric patient to hospital if they refuse, 69.8% ($n = 111$). Nearly all participants (94.3%, $n = 150$) of this study believe that psychiatric patients are dangerous, and the majority (62.9%, $n = 100$) of participants reported "fear" as their feeling towards calls involving psychiatric emergencies. Finally, participants (94.3% and 86.8%, respectively; $P <0.001$) agree that teaching and prior exposure to a psychiatric facility, as in work integrated learning, will empower EMC graduates with skills required to effectively manage psychiatric emergencies.

2.1.4 Conclusion: EMC providers are often the first healthcare professionals arriving at any scene of medical emergencies including psychiatric emergencies. To avoid malpractices, which could be detrimental to the patient's health, it is of utmost importance that pre-hospital emergency care providers are well trained and equipped to manage any form of medical emergency including those involving psychiatric patients.

Key words: Pre-hospital emergency care providers, Psychiatric Emergencies, South Africa

2.2 BACKGROUND

Globally, the burden of mental disorders continues to rise with significant impact on health, social, economic and human rights sectors.[1] Psychiatric emergencies (PEs) are acute onset of disturbance of behaviour, thought or mood of an individual which if untreated may lead to harm, either to the individual or to others.[2] Psychiatric emergency is a broad concept that consists of various disorders grouped into two major categories namely; acute excitement with psychomotor agitation and self-destructive or suicidal behaviour.[3] Psychiatric emergencies are often, but not always, caused by mental illness and about 60% of cases needing medical attention occur in non-psychiatric facilities.[3] According to Calzada and colleagues, acute agitation accounts for almost half of the total psychiatric emergencies in the pre-hospital setting.[4] Immediate treatment directed against these acute manifestations is needed, both to improve the patient's subjective symptoms and to prevent behaviour that could harm the patient or others.[5]

In SA, the Life Esidimeni tragedy, that led to the death of 144 mental health care users and the torture of 1418 others [6], has raised important ethical and clinical issues [7]. This requires that healthcare professionals, including pre-hospital emergency care providers are well trained on the ethical and clinical principles of managing psychiatric patients. EMC providers (Pre-hospital emergency care providers) are often the first healthcare professional arriving at any scene of medical emergencies. An EMCP will routinely encounter patients with acute psychiatric disturbances in practice.[8, 9] However, studies have reported that pre-hospital emergency care providers encounter challenges when it comes to providing high-quality, safe and effective healthcare for the mentally ill.[10, 11] It has been advocated that EMC personnel require mental health skills that will allow them recognise and manage mental illness in ways that will collaboratively add value to overall patient care. [12] At present, little is known about the knowledge, attitude and practice of pre-hospital emergency care providers in SA on pre-hospital management of psychiatric emergencies. Using a questionnaire survey, this study assessed the knowledge, attitude and practice of pre-hospital emergency care providers, working in the Free State province of SA, on aspects of pre-hospital management of psychiatric emergencies.

2.3 METHODS

This research was designed as a descriptive study that made use of a questionnaire survey.

2.3.1 Questionnaire survey

The structured questionnaire used in this study was self-administered and was distributed manually (in hard copy) to the participants of this study. The questionnaire was compiled using factors identified during the literature review, which had been used by previous studies. Questions were adapted so that they were applicable to the context of the pre-hospital EMC environment. The questionnaire collected data in the following three sections:

Section A: Biographical data: age, gender, qualification, district of operation, level of experience, EMC certification, and sector of practice.
Section B: Knowledge survey questions: assessed participants knowledge on aspects of pre-hospital management of psychiatric emergencies. In this section, participants were asked to choose between "Yes", "No" or "Unsure" in response to subject-specific, closed ended questions relating to the management of psychiatric emergencies in the pre-hospital setting. The open-ended questions requested that participants to supply a motivation for their response to the closed-ended question. The levels of knowledge assessed include; Level 1: Remember (K1) (The ability of the participants to recognise, remember and recall terms or concepts); and Level 2: Understand (K2) (The ability of the participants to explain ideas or concepts) [13].
Section C: Practice survey questions: assessed participants' practice regarding management of psychiatric emergencies in the pre-hospital environment.
Section D: Attitude survey: obtained the participants' attitude regarding pre-hospital management of psychiatric emergencies.

Participants were requested to return the completed questionnaire to the nearest emergency medical service (EMS) station in a box labelled for such purpose.

2.3.2 Target population

The target population consisted of all EMC personnel working in the Free State provincial emergency medical services and private sector, who were registered (at the time of the study) with the Health Professions Council of South Africa (HPCSA).

2.3.3 Sampling method and sample size

In this study, stratified random sampling was used to obtain a representative sample of 192 participants (10% of the entire population). The strata in this study were the different levels of EMC certification and the different sectors of practice (government or private). The survey sample consisted of individuals who were willing to participate in the study and complete the questionnaire.

2.3.4 Pilot study

A pilot study was conducted to test the suitability of the study design and methods, the chosen data collection method and the overall structure of the questionnaire. The pilot study consisted of twelve EMC personnel at different levels (four participants per strata) of certification, and in different sectors (four from private and eight from provincial government). The findings of the pilot study confirmed the feasibility of the main study, as the participants in the pilot study did not recommend changes to the structured questionnaire. The results of the pilot study were not included in the final results.

2.3.5 Data collection and analysis

Data collection was aided by EMS station managers and the drivers of the planned patient transport (PPT) system in the different regions, who assisted in both the dissemination and collection of the questionnaires. Participants had 48 hours to return the questionnaire if they did not complete it immediately. Quantitative data collated from the structured questionnaire was analysed quantitatively and results presented as frequencies and percentages. One-way ANOVA with Newman-Keuls Multiple Comparison Post-Test on Graph Pad Prism 4.0c (Graph Pad, San Diego, CA, USA) was used to determine significant differences between calculated mean percentages. Responses to the open-ended questions are presented as participants' verbatim quotes (e.g. #number).

2.3.6 Validity of the instrument

Validity (face validity, content validity, criterion validity, and construct validity) of the instrument used in this study was achieved by comparing the questionnaire elements with previous, similar studies and by conducting a pilot study. Furthermore, the questionnaire was subjected to review and approval by an evaluation committee, ethics committee and a senior biostatistician, all at the University of the Free State, Bloemfontein, South Africa.

2.3.7 Reliability of the Instrument

The closed ended questions were analysed for reliability with the use of Cronbach's alpha, within each subset of questions.

2.3.8 Ethical considerations

Approval to conduct the study was obtained from the Health Sciences Research Ethics Committee of the Faculty of Health Sciences at the University of the Free State (Ethics No. UFS-HSD2017/1184). Permission was also obtained from the Free State Department of Health and a private EMS provider (ER24).

2.4 RESULTS

Only 159 of the initial 192 questionnaires that was distributed were returned, giving a response rate of 82.8%. Of the participants, 78.0% (n = 124) were employed in the public sector (Free State Department of Health), while 19.5% (n = 31) were employed within the private sector. Four participants (2.5%) did not indicate the sector in which they were employed.

2.4.1 Cronbach's alpha analysis of subset of questions

The knowledge survey questions subscale consisted of 11 items (α = .96), while the practice survey questions subscale consisted of 11 items (α = .93) and attitude survey questions subscale consisted of 4 items (α = .88). The acceptable value of alpha ranges from 0.70 to 0.95. A low or higher value may be indicative of low number of questions, poor interrelatedness between items and redundant items.

2.4.2 Participants' demographics

This section of the questionnaire focused on determining participants' demographic information and experiences in the emergency medical services.

2.4.2.1 Age of participants

Majority (n = 47, 29.6%) of the participants were between 36 - 40 years, 22.6% (n = 36)

were between 41 - 45 years, 22.0% (n = 35) between 31 -35 years, 10.1% (n = 16) between 26 - 30 years, while only 5.7% (n = 9) of the participants were between 46 - 50 years. Four (2.5%) and 5 (3.1%) participants were between 20 – 25 years and older than 50 years, respectively. This data indicates the diversity of participants in relation to the age of EMC personnel. Seven (4.4%) participants did not indicate their age (Figure 1).

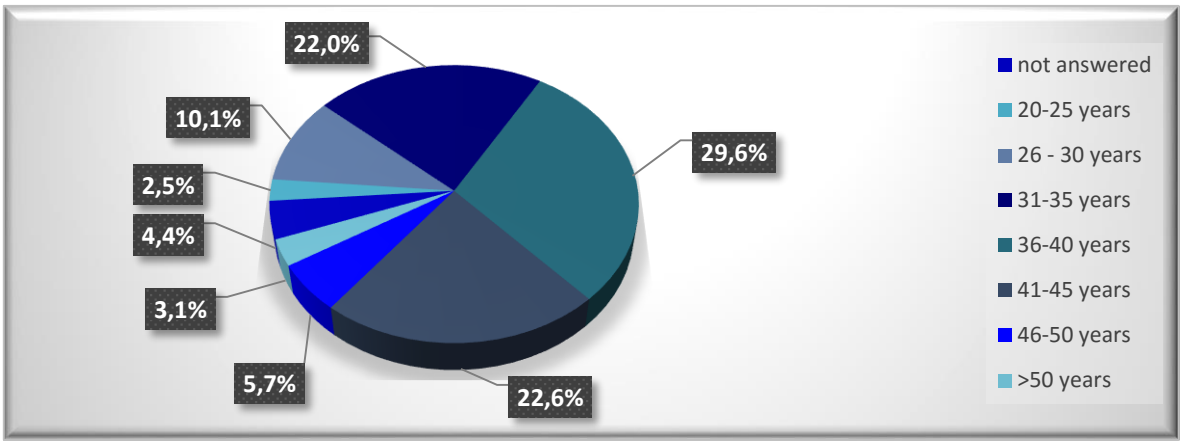

Figure 1: Age distribution of the participants

2.4.2.2 Gender of participants

Male participants constitute 66.7% (n = 106) and females 32.0% (n = 51). Thus, suggesting a male predominance in the profession. Two (1.3%) of the 159 participants did not indicate their gender (Figure 2).

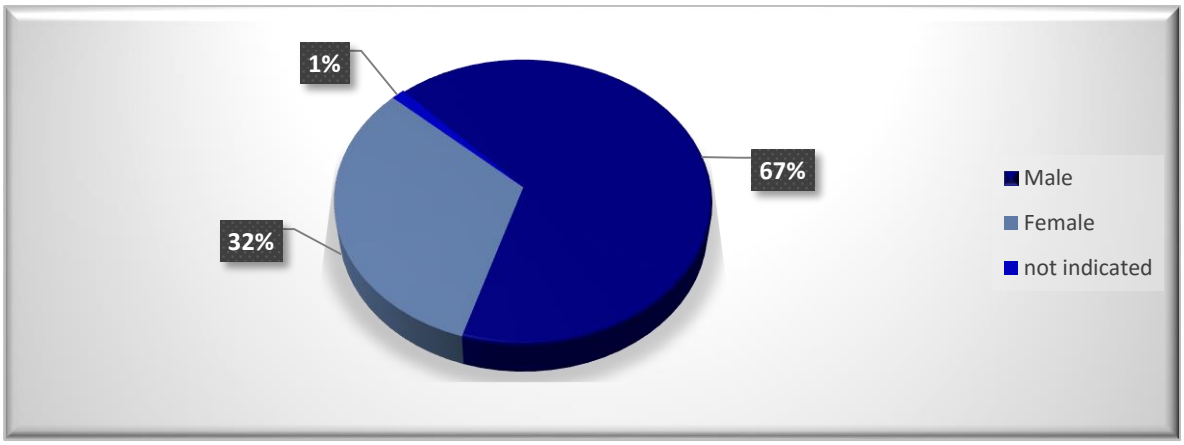

Figure 2. Gender distribution of the participants

2.4.2.3 Qualification and level of training of EMC certification of participants

The majority (37.7%; n = 60) of the participants had basic life support (BLS) qualifications,

30.8% (n = 49) had intermediate life support (ILS) qualifications, and 31.5% (n = 50) had advanced life support (ALS) qualifications. Figure 3 shows the different certification represented in each cadre.

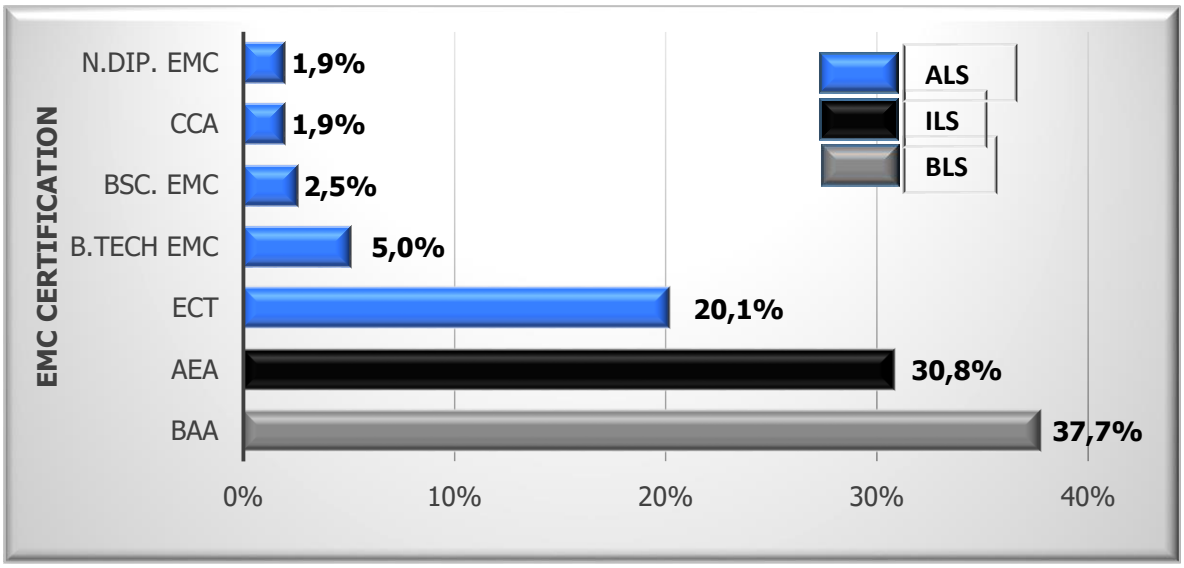

Figure 3. EMC certification of participants

2.4.2.4 Number of years post qualification

The majority (30.2%; n = 48) were 5-10 years post qualification, while 20.1% (n = 32) and 8.8% (n = 14) obtained their qualification 10-15 years and 15-20 years ago, respectively. A further 24.5% (n = 39) and 15.1% (n = 24) of the participants are 2-5 and less than two years post qualification, respectively. Only two (1.3%) of the participants obtained their qualification more than 20 years ago (Figure 4).

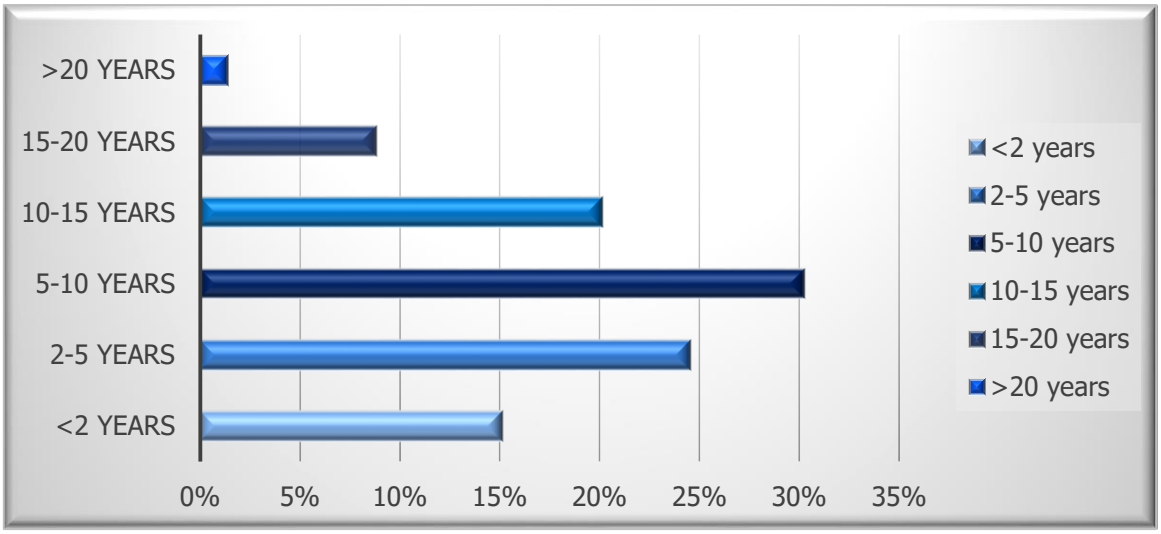

Figure 4. Post qualification years

2.4.2.5 Duration of service as pre-hospital EMC provider

The number of years that participants had been working as pre-hospital emergency medical care personnel is presented in Figure 5. The majority, that is, 42.8% (n = 68) of participants, indicated that they had been in service for between five and ten years. A further 22.0% (n = 35) had worked for 10-15 years, while only 3.1% (n = 5) and 3.8% (n = 6) had less than two years and greater than twenty years of service, respectively. One participant did not answer this section.

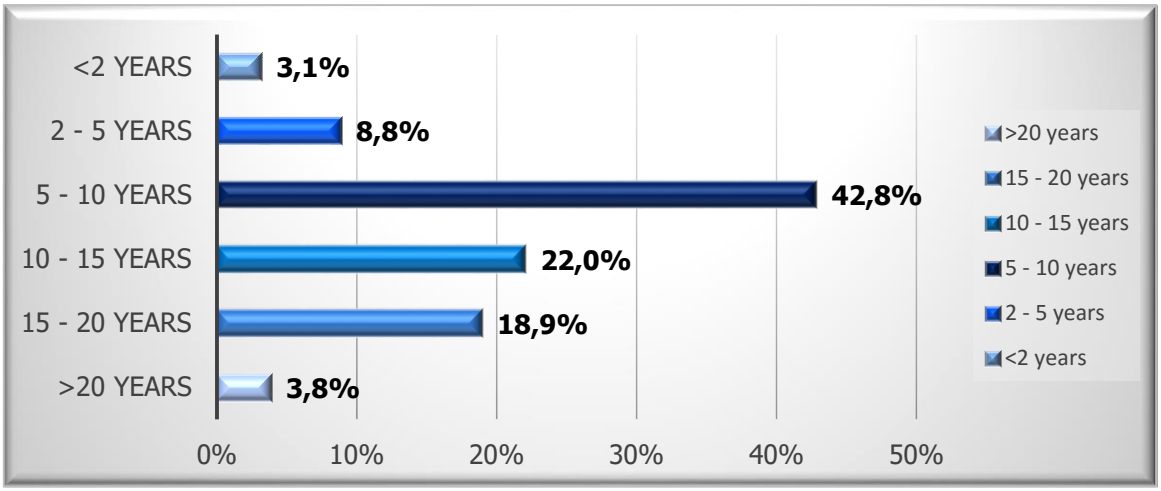

Figure 5. Duration of service as a pre-hospital emergency care provider

2.4.2.6 Location of workplace

More than half (52.2%; n = 82) of the participants worked in urban settings (metropolitan/city); 28.3% (n = 45) worked in small towns; and only 18.2% (n = 29) worked in rural areas. Two (1.3%) participants chose "other" as location of workplace. One participant did not answer this section (Figure 6).

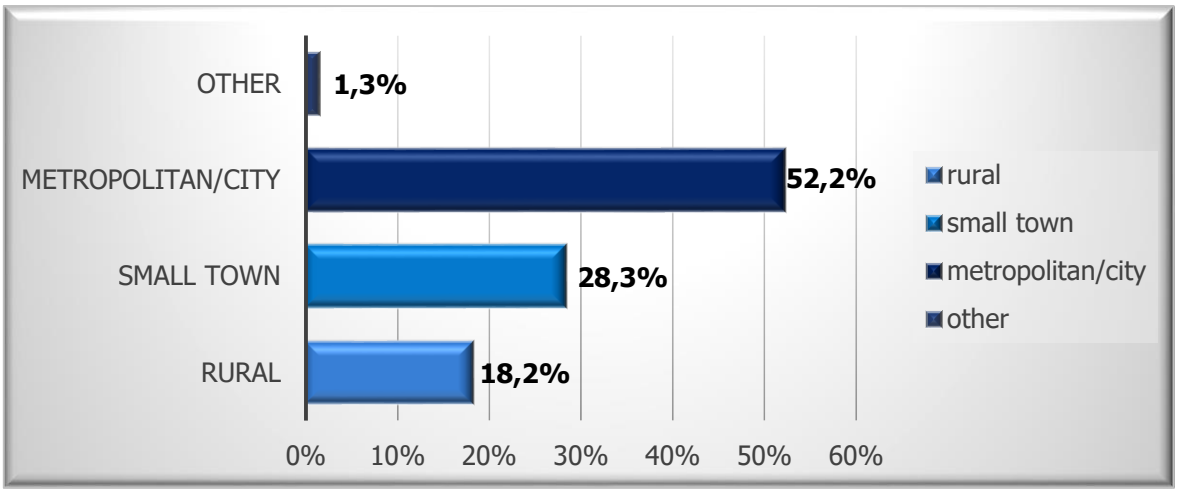

Figure 6. Location of workplace

2.4.2.7 Level of employment

The majority 79.8% (n = 127) worked as operational staff, while those working as managerial staff account for 10.7% (n = 17). Nine (5.7%) participants were lecturers and six (3.8%) chose "other" as their level of employment (Figure 7).

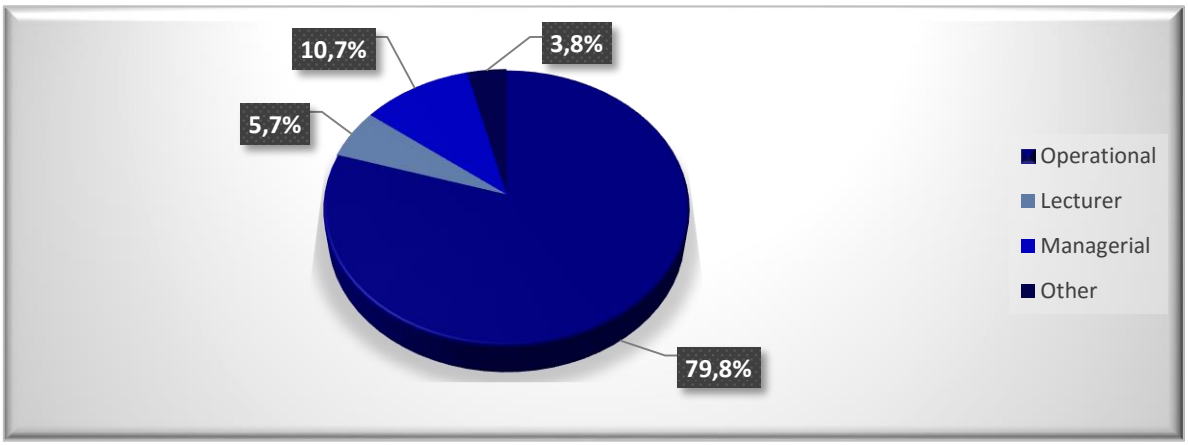

Figure 7. Participants' level of employment

2.4.3 Prior experience in managing a psychiatric emergency

To establish if participants have had prior experience in managing psychiatric emergencies, participants were requested to respond to the question "*Have you attended to a psychiatric emergency before*?" The majority (64.2%, n = 102) of the participants indicted "Yes" (P < 0.001), 26. 4% (n = 42) indicated "No", while 9.4% (n = 15) were unsure.

2.4.4 Pre-hospital emergency care providers' knowledge of pre-hospital management of psychiatric emergencies

This section of the questionnaire focused on assessing participants' knowledge on aspects of pre-hospital management of psychiatric emergencies.

2.4.4.1 Participants' self-appraisal of their knowledge on pre-hospital management of psychiatric emergencies

Participants were asked to do a self-appraisal of their knowledge on pre-hospital management of psychiatric emergencies by answering "Yes or No or Unsure" to the question "*Do you feel confident with the level of your knowledge regarding pre-hospital management of psychiatric emergencies?*" Result obtained revealed that the majority of the participants (87.4%, n = 139) indicated "No", while only 2.5% (n = 4) indicated "Yes". Fourteen (8.8%) participants were "Unsure" whether their knowledge of pre-hospital management of psychiatric emergencies is adequate. Two (1.3%) participants did not indicate a response for this section. More importantly, the majority (84.0%, n = 42) of the participants with ALS certification indicated that they are not confident of their knowledge of pre-hospital management of psychiatric emergencies (Table 1). This suggests that there is a need to expand and strengthen the teaching on pre-hospital management of psychiatric emergencies

Table 1: ***Participants' self-appraisal of their knowledge on pre-hospital management of psychiatric emergencies***

OPTIONS	BLS n (%)	ILS n (%)	ALS n (%)	TOTAL n
Yes	0 (0)	2 (4.1)	2 (4)	4
No	55 (91.7)	42 (85.7)	42 (84)	139
Not sure	3 (5)	5 (10.2)	6 (12)	14
No response	2 (3.3)	0 (0)	0 (0)	2
Total (n)	60	49	50	159

2.4.4.2 Knowledge on the different types of psychiatric emergencies

Here, participants were asked to respond to the question *"Do you know the different types of psychiatric emergencies?"* Only 22.6% (n = 36) of the participants' indicated that they know the different types of psychiatric emergencies by indicating "Yes" (cf. quotes #1 - #3), 47.8% (n = 76) indicated that they do not know by choosing "No", while 29.6% (n = 47) were unsure.

#1 *"anxiety disorder; personality disorders; violent disorder; substance abuse"*
#2 *"delirium/dementia; psychosis; attempted suicide or deliberate self-harm; alcohol or drug overdose; withdrawal symptoms of drug dependence; panic, violence or excitement"*
#3 *"suicide attempts, violent behaviour, psychosis, personality disorders, substance abuse and intoxication"*

2.4.4.3 Knowledge on how to approach an individual with a psychiatric emergency

Only 33.3 % (n = 53) of the participants' indicated that they are knowledgeable on how to approach an individual with a psychiatric emergency (cf. quotes #4 and #5), 38.3% (n = 61) indicated that they are not knowledgeable (cf. quotes #6 and #7), and 27.7% (n = 44) are unsure of how to approach such case (cf. quote #8).

#4 *"approach patient in a calm manner to gain their trust and see if the patient is willing to work with you after gaining their trust"*
#5 *"try to calm and reassure patient. Take the family member with when talking with the patient"*
#6 *"I did not receive any structured formal/informal training, nor any exposure during any training period"*
#7 *"no I have zero skills to handle them so am even scared to approach. They might harm me"*
#8 *"every psychiatric pt [sic] is different, so I would say it differs"*

2.4.4.4 Knowledge on how to assess an individual with a psychiatric emergency

The majority (46.5%, n = 74) of the participants indicated that they are not knowledgeable on how to assess an individual with a psychiatric emergency ($P < 0.01$) (cf. quotes #9 - #11), only 19.5% (n = 31) indicated that they know how to assess such a patient (cf. quotes #12 and #13), while 34.0% (n = 54) indicated that they are unsure (cf. quote #14).

#9 *"usually we contact SAPS for assistance"*
#10 *"no education on psychiatric patient"*
#11 *"no proper guidelines, how to assess specifically psychiatric patient like other cases/emergencies"*
#12 *"obtain hx [sic]. Talk to the pt [sic] ask relevant questions"*
#13 *"assess mental status; patient behaviour……"*
#14 *"I don't know the exact signs of a compute psychiatric patient"*

2.4.4.5 Knowledge on mental status examination/assessment protocol for psychiatric patients

Only 5.7% (n = 9) of the participants reported that they have knowledge of a mental status examination/assessment protocol for psychiatric patients (cf. quotes #15 and #16). The

majority (64.2%, n = 102) of the participants reported lack of knowledge of a mental status examination/assessment protocol for psychiatric patients (P < 0.001), while 29.6% (n = 47) were unsure whether they possess this knowledge. One participant failed to indicate an answer for this section. Lack of knowledge on mental status examination protocol was observed in the ALS strata where only 4% (n = 2) of the participants reported that they have knowledge about mental status examination protocol for psychiatric patients, while 62% (n = 31) did not know and only 34% (n = 17) were unsure.

#15 *"I am aware of the MSE chart which provides many criterion to be taken into count…"*
#16 *"mini mental state examination (used in SA) DSM5"*

2.4.4.6 Knowledge on crisis intervention skill for managing psychiatric emergencies

When asked to indicate whether they are knowledgeable on crisis intervention skill for managing psychiatric emergencies, the majority (73.6%, n = 117) of the participants indicated lack of knowledge i.e. "No" (cf. quotes #17 and #18) (P < 0.001), 23.3% (n = 37) were not sure if they possess such knowledge (cf. quote #19), while only 1.9% (n = 3) reported that they are knowledgeable on crisis intervention skills for managing psychiatric emergencies (cf. quote #20). Two participants (1.3%) did not respond to this question.

#17 *"no formal/informal training on the subject"*
#18 *"no skills that is why when I approach them and realize they are insane I call the police"*
#19 *"I have never been taught the skills for crisis intervention in managing psychiatric patients, and I am not sure if there is any skills required regarding psychiatric patients"*
#20 "*stay calm and be careful when handling such patients call for assistance if patient becomes violent e.g. higher qualified person or police. If patient presents with medical condition injury treat the emergency as per protocol"*

2.4.4.7 Knowledge of the Mental Health Care Act 2002 (Act no. 17 of 2002) of the Republic of South Africa

Here participants were asked whether they are conversant with the Mental Health Care Act 2002 (Act no. 17 of 2002) of the Republic of South Africa. Of the respondents, only 10.0% (n = 16) reported that they were knowledgeable on the Act, by indicating "Yes", the majority (76.7%, n = 122; P < 0.001) reported lack of knowledge of the Act, while 11.9% (n = 19) were unsure. Two participants did not respond to this question.

2.4.5 Practice of pre-hospital management of psychiatric emergencies by Pre-hospital emergency care providers

This section focused on obtaining information on the aspects of pre-hospital emergency care providers' practice of pre-hospital management of psychiatric emergencies.

2.4.5.1 Applying restrain

In respect to participants who indicated that they know physical (20.1%, n = 32) and chemical (13.8%, n = 22) restrain, only 25% (n = 8) and 40.9% (n = 9) of the participants indicated that they can apply/perform both physical and chemical restrain, respectively. At the same time, the majority 65.4% (n = 104) and 81.8% (n = 130) of the participants reported that their organisations do not have a physical restraining policy for psychiatric patients and do not provide them with physical restraining equipment (Table 2).

2.4.5.2 Patients transport

When asked whether they transport the psychiatric patient to hospital even if they refuse transportation, 69.8% (n = 111) of participants do not transport the patient to hospital, 16.4% (n = 26) indicated that they do transport the patients to the hospital, while only 11.9% (n = 19) were uncertain in this regard (Table 2). Three participants (1.9 %) did not indicate an answer in the section.

2.4.5.3 Calling the police for assistance

Regarding calling the police for assistance, most (80.5%, n = 128) of the participants indicated that they do call police for assistance when the psychiatric patient refuses transportation, 11.9% (n = 19) indicated that they do not call police for assistance, thus suggesting that these patients are being abandoned by EMS personnel, while only 5.7% (n = 9) indicated that they were unsure (Table 2). Three participants (1.9%) did not indicate an answer in the section.

Table 2. Participants' practice survey regarding pre-hospital management of psychiatric emergencies

QUESTIONS	Options	BLS n (%)	ILS n (%)	ALS n (%)	Total n
Do you know how to physically restrain the psychiatric patient?	Yes	7 (11.7)	7 (14.3)	18 (36)	32
	No	39 (65)	29 (59.2)	23 (46)	91
	Not sure	13 (21.7)	13 (26.5)	8 (16)	34
	No response	1 (1.7)	0 (0)	1 (2)	2
Do you know chemical restraints for psychiatric patients?	Yes	3 (5)	5 (10.2)	14 (28)	22
	No	47 (78.3)	36 (73.5)	30 (60)	113
	Not sure	8 (13.3)	8 (10.2)	6 (12)	22
	No response	2 (3.3)	0 (0)	0 (0)	2
Do you transport the psychiatric patient to hospital even if they refuse transportation?	Yes	4 (6.6)	9 (18.4)	13 (26)	26
	No	49 (81.7)	32 (65.3)	30 (60)	111
	Not sure	5 (8.3)	7 (14.3)	7 (14)	19
	No response	2 (3.3)	1 (2)	0 (0)	3
Do you call the police for assistance when a psychiatric patient refuses transportation?	Yes	46 (76.7)	43 (87.8)	39 (78)	128
	No	8 (13.3)	3 (6.1)	8 (16)	19
	Not sure	4 (6.7)	3 (6.1)	2 (4)	9
	No response	2 (3.3)	0 (0)	1 (2)	3

2.4.6 Attitude of pre-hospital emergency care providers towards managing psychiatric patients in the pre-hospital environment

2.4.6.1 Pre-hospital emergency care providers' perception of psychiatric patients

The perception that psychiatric patients are dangerous seems to be the same across all levels of registrations. The similarity was evident from the slight variation of responses obtained from the three groups. Almost all participants under the BAA strata (95%, n = 57) perceive psychiatric patients as dangerous, while only 1.7% (n = 1) disagree and only 3.3% (n = 2) did not answer this question. Similarly, 93.9% (n = 46) of ILS participants in the study also perceive psychiatric patients to be dangerous, and only 6.1% (n = 3) disagree. The same trend was noted under the ALS group with nearly all participants (94%, n = 47) agreeing that psychiatric patients are dangerous, while only three (6%) participants disagreed.

2.4.6.2 Feeling about a call out of a psychiatric patient

The majority (62.9%, n = 100) of participants indicated their feeling towards psychiatric patients as "*Fear because they may harm me*" which correlates to the significant number of pre-hospital emergency care providers who think that psychiatric patients are dangerous

(cf. 2.4.6.1) (Figure 8). Only 23.3% (n = 37) indicated their feeling as "*Compassionate and desire to help*", 7.4% (n = 12) indicated their feeling as "*Nothing because it is part of my job*", while only 4.4% (n = 7) participants chose "*No particular feeling*" as their feeling towards psychiatric patients. Three (1.9%) participants did not indicate their feelings under this question.

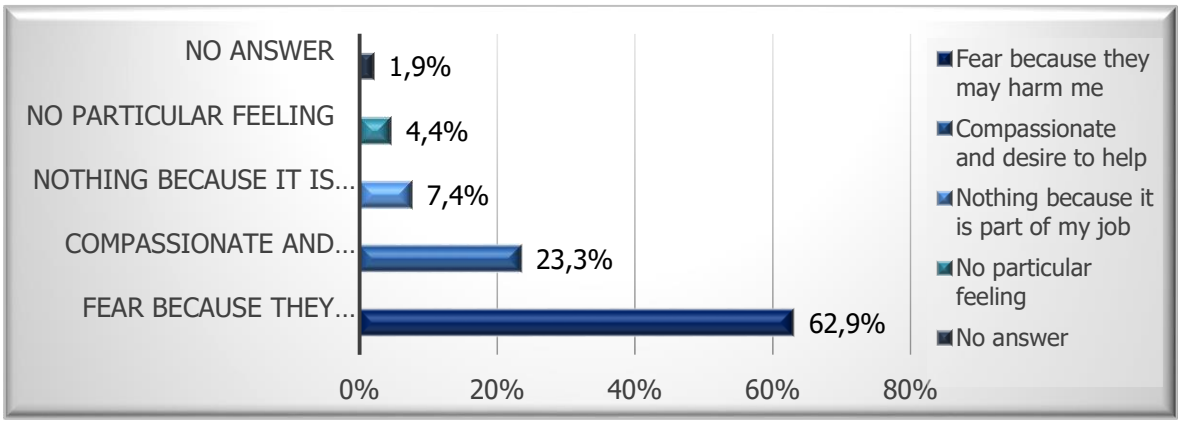

Figure 8. Participants' feelings regarding psychiatric patient call outs

2.4.6.3 First reaction when meeting violent psychiatric patient

In Figure 9, the participants' first reaction when meeting a violent psychiatric patient is indicated. The alarming number (73.6%, n = 117) of emergency medical care providers across all categories indicated that they call the South African Police Services (SAPS) when confronted with a violent psychiatric patient, 15.7% (n = 25) indicated that they normally call for back-up, 4.4% (n = 7) indicated that they call a psychiatrist, while only 3.1% (n = 5) indicated that they will help the patient. Five (3.1%) participants did not indicate their feelings under this question.

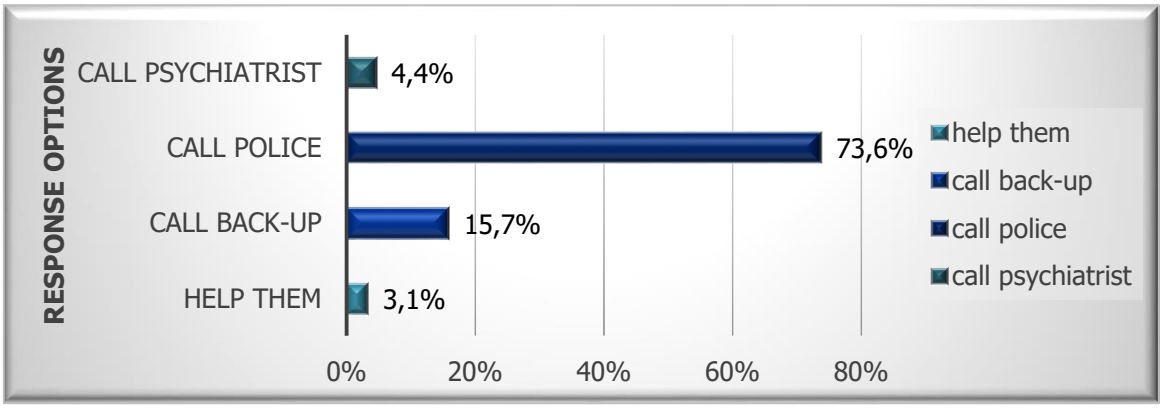

Figure 9. Pre-hospital emergency care providers' first reaction towards violent psychiatric patient

2.4.7 Participants' perceptions on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum

Participants were asked to indicate the extent to which they "Agree" or "Disagree" with the statement in Table 3.

Table 3: **Participants' perceptions on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum**

Statements	Agree n (%)	Disagree n (%)	No response n (%)
Do you think you are likely to attend to a psychiatric call?	117 (73.5)***	40 (25.2)	2 (1.3)
Do you think prior exposure to psychiatric facilities will empower EMC graduates with skills to manage psychiatric patients?	138 (86.8)***	18 (11.3)	3 (1.9)
Do you think it is necessary to include teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum?	150 (94.3)***	6 (3.8)	3 (1.9)

***, $P < 0.001$

2.5 DISCUSSION

According to the World Health Organization (WHO) report on mental disorders, around 450 million people worldwide currently suffer from mental disorders and one in four people in the world will be affected by mental or neurological disorders at some point in their lives. [14] Accompanying this high prevalence are reports confirming the increase in the frequency of psychiatric emergencies presenting to emergency departments and emergency medical services globally.[15-19]

Pre-hospital emergency care is an essential part of the continuum of emergency health care provided by emergency medical services (EMS) responders.[20] Pre-hospital emergency care providers are the initial health care providers at the scene of any medical emergency and are often the first to evaluate the nature of the emergency, determine the need for medical resources, initiate management and provide medical transport for the sick and injured.[20,21] However, it has been reported that the EMC provider's ability to understand, assess and manage psychiatric emergencies remains poor [22], due to limited knowledge and insufficient training. [18] Moreover, no known study has investigated the knowledge of pre-hospital emergency care providers in SA on aspects of pre-hospital management of psychiatric emergencies. This present study assessed the knowledge of pre-hospital

emergency care providers, in the Free State province of SA, on aspects of managing psychiatric emergencies in the pre-hospital setting.

The South African health care sector has been described as a two-tiered system divided into the government funded public healthcare sector and the private healthcare sector, where citizens must purchase their own private medical insurance in order to be treated at a private healthcare facility.[23] Similarly, employment of health professionals is either through government institutions (public health sector) or self-employment/employment by cooperate bodies in the private sector.[24] The majority (78.0%) of the participants of this study indicated that they are employed in the public sector. Thus, suggesting that majority of pre-hospital emergency care providers within the Free State province are employee of the Free State Department of Health. This is contrary to studies that reports a preference for the private health sector by health professionals in South Africa, due to poor working conditions in the public health sector.[25,26] However, the disparity in public versus private employee reported herein is justified since only one private employer gave permission for its providers to participate in the study. Other private employers approached declined the request to participate in the study.

Traditionally, the emergency medical care sector is considered a male-dominated field.[27] A male dominance of 66.7% compared to 32% females presented herein corroborates findings in published literature [28-30] as is the case in the Free State province, SA. This situation is not unique to the Free State province as many EMS across the country and other parts of the world are still lacking female providers and concerns about gender bias in the profession has been reported.[28, 31] The predominance of male over female in the EMC profession is partly because prior to the establishment of the EMC as a profession, pre-hospital emergency medical services were initially offered by the fire departments, a traditionally male-dominated field, in most communities [27,28].

Findings presented by this study suggest that pre-hospital emergency care providers within the Free State province are relatively young (median age group 36-40 years) with the majority having between 5 and 10 years of working experience in the EMC sector (Figure 5). This corroborates similar findings by Butler (2015).[31] The certification of the pre-hospital emergency care providers can be categorized in to three main cadres namely; Basic Life Support (BLS), Intermediate Life Support (ILS) and Advanced Life Support (ALS).[32] From this study it can be said that only a small number of EMC providers in the Free State province are in possession of ALS certification while the majority are in possession of a BLS

or ILS certification (Figure 3). Certification for BLS can be obtained after undergoing a 4-6 week course, while the ILS certification is obtained after attending a 4 months course that builds on the foundation laid during the BLS training (BAA course) and the ALS qualification could either be obtained after completing a 9-month course that builds on the foundation laid during both BLS and ILS training or completing a university structured course (two year diploma or four year degree programme).[32] The BLS provider (BAA), is capable of doing the basics including (but not limited to) simple airway management, extrication and splinting of fractures [33], but lack training in psychiatry emergency care. This may have an impact on the scope of pre-hospital emergency care delivered by such personnel and ultimately patient outcome. [34]

Despite 64.2% of the participants indicating that they have attended to a psychiatric emergency case before, the majority (87.4%) of the participants across the cadres reported that they are not confident of their knowledge on pre-hospital management of psychiatric emergencies. In addition, only 4% (n = 2) of the participants under the ALS strata reported that they feel confident about their level of knowledge regarding management of psychiatric patients although some elements of psychiatric emergencies appear in the curriculums of NQF aligned programmes. Thus, suggesting that majority of the patients attended to by these 102 (64.2%) Pre-hospital emergency care providers were poorly managed. While the pre-hospital emergency care provider is not expected to diagnose patients with psychiatric emergencies, it is vital that the provider has a thorough understanding of the presentation and management of such patients in order to provide safe and expedient transport to definitive care.[8] In this presented study, less than half (47.8%) of the participants indicated that they are not knowledgeable on the different types of psychiatric emergencies. In cases involving suicidal ideations, the EMC provider is expected to approach the individual with a degree of understanding of their turmoil and speak in a calm, supportive manner. [22] Findings by this study reveal that more than a third of the participants indicated that they are not knowledgeable on how to approach an individual with a psychiatric emergency. This was attributed to lack of training or exposure (cf. quotes #6 and #7).

Mental State/Status Examination (MSE) is part of every mental health assessment. The MSE is used to gain an in-depth understanding of the patient's psychological functioning at a particular point in time in order to direct care appropriately.[35] In cases involving suicidal ideations, the EMC provider is required to perform a thorough assessment to determine if there is enough evidence to seek help in obtaining an involuntary commitment/transport should the patient be unwilling to seek help.[22] Findings by this study reveal that only

5.7% of the participants indicated that they are knowledgeable on a MSE protocol (cf. quotes #15 and #16), while the majority (64.2%) reported lack of knowledge. In addition, only 19.5% of the EMC providers in this study indicated that they are knowledgeable on how to assess an individual with a psychiatric emergency (cf. quotes #12 and #13), while nearly half (46.5%) reported lack of knowledge, which they ascribe to no education and the absence of proper guidelines (cf. quotes #10 and #11). From these findings, it can be said that most EMC providers within the Free State province and indeed SA are not skilled in examining/assessing a case of psychiatric emergency in the pre-hospital setting.

During psychotic relapse, sufferers may experience a sudden exacerbation of acute symptoms which could be life threatening to the patient or others. Initiating crisis intervention at this stage is crucial as it brings much needed relief for both the patient and their carer and can help prevent further deterioration.[36] Studies have reported that early crisis intervention, with immediate reduction of psychotic symptoms is beneficial for the long-term prognosis of this illness [37, 38] In this present study, the majority (73.6%) of the participants indicated that they are not knowledgeable on crisis intervention skills for managing a psychiatric patient (cf. quotes #17 and #18). This could lead to a poorer long-term prognosis and poor patient outcome.

In SA, like in many other parts of the world, patient care takes place within a legal framework consisting of legislations, Acts, policies and laws to protect patient's rights. The Mental Health Care Act 2002 (Act no. 17 of 2002), ushered in a new era for South African psychiatry by replacing the Mental Health Act of 1973.[39] A requirement of the Act is that mental health care users be treated in the least restrictive manner possible and ultimately with the least discomfort and inconvenience.[40] Findings presented herein reveals that the majority (76.7%) of the pre-hospital emergency care providers who participated in this study indicated that they are not knowledgeable on the provisions of the Act. This suggested that a good majority of pre-hospital emergency care providers in the Free State province and indeed SA are not conversant with the provisions within the Mental Health Care Act. This may lead to varying malpractices that may be detrimental to a patient's health.

In situations where the patient shows signs of violent behaviour, the pre-hospital emergency care providers are expected to immediately treat the patient to stop the violence from escalating and to find the quickest way to keep the patient's agitation and violence under control.[41] However, this study revealed that 73.6% of participants' first reaction when confronted by a violent psychiatric patient is to call the police for assistance, an action

that could escalate the violent behaviour. In addition, 69.8% stated that they do not transport the psychiatric patients to hospital when they refuse transportation to the point of care. Furthermore, 80.5% of the participants indicated that they call the police should the patient refuse transportation to the point of care. This suggested that the majority of patients attended to by these pre-hospital emergency care providers may have been abandoned or transported by the police to the point of care.

The setting in which the pre-hospital emergency care providers operate is an uncontrolled environment and mostly consists of elements which could potentially influence the patient's presentation and provider's behaviour and judgement.[41] Therefore, assessing the patient in an uncontrolled environment becomes a challenging task, let alone aggressive and agitated patients. In some instances less aggressive treatment such as medication and verbal therapies are insufficient to control potentially dangerous patients, which strongly justify the use of restraints (physical and chemical) on violent patients.[42] However, there is much controversy regarding the use of restraints. In addition, the pre-hospital emergency care providers care providers should also be cognisant of the potential danger associated with physical restraint to both the patient and the provider.[43] Therefore, in situations whereby the pre-hospital emergency care providers would have to use the restraints to stop the patient's violent behaviour from escalating, the Mental Health Care Act (MHCA) No. 17 of 2002 and applicable regulations conditionally permits the use of restraints.[40,44] However, findings of this study revealed that only 4.4% indicated the availability of restraints in their organisation, suggesting that physical restraint is not widely practiced. In addition, only 9 (40.9%) of the respondent are allowed to chemically restrain the patient if needed.

In practice, the pre-hospital emergency care providers attend to all kinds of emergency incidents which present different challenges to EMS personnel. Data from nine countries namely Australia, United States of America, Turkey, Poland, India, Spain, Iran, Canada and Sweden indicates that violence against EMS personnel is a problem for many EMS agencies worldwide.[45] In addition, some specific psychiatric and medical disorders have been associated with violent behaviour.[46] Violent incidents place the lives of the patient and nearby persons, including the caregivers, in danger. As a results, pre-hospital emergency care providers are reluctant to transport psychiatric patients due to the potential threat to their personal safety.[47] In this study, three components (affective/evaluative, cognitive/belief and behavioural/action) of pre-hospital emergency care providers attitude towards the management of psychiatric patients in the pre-hospital environment was

evaluated.[48] Findings reveal that, 94.3% of participants believe that psychiatric patients are dangerous. Moreover, 62.9% of participants fear psychiatric patients because of the possibility of being injured, while only 23.3% expressed their compassion and desire to help. Furthermore, the majority 118 (73.6%) of participants' first reaction/action (behaviour) was to call the police when confronted by a violent psychiatric patient and only 5 (3.1%) pre-hospital emergency care providers indicating that they would help them. Thus, showing that the majority of the pre-hospital emergency care providers in the Free State EMS have a negative attitude towards psychiatric patients. Taken together, findings presented herein suggest that poor or limited knowledge on aspects of pre-hospital management of psychiatric emergencies due to lack of specific training in the EMC curriculum, may have precipitated a negative attitude towards patients and poor practice (malpractices) observed in the pre-hospital emergency care providers who participated in this study. According to Saunders et al (2012), training consistently led to improvements in both knowledge and self-reported attitudes in most studies suggesting that lack of specific training may contribute to the generally negative attitudes held towards self-harm patients. [49]

Finally, when asked about their opinion on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum, the majority (94.3% and 86.8%, respectively) of the pre-hospital emergency care providers agree that teaching and prior exposure to a psychiatric facility, as in work integrated learning, will empower EMC graduates with skills to effectively manage psychiatric emergencies.

2.6 CONCLUSION

Pre-hospital emergency care providers are often the first healthcare professionals arriving at any scene of medical emergencies including psychiatric emergencies. It is therefore of utmost importance that pre-hospital emergency care providers are well trained and equipped to manage any form of medical emergency including those involving psychiatric patients. Enhancing their knowledge, attitude and practice in aspects of pre-hospital management of psychiatric emergencies, through academic training and exposure will ensure that adequate and comprehensive pre-hospital emergency care is given to this vulnerable group of patients. Inclusion of training on pre-hospital management of psychiatric emergencies in the EMC curriculum may ensure that EMC graduates are adequately equipped in this area and limit negative attitudes and possible malpractices. Resources such as management guidelines and or structured protocol on how to manage

psychiatric emergencies in the pre-hospital environment may be useful as a training tool in the field of practice. Furthermore, organising continued professional development (CPD) courses on management of psychiatric emergencies in the pre-hospital setting can be useful in training pre-hospital emergency care providers already in practice.

REFERENCES

1. World Health Organization. Mental disorders 2018 [Accessed December 8 2018]. Available from: https://www.who.int/news-room/fact-sheets/detail/mental-disorders.
2. Sudarsanan S, Chaudhury S, Pawar A, Salujha S, Srivastava K. Psychiatric emergencies. *Medical Journal, Armed Forces India*. 2004;60(1):59.
3. Mavrogiorgou P, Brüne M, Juckel G. The management of psychiatric emergencies. *Deutsches Ärzteblatt International*. 2011;108(13):222.
4. Calzada RR, Marcos MS, Arisso PR, Fuentes MS, Alonso LD, Calzada MR, et al. Psychiatric emergency pre-hospital: Incidence and management of agitation in Valladolid (Spain). *Europian Psychiatry*. 2016;33:S444.
5. Barratt H, Rojas-García A, Clarke K, Moore A, Whittington C, Stockton S, et al. Epidemiology of mental health attendances at emergency departments: systematic review and meta-analysis. *Public Library of Science One*. 2016;11(4):e0154449.
6. Mkhabela M. The reasons for the Life Esidimeni tragedy hidden in Moseneke's report: News 24; 2018 [Accessed 18 January 2019]. Available from: https://www.news24.com/Columnists/Mpumelelo_Mkhabela/the-reasons-for-the-life-esidimeni-tragedy-hidden-in-mosenekes-report-20180323.
7. Freeman MC. Esidimeni: Global lessons from a local tragedy: Medical Brief; 2018 [Accessed 18 January 2019]. Available from: https://www.medicalbrief.co.za/archives/esidimeni-global-lessons-local-tragedy/.
8. Ritchie JD, Wilson AG. Evaluation and Management of Psychiatric Emergencies in the Pre-hospital Setting. Journal of Emergency Medical Services. 2014 [Accessed on 05 June 2019]. Available from: https://www.jems.com/articles/print/volume-39/issue-7/features/evaluation-and-management-psychiatric-em.html?c=1.
9. Sharrock J, Happell B. The role of the psychiatric consultation-liaison nurse in the general hospital. *The Australian journal of advanced nursing*: a quarterly publication of the Royal Australian Nursing Federation. 2000;18(1):34-9.
10. Shaban R. Mental health assessments in paramedic practice: A warrant for research and inquiry into accounts of paramedic clinical judgment and decision-making. *Journal of Emergency Primary Health Care*. 2004;2(3-4):1-8.
11. Roberts L. The implications of mental health call outs on paramedic practice. Department of Paramedic and Social Health Sciences. 2007.
12. Shaban R. Paramedics and the mentally ill. Paramedics in Australia: Contemporary Challenges Sydney, Australia: Pearson Education. 2009:1-15.

13. The British Computer Society (BCS). Levels of Knowledge & Levels of Skill and Responsibility (SFIA Levels). Levels of Knowledge & SFIA Levels Version 01 [Internet]. 2014. Available from: https://certifications.bcs.org/upload/pdf/sfia-levels-knowledge.pdf.
14. World Health Organisation (WHO). World health report: Mental disorders affect one in four people 2001 [Accessed 16 January 2019]. Available from: https://www.who.int/whr/2001/media_centre/press_release/en/.
15. Kalucy R, Thomas L, Lia B, Slattery T, Norris D. Managing increased demand for mental health services in a public hospital emergency department: A trial of 'Hospital- in- the- Home'for mental health consumers. *International Journal of Mental Health Nursing*. 2004;13(4):275-81.
16. Hazlett SB, McCarthy ML, Londner MS, Onyike CU. Epidemiology of adult psychiatric visits to US emergency departments. Acad Emerg Med. 2004;11(2):193-5.
17. Zeller SL. Treatment of psychiatric patients in emergency settings. *Primary Psychiatry*. 2010;17(6):35-41.
18. Pajonk F, Bartels H, Biberthaler P, Bregenzer T, Moecke H. Psychiatric emergencies in preclinical emergency service; incidence, treatment and evaluation by emergency physicians and staff. *Der Nervenarzt*. 2001;72(9):685-92.
19. Pajonk F-G, Schmitt P, Biedler A, Richter JC, Meyer W, Luiz T, et al. Psychiatric emergencies in pre-hospital emergency medical systems: a prospective comparison of two urban settings. *General Hospital Psychiatry*. 2008;30(4):360-6.
20. Hanfling D, Altevogt BM, Viswanathan K, Gostin LO. Crisis standards of care: a systems framework for catastrophic disaster response: National Academies Press; 2012.
21. Institute of Medicine (IOM). Emergency Medical Services at the Crossroads Washington, DC: The national academies press; 2006. 230 p.
22. Snyder S, Kivlehan S, Collopy K. Managing Psychiatric Emergencies: EMS World Magazine; 2013 [Accessed 9 January 2019]. Available from: https://www.emsworld.com/article/10931747/managing-psychiatric-emergencies.
23. Young M. Private vs. Public Healthcare in South Africa. Michigan: Western Michigan University; 2016.
24. Mahlathi P, Dlamini J. Minimum Data Sets For Human Resources For Health And The Surgical Workforce In South Africa's Health System: A Rapid Analysis Of Stock And Migration. Pretoria, South Africa: African Institute of Health and Leadership Development and WHO, 2015.
25. Medical Brief. SA's shortage of medical doctors – a bleak picture 2016 [Accessed 18 January, 2019]. Available from: https://www.medicalbrief.co.za/archives/sas-

shortage-medical-doctors-bleak-picture/.

26. Shipley J. Private practice (RWOPS) and overtime for state-employed specialists. *South African Orthopaedic Journal.* 2015;14(1):18-9.
27. Gonsoulin S, Palmer CE. Gender issues and partner preferences among a sample of emergency medical technicians. *Prehospital Disaster Medicine*. 1998;13(1):34-40.
28. Franks PE, Kocher N, Chapman S. Emergency medical technicians and paramedics in California: San Francisco: UCSF Center for Health Professions.; 2004; 1-8
29. Hunter S. Defining and valuing diversity in EMS. *Emergency Medical Services*. 2003;32(11):88.
30. Steeps RJ, Wilfong DA, Hubble MW, Bercher DL. Emergency Medical Services Professionals' Attitudes About Community Paramedic Programs. *Western Journal of Emergency Medicine*. 2017;18(4):630.
31. Butler MW. Experiences Of Free State Emergency medical care providers Regarding Paediatric Pre-Hospital Care. Masters mini-dissertation. Bloemfontein: University of the Free State; 2015.
32. Arrive Alive. Different levels of emergency personnel 2018 [Accessed November 11 2018]. Available from: https://www.arrivealive.co.za/Different-levels-of-emergency-personnel.
33. Cunningham C. Systemic Views on Health Care [Internet]2017. Available from: https://chacunningham.wordpress.com/2017/01/29/the-end-of-the-short-course-route-to-become-a-sa-paramedic/.
34. Sun J-T, Chiang W-C, Hsieh M-J, Huang EP-C, Yang W-S, Chien Y-C, et al. The effect of the number and level of emergency medical technicians on patient outcomes following out of hospital cardiac arrest in Taipei. *Resuscitation*. 2018;122:48-53.
35. The Royal Children's Hospital Melbourne. Clinical Practice Guidelines: Mental state examination Melbourne. 2018 [Accessed January 18 2019]. Available from: https://www.rch.org.au/clinicalguide/guideline_index/Mental_state_examination/.
36. Weisman G. A clinical guide for the treatment of schizophrenia. Bellack A, editor. New York: Plenum Press; 1989.
37. McGorry PD, Edwards J, Mihalopoulos C, Harrigan SM, Jackson HJ. EPPIC: an evolving system of early detection and optimal management. Schizophr Bull. 1996;22(2):305-26.
38. Murphy S, Irving CB, Adams CE, Driver R. Crisis intervention for people with severe mental illnesses. The Cochrane database of systematic reviews. 2012;5:CD001087.
39. Szabo CP, Kaliski SZ. Mental health and the law: a South African perspective. *British Journal of Psychiatry*. 2017;14(3):69-71.

40. Government of the Republic of South Africa. Mental Health Care Act 2002 (Act no. 17 of 2002) General Regulations. 2004 [Accessed January 21 2019]. Available from: https://www.hpcsa.co.za/Uploads/editor/UserFiles/downloads/legislations/acts/mental_health_care_act_17_of_2002.pdf.
41. Rocca P, Villari V, Bogetto F. Managing the aggressive and violent patient in the psychiatric emergency. *Progress in Neuro-Psychopharmacology & Biological Psychiatry.* 2006; 30:586-598.
42. Moosa MYH, Jeenah FY. The use of restraints in psychiatric patients. *South African Journal of Psychiatry.* 2009*;* 15(3):72-75.
43. Knox DK, Holloman GH. Use and avoidance of seclusion and restraint: Consensus statement of the American Association for Emergency Psychiatry Project BETA seclusion and restraint workgroup. *Western Journal of Emergency Medicine.* 2012; 13(1):35-40.
44. RSA DOH (Republic of South Africa Department of Health). Policy guidelines on seclusion and restraint of mental health care users. Pretoria: Government printer. 2012.
45. Maguire B.J, O'Meara P, O'Neill BJ, Brightwell R. Violence against emergency medical services personnel: A systematic review of the literature. *American Journal of Industrial Medicine.* 2017: 1-14.
46. Sudarsanan S, Chaudhury S, Pawar AA, Salujha SK, Srivastava K. Psychiatric Emergencies. *MJAFI. 2004;* 60:59-62.
47. Jonsson G, Moosa MYH, Jeenah FY. The mental health care act: Stakeholder compliance with section 40 of the act. *South African Journal of Psychiatry.* 2009; 15(2):37-42.
48. Seker H. Developing a questionnaire on attitude towards school. *Learning Environments Research.* 2011*;* 14:241-261.
49. Saunders KEA, Hawton K, Fortune S, Farrell S. Attitudes and knowledge of clinical staff regarding people who self-harm: A systematic review. *Journal of Affective Disorders. 2012;* 139:205–216.

CHAPTER 3

CONCLUSION, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

3.1 INTRODUCTION

The researcher conducted an in-depth study with a view to determine the need for including teaching on pre-hospital management of psychiatric emergencies in the emergency medical care curriculum in South Africa. In the study, the researcher aimed at investigating and revealing deficiencies in the knowledge, attitude and practice of pre-hospital emergency care providers with regards to managing psychiatric emergencies in the pre-hospital environment.

The study achieved what it was set out to investigate. The research questions were answered through the findings of the questionnaire which mainly focused on the participant's knowledge, attitude and practice regarding psychiatric emergencies. The use of a literature review supplemented the findings of the study by providing scientific evidence regarding the background to the stated problem.

In any healthcare system, emergency medical services play a very important role in providing critical care out of hospital, transporting patients to the hospital, as well as providing inter-hospital transfers. As a result, pre-hospital emergency care providers are exposed to various types of emergencies, including psychiatric emergencies. In order for pre-hospital emergency care providers in South Africa to be able to appropriately manage patients with psychiatric emergencies, they should have basic knowledge of psychiatric emergencies to enable them to diagnose and initiate appropriate management protocol out of hospital. Therefore, teaching on psychiatric emergencies in the emergency medical care curriculum in South Africa becomes imperious.

The aim of this chapter is to provide a summary of the study and to offer comments and concluding thoughts on the findings of the study. The chapter starts with a brief overview of the study, followed by conclusions drawn from the findings and the identified limitations. The chapter concludes by offering a brief discussion on the recommendations and conclusive remarks to address the identified gap in the emergency medical care curriculum in South Africa.

3.2 OVERVIEW OF THE STUDY

The overall goal of the study was to make informed and evidence-based recommendations that will initiate the review of the EMC curriculum to include adequate teaching and training on pre-hospital management of psychiatric emergencies. Inclusion of the management of psychiatric emergencies in the EMC education will ensure that emergency medical care graduates would be knowledgeable and competent to manage psychiatric emergencies in the pre-hospital environment.

In this research project, the researcher utilised a quantitative, non-experimental design, which is descriptive in nature. In addition, a literature review was employed to find scientific information regarding the topic. A questionnaire survey was used as a data collection tool to discover factual information concerning the knowledge, attitude and practice of emergency medical care providers regarding psychiatric emergencies.

As such, this study was guided by the three research questions presented in Chapter 1 (cf. Section 1.3). Ultimately, the final outcome of this study was informed by these research questions. Under the following sub-sections (3.2.1 – 3.2.3), the research questions are reviewed and the main findings of each question summarised.

3.2.1 Research question 1

i. What are the variants of psychiatric emergencies that can be encountered by the pre-hospital emergency care providers in practice?

The first objective of this study was phrased as follows:

i. To determine the different types of psychiatric emergencies that can be encountered by the pre-hospital emergency care providers in practice.

This objective assisted the researcher to answer the first research question and was achieved as follows:

- Firstly, the role of the EMS and the environment in which pre-hospital emergency care providers practice under were evaluated and contextualised (cf. Section 2.5 paragraph 2-4).

- Secondly, the level of education and training offered for the emergency medical care providers in South Africa was examined (cf. Section 2.4.2.3; 2.5 paragraph 5)
- Lastly, the various psychiatric emergencies that could be encountered by the emergency medical care providers in the pre-hospital environment as first responders were identified (cf. Section 2.2).

3.2.2 Research question 2

ii. What are the international standards and guidelines for the pre-hospital management of psychiatric emergencies by pre-hospital emergency care providers?

The second objective was phrased as follows:

ii. ***To determine and review the various international standards and guidelines used for the management of psychiatric emergencies by pre-hospital emergency care providers worldwide***.

This objective assisted the researcher to answer the second research question of this study and was pursued as follows:

- Firstly, the international standards and guidelines for managing psychiatric emergencies by emergency medical care providers were identified, examined and presented in previous Chapters 1 and 2 (cf. Section 1.2.3 & 2.5 paragraph 7-9).
- Lastly, the local (South African) guidelines were examined and provided the researcher with a clue of the gap between the South African emergency medical care education and training and international community regarding standards and guidelines concerning pre-hospital management of psychiatric emergencies (cf. Section 1.2.4; & 2.5 paragraph 10).

3.2.3 Research question 3

iii. What are the knowledge, attitudes and practices (KAP) of pre-hospital emergency care providers regarding pre-hospital management of psychiatric emergencies?

The third and final objective was phrased as follows:

iii. To determine the knowledge, attitude and practice of the pre-hospital emergency care providers on the management of psychiatric emergencies.

This objective assisted the researcher to answer the third and final research question and was achieved through a questionnaire survey as follows:

- To understand the calibre of emergency medical care providers who participated in this research, the demographic details of the participants were collated and presented in figures (2.1-2.7) in Chapter 2 (cf. Section 2.4.2) and relevant aspects were explained in the discussion section (cf. Section 2.5 paragraph 3-5).
- Knowledge assessment obtained from emergency medical care providers regarding the pre-hospital management of psychiatric emergencies was examined and presented in Chapter 2 (cf. Section 2.4.4) in figures and table form and most appropriate aspects discussed in Chapter 2 (cf. Section 2.5 paragraph 6-9).
- The practice survey of emergency medical care providers regarding pre-hospital management of psychiatric emergencies was evaluated and presented in figures and table forms in Chapter 2 (cf. Section 2.4.5) and discussed in Chapter 2 (cf. Section 2.5 paragraph 10-11).
- The attitude of emergency medical care providers towards management of psychiatric emergencies was determined and presented in a table form in Chapter 2 (cf. Section 2.4.6) and the most appropriate aspects were further discussed (cf. Section 2.5 paragraph 12-13).

In conclusion, the source and origin of this study came from observations made by the researcher who recognised the challenges faced by emergency medical care providers in the Free State Province regarding management of psychiatric emergencies and the lack of psychiatric emergencies in the emergency medical care curriculum in South Africa. Moreover, emergency medical care providers continue to respond to all emergency incidents and initiate treatment for all patients regardless of the type of emergency.

In Chapter 2, the researcher contextualised the position and the role of emergency medical services internationally and in South Africa. Furthermore, two main groups of psychiatric emergencies (acute excitement with psychomotor agitation and self-destructive or suicidal behaviour) were identified which the emergency medical care providers would encounter

during operational duties. This study also identified possible challenges that psychiatric patients could present to emergency medical care providers and also conceptualised and contextualised appropriate components of legal framework to consider when managing psychiatric patient.

Moreover, sound research methods and designs were discussed in which a quantitative, non-experimental design, which is descriptive in nature was employed in this study. The questionnaire survey which was divided into four sections (demographic, knowledge, practice, and attitude survey) provided appropriate data to answer the final research question of this study. Reliability and validity in this study were enhanced by the involvement of the qualified biostatistician from the Department of Biostatistics at the University of the Free State and testing the responses from the pilot study with the Cronbach alpha.

Information derived from the empirical phase of research regarding the emergency medical care providers' knowledge, practice and attitude concerning pre-hospital management of psychiatric emergencies was presented in an interpretable figures and tables (Chapter 2). However, only the most appropriate data was discussed in detail (cf. Chapter 2, Section 2.5). The outcome from the questionnaire survey was supplemented by the literature study and assisted the researcher to formulate the recommendations for future research, curriculum improvement and formulation of guidelines concerning psychiatric emergencies in both spheres of emergency medical services (operational and education).

3.3 LIMITATIONS

The researcher identified the following limitations of the study:

- The researcher started data collection later than expected due to the technical challenges and delays encountered from ethical committees outside of the university (UFS) for approval purposes. The outcome of these challenges and delays led to two private ambulance service providers being excluded from the study which were initially intended to be part of the study. Therefore, this meant that the population of the study had to be reduced. Fortunately, that did not have a significant impact on the outcome of the study.
- The selected method of distribution of questionnaires was always going to be a daunting task, however the researcher had to appoint fieldworkers to circumvent the

eventualities attached to the method. After three months of data collection only 82.8% response rate was achieved. In most open-ended questionnaires, participants did not answer the last part of the question, and the researcher recognises that future quantitative studies should include less open-ended questions.

- The researcher found limited literature concerning management of psychiatric emergencies in the field of emergency medical care internationally, and no literature in the South African context. Subsequently, literature from other professions such as nursing and psychiatry were used where applicable.
- Another limitation was the dearth of emergency medical care providers with NQF aligned emergency medical care qualifications during the study. Their presence in large numbers might have enhanced the rigour of the study.

3.4 RECOMMENDATIONS

The study focused on the practitioners working within the boundaries of the Free State Province. However, the findings of this study could be generalised to the entire emergency medical care providers who obtained their qualifications in South Africa because the participants in this study were trained from various colleges and universities around the country.

The study was successful in addressing the aim and objectives of the study. Furthermore, the study may contribute by making the practitioners, researchers, educators and governing bodies aware that the current curriculum of undergraduate emergency medical care programmes does not empower the graduates with sufficient knowledge of psychiatric emergencies to appropriately manage and treat the psychiatric patients, and therefore could lead to varying malpractices that may be to the detriment of the patients.

The scope of this study was to determine the need for teaching of psychiatric emergencies in EMC curriculum. Therefore, future research is needed to identify the common psychiatric disorders seen by emergency medical care providers in the pre-hospital setting and to create standards and guidelines which are in line with those of international communities.

This study found that some pre-hospital emergency care providers in the Free State province of SA are not knowledgeable about aspects of pre-hospital management of psychiatric emergencies and are not conversant with the provisions of Mental Health Care Act 2002 (Act no. 17 of 2002) of SA.

The identified gap from the questionnaire survey regarding the providers' knowledge, attitude and practices may be addressed through the integration of psychiatric disorder within the emergency medical care undergraduate curriculum.

To address this knowledge gap and prevent malpractice, this study offers the following implementable recommendations:

- Providing management guidelines and or structured protocol,
- Organising CPD course on management of psychiatric emergencies in the pre-hospital setting for pre-hospital emergency care providers in practice, and
- Strengthen training on pre-hospital management of psychiatric emergencies in the EMC curriculum in SA to enhance the knowledge of EMC personnel in the province and indeed SA on pre-hospital management of psychiatric emergencies

3.5 CONCLUSIVE REMARK

Given that emergency medical services are placed at the forefront of health care services, and seeing that pre-hospital emergency care providers do attend cases of psychiatric emergencies and are mostly the first health care professionals to arrive on scene, this shows the need to integrate sufficient teaching on pre-hospital management of psychiatric disorders within the curriculum of emergency medical care programmes in South Africa.

Inclusion of teaching on pre-hospital management of psychiatric disorders in the emergency medical care programmes would likely capacitate graduate pre-hospital emergency care providers with appropriate knowledge and guidelines for management of psychiatric emergencies. In addition, student placement at psychiatric facilities (as in the form of work integrated learning) would strengthen their knowledge and allow them to demonstrate competency in psychiatry before they depart to manage psychiatric patients on their own.

REFERENCES

Al-Shaqsi, S. 2010. Models of international emergency medical services (EMS) systems. *Oman Medical Journal* 25(4):320-323.

Anderson, P.D., Sute, R.E., Mulligan, T., Bodiwala, G., Razzak, J & Mock, C. 2012. World Health Assembly Resolution 60.22 and its importance as a health care policy tool for improving emergency care access and availability globally. *Annals of Emergency Medicine* 60(1):35-44.

Arrive Alive. Different levels of emergency personnel. 2018. https://www.arrivealive.co.za/Different-levels-of-emergency-personnel. Accessed on 11 November 2018.

Arnold, J.L. 1999. International emergency medicine and the recent development of emergency medicine worldwide. *Annuals of Emergency Medicine* 33(1):97-103.

Barratt, H., Rojas-García, A., Clarke, K., Moore, A., Whittington, C., Stockton, S., Thomas, J., Pilling, S & Raine, R. 2016. Epidemiology of mental health attendances at emergency departments: systematic review and meta-analysis. *Public Library of Science One* 11(4):e0154449

Boyle, M.J., Williams, B., Cooper, J., Adams, B. & Alford, K. 2008. Ambulance clinical placements – A pilot study of students' experience. *BMC Medical Education* 8(19): http://www.biomedcentral.com/1472-6920/8/19. Retrieved on 11 May 2017.

Bradshaw, D., Norman, R. & Schneider, M. 2007. A clarion call for action based on refined DALY estimates for South Africa. *South African Medical Journal* 97(6):438-440.

Brink, H., Van der Walt, C. & Van Rensburg, G. 2012. *Fundamentals of research methodology for healthcare professionals.* 3rd edition. Cape Town: Juta & Company Ltd.

Butler, M.W. 2015. Experiences of Free State Province emergency medical care providers regarding paediatric pre-hospital care. Masters mini-dissertation. Bloemfontein. University of the Free State.

Calzada, R.R., Marcos, M.S., Arisso P.R., Fuentes, M.A.S., Alonso, L.D., Calzada, M.R., Calzada, R.R., Amorrortu, E.C. 2016. Psychiatric emergency pre-hospital: Incidence and management of agitation in Valladolid (Spain). *The Journal of the European Psychiatric Association* 33:S444.

Christopher, L.D. 2007. An investigation into the non-compliance of Advanced Life Support Practitioners with the guidelines and protocols of the Professional Board for Emergency Care Practitioners. Masters dissertation. Durban: Durban University of Technology.

Cooper, L., Orrell, J. & Bowden, M. 2010*. Work integrated learning: A guide to effective practice.* First edition. New York. Routledge.

Cross, M., Mungadi, R. & Rouhani, S. 2002. From policy to practice: curriculum reform in South African education [1]. *Comparative Education* 38(2):171-187.

Cunningham, C. 2017. Systemic Views on Health Care. https://chacunningham.wordpress.com/2017/01/29/the-end-of-the-short-course-route-to-become-a-sa-paramedic/. Accessed on 9 December 2018.

Dalbock, G. 1996. A history of ambulance practitioners and services in SA. *South African Family Practice* 17:118-121.

Delport, C.S.L & Roestenburg, W.J.H. 2011. Quantitative data-collection methods: questionnaires, checklists, structured observation and structured interview schedules. In *Research at grass roots, for the social sciences and human service professions*, by De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. 4th edition. Pretoria: Van Schaik Publishers.

De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. 2011. *Research at grass roots, for the social sciences and human service professions*. 4th edition. Pretoria: Van Schaik Publishers.

Ford-Jones, P.C. & Chaufan, C. 2017. A critical analysis of debates around mental health calls in the prehospital setting. *The Journal of Health Care* 54:1-5.

Franks, P.E., Kocher, N. & Chapman, S. 2004. Emergency medical technicians and paramedics in California. San Francisco: UCSF Center for Health Professions.

Freeman, M.C. 2018. Esidimeni: Global lessons from a local tragedy: Medical Brief [Accessed 18 January 2019]. Available from: https://www.medicalbrief.co.za/archives/esidimeni-global-lessons-local-tragedy/.

Gonsoulin, S. & Palmer, C.E. 1998. Gender issues and partner preferences among a sample of emergency medical technicians. *Prehospital Disaster Medicine* 13(1):34-40.

Harden, R.M., Crosby, J.R. & Davis, M.H. 1999. AMEE Guide No. 14: Outcome-based education: Part 1 - An introduction to outcome-based education. *Medical Teacher* 21(1):7-14.

Hanfling, D., Altevogt, B.M., Viswanathan, K. & Gostin, L.O. 2012. *Crisis standards of care: a systems framework for catastrophic disaster response*: National Academies Press

Hazlett, S.B., McCarthy, M.L., Londner, M.S. & Onyike, C.U. 2004. Epidemiology of adult psychiatric visits to US emergency departments. *Academic Emergency Medicine* 11(2):193-5.

HPCSA (Health Professions Council of South Africa). 1999a. May 1999: Curriculum for the Critical Care Assistant Course. Doc. 5. Part 1. Pretoria: HPCSA.

HPCSA (Health Professions Council of South Africa). 1999b. May 1999: Curriculum for the Ambulance Emergency Assistant Course. Doc. 4. Part 1. Pretoria: HPCSA.

HPCSA (Health Professions Council of South Africa). 1999c. May 1999: Curriculum for the Basic Ambulance Assistant Course. Doc. 2. Part 1. Pretoria: HPCSA.

HPCSA (Health Professions Council of South Africa). 2006. Advanced life support practitioner: protocol. Accessed on 26 June 2019. https://www.hpcsa.co.za/downloads/emergency_care/advanced_life_support.pdf

HPCSA (Health Professions Council of South Africa). 2009. Emergency care technician scope of practice. Accessed on 26 June 2019. https://www.hpcsa.co.za/Uploads/editor/UserFiles/downloads/rules_reg_constitution/scope_of_practice_ect.pdf

HPCSA (Health Professions Council of South Africa). 2015. Guidelines for the completion of the portfolio for institutions intending to offer the emergency medical care assistant (ECA), emergency care technician (ECT) and emergency care practitioner (ECP) programmes: Form 332. http://www.hpcsa.co.za/uploads/editor/UserFiles/FORM_332_ACCREDITATION_GUIDELINES_FINAL_MARCH_2016.pdf. Retrieved on 13 May 2017.

HPCSA (Health Professions Council of South Africa). 2016a. Emergency care assistant. http://www.hpcsa.co.za/uploads/editor/UserFiles/ECA_CURRICULUM_18_MARCH_2016.pdf/ Retrieved on 13 May 2017.

HPCSA (Health Professions Council of South Africa). 2016b. Revised Clinical Practice Guidelines 2016. https://www.scribd.com/document/328123938/HPCSA-Clinical-Practice-Guidelines-2016-Request-for-Comment. Accessed on 19 June 2017.

HPCSA (Health Professions Council of South Africa). 2018. Clinical Practice Guidelines. http://www.hpcsa.co.za/Uploads/editor/UserFiles/downloads/emergency_care/CLINICAL_PRACTICE_GUIDELINES_PROTOCOLS_2018.pdf. Accessed on 27 September 2018.

Hunter, S. 2003. Defining and valuing diversity in EMS. *Emergency Medical Services* 32(11):88.

IOM (Institute of Medicine). 2006. *Emergency Medical Services at the Crossroads*. Washington, DC: The national academies press

Kalucy, R., Thomas, L., Lia, B., Slattery, T. & Norris, D. 2004. Managing increased demand for mental health services in a public hospital emergency department: A trial of 'Hospital-in-the-Home' for mental health consumers. *International Journal of Mental Health Nursing* 13(4):275-81.

Kaphagawani, N.C & Useh, U. 2013. Analysis of nursing students learning experiences in clinical practice: Literature review. *Ethno-Medicine* 7(3):181-185.

Knox, D.K & Holloman, G.H. 2012. Use and avoidance of seclusion and restraint: Consensus statement of the American Association for Emergency Psychiatry Project BETA seclusion and restraint workgroup. *Western Journal of Emergency Medicine* 13(1):35-40.

Lauro, J., Sullivan, F & Williams, K.A. 2013. Emergency medical technician education and training. *Rhode Island Medical Journal*:31-34.

MacFarlane, C., Van Loggerenberg, C. & Kloeck, W. 2005. International EMS systems: South Africa—past, present and future. *Resuscitation* 64:145-148.

Maguire, B.J. O'Meara, P., O'Neill, B.J & Brightwell, R. 2017. Violence against emergency medical services personnel: A systematic review of the literature. *American Journal of Industrial Medicine*: 1-14.

Mahlathi, P. & Dlamini, J. 2015. Minimum Data Sets For Human Resources For Health And The Surgical Workforce In South Africa's Health System: A Rapid Analysis Of Stock And Migration. Pretoria, South Africa: African Institute of Health and Leadership Development and WHO.

Maree, K & Pietersen, J. 2007. Sampling. In *First step in research*, by Maree, K (Ed.). Revised edition. Pretoria: Van Schaik Publishers.

Mavrogiorgou, P., Brüne, M. & Juckel, G. 2011. The management of psychiatric emergencies. *Deutsches Ärzteblatt International* 108(13):222-230.

McCann, T.V., Savic, M., Ferguson, N., Bosley, E., Smith, K., Roberts, L., Emond, K & Lubman, D.I. 2018. Paramedics' perceptions of their scope of practice in caring for patients with nonmedical emergency-related mental health and/or alcohol and other drug problems: A qualitative study. *Public Library of Science One* 13(12): e0208391.

McGorry, P.D., Edwards, J., Mihalopoulos, C., Harrigan, S.M. & Jackson, H.J. 1996. EPPIC: an evolving system of early detection and optimal management. *Schizophrenia Bulletin* 22(2):305-26.

Medical Brief. SA's shortage of medical doctors – a bleak picture 2016. https://www.medicalbrief.co.za/archives/sas-shortage-medical-doctors-bleak-picture/. Accessed 18 January2019

Mkhabela, M. 2018. The reasons for the Life Esidimeni tragedy hidden in Moseneke's report: News 24. https://www.news24.com/Columnists/Mpumelelo_Mkhabela/the-reasons-for-

the-life-esidimeni-tragedy-hidden-in-mosenekes-report-20180323. Accessed on 18 January 2019.

Moodley, K. 2016. An investigation into the clinical practicum experience of ALS paramedic students and their preparedness for professional practice. Master dissertation. Durban: Durban University of Technology.

Murphy, S., Irving, C.B., Adams, C.E. & Driver, R. 2012. Crisis intervention for people with severe mental illnesses. *The Cochrane database of systematic reviews* 5:CD001087.

Pajonk, F.G., Bartels, H., Biberthaler, P., Bregenzer, T. & Moecke H. 2001. Psychiatric emergencies in preclinical emergency service; incidence, treatment and evaluation by emergency physicians and staff. *Der Nervenarzt* 72(9):685-92.

Pajonk, F.G., Schmitt, P., Biedler, A., Richter, J.C., Meyer, W., Luiz, T. & Madler, C. 2008. Psychiatric emergencies in pre-hospital emergency medical systems: a prospective comparison of two urban settings. *General Hospital Psychiatry* 30:360-366.

Razzak, J.A & Kellermann, A. 2002. Emergency medical care in developing countries: is it worthwhile? *Bulletin of the World Health Organization* 80(11):900-905

Ritchie, J.D & Wilson, A.G. 2014. Evaluation and Management of Psychiatric Emergencies in the Pre-hospital Setting. *Journal of Emergency Medical Services*. https://www.jems.com/articles/print/volume-39/issue-7/features/evaluation-and-management-psychiatric-em.html?c=1. Accessed on 05 June 2019.

RSA (Republic of South Africa). 2002. No. 17 of 2002. Mental Healthcare Act. 17 of 2002. Cape Town: Government Gazette.

RSA (Republic of South Africa) Government. 2002. No. 17 of 2002. Mental Healthcare Act. 17 of 2002. Cape Town: Government Gazette.

RSA (Republic of South Africa). 2003. No. 3 of 2003. Constitution of the Republic of South Africa Act. 108 of 1996. Cape Town: Government Printer.

RSA DOH (Republic of South Africa Department of Health). 2012. Policy guidelines on

seclusion and restraint of mental health care users. Pretoria: Government printer.

RSA NDoH (Republic of South Africa. National Department of Health). 2011. Draft national policy on emergency care education and training. Draft 6. Pretoria: Department of Health.

RSA NDoH (Republic of South Africa. National Department of Health). 2015. National emergency care education and training policy. Pretoria: Department of Health.

RSA NDoH (Republic of South Africa. National Department of Health). 2017. National emergency care education and training policy. Pretoria: Department of Health.

Roberts, L. 2007. *The implications of mental health call outs on paramedic practice*. Department of Paramedic and Social Health Sciences. Adelaide, Flinders University.

Roberts, L. & Henderson, J. 2009. Paramedic perceptions of their role, education, training and working relationships when attending cases of mental illness. *Australasian Journal of Paramedicine* 7(3):1-16.

Rocca, P, Villari, V & Bogetto, F. 2006. Managing the aggressive and violent patient in the psychiatric emergency. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 30:586-598.

SAQA (South African Qualifications Authority). Registered qualification: Bachelor Degree: Emergency Medical Care. http://allqs.saqa.org.za/showQualification.php?id=63129 (a). Accessed on 20 November 2019

SAQA (South African Qualifications Authority). Registered qualification: Higher Certificate: Emergency Care. http://regqs.saqa.org.za/viewQualification.php?id=84207 (b). Accessed on 20 November 2019.

Saunders, K.E.A., Hawton, K., Fortune, S & Farrell, S. 2012. Attitudes and knowledge of clinical staff regarding people who self-harm: A systematic review. *Journal of Affective Disorders* 139: 205–216.

Seker, H. 2011. Developing a questionnaire on attitude towards school. *Learning Environments Research* 14:241-261.

Shaban, R. 2004. Mental health assessments in paramedic practice: A warrant for research and inquiry into accounts of paramedic clinical judgment and decision-making. *Journal of Emergency Primary Health Care* 2(3-4):1-8.

Shaban, R. 2009. Paramedics and the mentally ill. *Paramedics in Australia: Contemporary challenges of practice*. Sydney, Australia: Pearson Education:1-15.

Sharrock, J & Happell, B. 2000. The role of the psychiatric consultation-liaison nurse in the general hospital. *The Australian Journal of Advanced Nursing: a quarterly publication of the Royal Australian Nursing Federation* 18(1):34-9.

Shipley, J. 2015. Private practice (RWOPS) and overtime for state-employed specialists. *South African Orthopaedic Journal* 14(1):18-9.

Smith, C. 2012. Evaluating the quality of work-integrated learning curricula: a comprehensive framework. *Higher Education Research & Development* 31(2):247-262.

Snyder, S., Kivlehan, S. & Collopy, K. 2013. Managing Psychiatric Emergencies: EMS World magazine (issue May 2013). https://www.emsworld.com/article/10931747/managing-psychiatric-emergencies. Accessed on 9 January 2019.

Steeps, R.J., Wilfong, D.A., Hubble, M.W. & Bercher, D.L. 2017. Emergency Medical Services Professionals' Attitudes About Community Paramedic Programs. *Western Journal of Emergency Medicine* 18(4):630-639.

Sudarsanan, S., Chaudhury, S., Pawar, A.A., Salujha, S.K & Srivastava, K. 2004. Psychiatric emergencies. *Medical journal, Armed Forces India* 60(1):59-62.

Sun, J-T., Chiang, W-C., Hsieh, M-J., Huang, E.P-C., Yang, W-S., Chien, Y-C., Wang, Y-C., Lee, B-C., Sim, S-S., Tsai, K-C., Ma, M.H-M. & Chen, L-W. 2018. The effect of the number and level of emergency medical technicians on patient outcomes following out of hospital cardiac arrest in Taipei. *Resuscitation* 122:48-53.

Szabo, C.P. & Kaliski, S.Z. 2017. Mental health and the law: a South African perspective. *British Journal of Psychiatry* 14(3):69-71.

The British Computer Society (BCS). Levels of Knowledge & Levels of Skill and Responsibility (SFIA Levels). Levels of Knowledge & SFIA Levels Version 01 [Internet]. 2014. https://certifications.bcs.org/upload/pdf/sfia-levels-knowledge.pdf. Accessed on 05 June 2019.

The Royal Children's Hospital Melbourne. Clinical Practice Guidelines: Mental state examination Melbourne. 2018.
https://www.rch.org.au/clinicalguide/guideline_index/Mental_state_examination/.
Accessed on 18 January 2019.

US DoT (United States. Department of Transportation). 2009. National emergency medical services education standards.
https://www.ems.gov/pdf/National-EMS-Education-Standards-FINAL-Jan-2009.pdf.
Accessed on 28 September 2017.

Vincent-Lambert, C. 2011. A framework for articulation between the emergency care technician certificate and the emergency medical care professional degree. Doctor of Philosophy thesis. Bloemfontein: University of the Free State.

Weisman, G. *A clinical guide for the treatment of schizophrenia*. Bellack A, editor. New York: Plenum Press; 1989.

Williams, D.R., Herman, A., Stein, D.J., Heeringa, S.G., Jackson, P.B., Moomal H & Kessler, R.C. 2008. Twelve-month mental disorders in South Africa: prevalence, service use and demographic correlates in the population-based South African Stress and Health Study. *Psychological Medicine* 38(2):211-220.

WHO (World Health Organization). 2001. World health report: Mental disorders affect one in four people. https://www.who.int/whr/2001/media_centre/press_release/en/. Accessed 16 January 2019.

WHO (World Health Organization). 2004. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization world mental health surveys.
https://www.ncbi.nlm.nih.gov/pubmed/15173149.
Accessed on 12 November 2018.

WHO (World Health Organization). 2004. Prevention of mental disorders: Effective interventions and policy options.
https://apps.who.int/iris/bitstream/handle/10665/43027/924159215X_eng.pdf.
Accessed on 02 February 2019.

WHO (World Health Organization). 2018. Mental disorders 2018.
https://www.who.int/news-room/fact-sheets/detail/mental-disorders.
Accessed on 8 December 2018.

Young, M. 2016. *Private vs. Public Healthcare in South Africa*. Michigan: Western Michigan University.

Zeller, S.L. 2010. Treatment of psychiatric patients in emergency settings. *Primary Psychiatry* 17(6):35-41.

APPENDICES

APPENDIX A

APPENDIX A1: ACCEPTANCE LETTER FOR PUBLICATION OF THE MANUSCRIPT - PAN AFRICAN MEDICAL JOURNAL

APPENDIX A2: ASSESSING THE KNOWLEDGE OF EMERGENCY MEDICAL CARE PROVIDERS IN THE FREE STATE, SOUTH AFRICA, ON ASPECTS OF PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES

APPENDIX A1

ACCEPTANCE LETTER FOR PUBLICATION OF THE MANUSCRIPT-PAN AFRICAN MEDICAL JOURNAL

Anthonio Adefuye

From: Editor - Panafrican Medical Journal <editor@panafrican-med-journal.com>
Sent: Monday, April 8, 2019 4:10 PM
To: Anthonio Adefuye; sales-service@panafrican-med-journal.com
Subject: Manuscript acceptance notice - Pan African Medical Journal

Dear Anthonio Adefuye

Manuscript: Assessing the Knowledge of Emergency Medical Care Practitioners in the Free State, South Africa, on Aspects of Pre-hospital management of Psychiatric Emergencies

We are please to inform you that your manuscript is now formally accepted for publication in the Pan African Medical Journal and will soon be published, pending payement of Manuscript Processing Charges (if applicable; see the Manuscript Processing Charges Summary below).
The manuscript is currently undergoing a quality control audit and the editorial team will get back to you if any action is needed on your part.

Best Regards

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APPENDIX A2

ASSESSING THE KNOWLEDGE OF EMERGENCY MEDICAL CARE PROVIDERS IN THE FREE STATE, SOUTH AFRICA, ON ASPECTS OF PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES

PanAfrican Medical Journal

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Research

Assessing the knowledge of emergency medical care practitioners in the Free State, South Africa, on aspects of pre-hospital management of psychiatric emergencies

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Abstract

Introduction: studies have reported that emergency medical care practitioners (EMCPs) encounter challenges when attending to psychiatric emergencies. The EMC provider's ability to understand, assess and manage psychiatric emergencies has been reported to be poor due to limited knowledge and insufficient training. In South Africa (SA), little is known about the knowledge of EMCPs on pre-hospital management of psychiatric emergencies. The objective of this study was to assess the knowledge of EMCPs working in the Free State province on aspects of pre-hospital management of psychiatric emergencies. **Methods:** this descriptive study used a questionnaire survey to obtain data on the knowledge of EMCPs on aspects of pre-hospital management of psychiatric emergencies. **Results:** only 159 of the initial 192 questionnaires distributed were returned, giving a response rate of 82.8%. The majority (87.4%) of the participants reported inadequate knowledge of pre-hospital management of psychiatric emergencies. More than a third of the participants reported that they are not knowledgeable on how to assess a psychiatric patient ($P < 0.01$), 64.2% and 73.6% ($P < 0.001$ in both cases) could not perform mental status examination and lack the knowledge of crisis intervention skills for managing a psychiatric emergencies. The majority (76.7%; $P < 0.001$) of the participants are not conversant with the Mental Health Care Act 2002 (Act no. 17 of 2002). Finally, participants (94.3% and 86.8%, respectively; $P < 0.001$) agree that teaching and prior exposure to a psychiatric facility, as in work integrated learning, will empower EMC graduates with skills required to effectively manage psychiatric emergencies. **Conclusion:** EMC practitioners are often the first healthcare professionals arriving at any scene of medical emergencies including psychiatric emergencies. To avoid malpractices, which could be detrimental to patient's health, it is of utmost importance that EMCPs are well trained and equipped to manage any form of medical emergency including those involving psychiatric patients.

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Introduction

Globally, the burden of mental disorders continues to rise with significant impact on health, social, economic and human rights sectors [1]. Psychiatric emergencies (PEs) are acute onset of disturbance of behaviour, thought or mood of an individual which if untreated may lead to harm, either to the individual or to others [2]. Psychiatric emergency is a broad concept that consists of various disorders grouped into two major categories namely; acute excitement with psychomotor agitation and self-destructive or suicidal behaviour [3]. Psychiatric emergencies are often, but not always, caused by mental illness and about 60% of cases needing medical attention occur in non-psychiatric facilities [3]. According to Calzada and colleagues, acute agitation accounts for almost half of the total psychiatric emergencies in the pre-hospital setting [4]. Immediate treatment directed against these acute manifestations is needed, both to improve the patient's subjective symptoms and to prevent behaviour that could harm the patient or others [5].

In SA, the Life Esidimeni tragedy, that led to the death of 144 mental health care users and the torture of 1418 others [6], has raised important ethical and clinical issues [7]. This requires that healthcare professionals, including EMCPs are well trained on the ethical and clinical principles of managing psychiatric patients. EMC practitioners (EMCPs) are often the first healthcare professionals arriving at any scene of medical emergencies. An EMCP will routinely encounter patients with acute psychiatric disturbances in practice [8,9]. However, studies have reported that EMCPs encounter challenges when it comes to providing high-quality, safe and effective healthcare for the mentally ill [10,11]. It has been advocated that EMC personnel require mental health skills that will allow them recognise and manage mental illness in ways that will collaboratively add value to overall patient care [12]. At present, little is known about the knowledge of EMCPs in SA on pre-hospital management of psychiatric emergencies. Using a questionnaire survey, this study assessed the knowledge of EMCPs, working in the Free State province of SA, on aspects of pre-hospital management of psychiatric emergencies.

Methods

This research was designed as a descriptive study that made use of a questionnaire survey.

Questionnaire survey: the structured questionnaire used in this study was self-administered and was distributed manually (in hard copy) to the participants of this study. The questionnaire was compiled using factors identified during the literature review, which had been used by previous studies. Questions were adapted so that they were applicable to the context of the pre-hospital EMC environment. The questionnaire collected data in the following three sections; section A: biographical data; age, gender, qualification, district of operation, level of experience, EMC certification, and sector of practice, section B: knowledge survey questions; assessed participants knowledge on aspects of pre-hospital management of psychiatric emergencies. In this section, participants were asked to choose between "yes", "no" or "unsure" in response to subject-specific, closed ended questions relating to the management of psychiatric emergencies in the pre-hospital setting. The open-ended questions requested that participants' supply a motivation for their response to the closed-ended question. The levels of knowledge assessed include; level 1: remember (K1) (The ability of the participants to recognise, remember and recall terms or concepts); and level 2: understand (K2) (The ability of the participants to be able to explain ideas or concepts) [13]. Section C: obtained participants' perceptions on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum in SA. Participants were requested to return completed questionnaire to the nearest emergency medical service (EMS) station in a box labelled for such purpose.

Target population: the target population consisted of all EMC personnel working in the Free State provincial emergency medical services and private sector, who were registered (at the time of the study) with the Health Professions Council of South Africa (HPCSA).

Sampling method and sample size: in this study, stratified random sampling was used to obtain a representative sample of 192 participants (10% of the entire population). The strata in this study were the different levels of EMC certification and the different sector of practice (government or private). The survey population consisted of individuals who were willing to participate in the study and complete the questionnaire.

Pilot study: a pilot study was conducted to test the suitability of the study design and methods, the chosen data collection method and the overall structure of the questionnaire. The pilot study consisted of twelve EMC personnel at different levels of certification, and in different sector. The findings of the pilot study confirmed the

feasibility of the main study, as the participants in the pilot study did not recommend changes to the structured questionnaire. The results of the pilot study were not included in the final results.

Data collection and analysis: data collection was aided by EMS station managers and the drivers of the planned patient transport (PPT) system in the different regions, who assisted in both the dissemination and collection of the questionnaires. Quantitative data collated from the structured questionnaire was analysed quantitatively and results presented as frequencies and percentages. One-way ANOVA with Newman-Keuls multiple comparison post-test on Graph Pad Prism 4.0c (Graph Pad, San Diego, CA, USA) was used to determine significant differences between calculated mean percentages. Response to the open-ended questions are presented as participants verbatim quotes.

Validity and reliability of the instrument: validity (Face validity, content validity, criterion validity, and construct validity) of the instrument used in this study was achieved by comparing the questionnaire elements with previous, similar studies and by conducting a pilot study. Furthermore, the questionnaire was subjected to review and approval by an evaluation committee, ethics committee and a senior biostatistician, all at the University of the Free State, Bloemfontein, South Africa. In order to achieve the reliability of the instrument, the closed ended questions were analysed with the use of Cronbach's alpha, within each subset of questions.

Ethical considerations: approval to conduct the study was obtained from the Health Sciences Research Ethics Committee of the Faculty of Health Sciences at the University of the Free State (Ref. No. UFS-HSD2017/1184). Permission was also obtained from the Free State Department of health and a private EMS provider (name withheld).

Results

Only 159 of the initial 192 questionnaires that was distributed were returned, giving a response rate of 82.8%. Of the participants, 78.0% (n = 124) were employed in the public sector (Free State Department of Health), while 19.5% (n = 31) were employed within the private sector. Four participants (2.5%) did not indicate the sector in which they were employed.

Cronbach's alpha analysis of subset of questions: the knowledge survey questions subscale consisted of 12 items (α = .96), while the perception survey questions subscale consisted of 4 items (α = .88).

Age of participants: majority (n = 47, 29.6%) of the participants were between 36-40 years, 22.6% (n = 36) were between 41-45 years, 22.0% (n = 35) between 31-35 years, 10.0% (n = 16) between 26-30 years, while only 5.7% (n = 9) of the participants were between 46-50 years. Four (2.5%) and 5 (3.1%) participants were between 20-25 years and older than 50 years, respectively. This data indicates the diversity of participants in relation to the age of EMC personnel. Seven (4.4%) participants did not indicate their age.

Gender of participants: males made out 66.7% (n = 106) and females 32.0% (n = 51). Thus, suggesting a male predominance in the profession. Two (1.26%) of the 159 participants did not indicate their gender.

Qualification/level of training or EMC certification of participants: the majority (37.7%; n = 60) of the participants had basic life support (BLS) qualifications, 30.8% (n = 49) had intermediate life support (ILS) qualifications, and 31.4% (n = 50) had advanced life support (ALS) qualifications. Figure 1 shows the different certification represented in each cadre.

Number of years post qualification: the majority (30.2%; n = 48) were 5-10 years post qualification, while 20.1% (n = 32) and 8.8% (n = 14) obtained their qualification 10-15 years and 15-20 years ago, respectively. A further 24.5% (n = 39) and 15.0% (n = 24) of the participants are 2-5 and less than 2 years post qualification, respectively. Only two (1.3%) of the participants obtained their qualification more than 20 years ago.

Duration of service as pre-hospital EMC provider: the number of years that participants had been working as pre-hospital emergency medical care personnel is presented in Figure 2. The majority, that is, 42.8% (n = 68) of participants, indicated that they had been in service for between five and ten years. A further 22.0% (n = 35) had worked for 10-15 years, while only 3.1% (n = 5) and 3.8% (n = 6) had less than two years and greater than twenty years of service, respectively (Figure 2).

Location of workplace: more than half (51.6%; n = 82) of the participants worked in urban settings (metropolitan/city); 28.3%

(n = 45) worked in small towns; and only 18.2% (n = 29) worked in rural area. Two (1.26%) participants chose "other" as location of workplace. One participant did not answer this section.

Level of employment: the majority 79.8% (n = 127) worked as operational staff, while those working as managerial staff account for 10.7% (n = 17). Nine (5.7%) participants were lecturers and six (3.8%) chose "other" as their level of employment.

Prior experience in managing a psychiatric emergency: to establish if participants have had prior experience in managing psychiatric emergencies, participants were requested to respond to the question *"Have you attended to a psychiatric emergency before? "*The majority (64.2%, n = 102) of the participants indicted "Yes" (P < 0.001), 26. 4% (n = 42) indicated "No", while 9.4% (n = 15) were unsure.

Knowledge of pre-hospital management of psychiatric emergencies: this section of the questionnaire focused on assessing participants' knowledge on aspects of pre-hospital management of psychiatric emergencies.

Participants' self-appraisal of their knowledge on pre-hospital management of psychiatric emergencies: participants were asked to do a self-appraisal of their knowledge on pre-hospital management of psychiatric emergencies by answering "Yes or No or Unsure" to the question *"Do you feel confident with the level of your knowledge regarding pre-hospital management of psychiatric emergencies? "* Result obtained revealed that the majority (87.4%, n = 139) indicated "No", while only 2.5% (n = 4) indicated "Yes". Fourteen (8.8%) participants were "Unsure" whether their knowledge of pre-hospital management of psychiatric emergencies is adequate.

Knowledge on the different types of psychiatric emergencies: here, participants were asked to respond to the question; *"Do you know the different types of psychiatric emergencies?"*. Only 22.6% (n = 36) of the participants indicated that they know the different types of psychiatric emergencies by indicating "Yes" (cf. quotes #1-#3), 47.8% (n = 76) indicated that they do not know by choosing "No", while 29.6% (n = 47) were unsure. *#1 "anxiety disorder; personality disorders; violent disorder; substance abuse", #2 "delirium/dementia; psychosis; attempted suicide or deliberate self-harm; alcohol or drug overdose; withdrawal symptoms of drug dependence; panic, violence or excitement", #3 "suicide attempts, violent behaviour, psychosis, personality disorders, substance abuse and intoxication".*

Knowledge on how to approach an individual with psychiatric emergency: only 33.3 % (n = 53) of the participants indicated that they are knowledgeable on how to approach an individual with psychiatric emergency (cf. quotes #4 and #5), 38.3% (n = 61) indicated that they are not knowledgeable (cf. quotes #6 and #7), and 27.7% (n = 44) are unsure of how to approach such case (cf. quote #8). *#4 "approach patient in a calm manner to gain their trust and see if the patient is willing to work with you after gaining their trust", #5 "try to calm and reassure patient. Take the family member with when talking with the patient", #6 "I did not receive any structured formal/informal training, nor any exposure during any training period", #7 "no I have zero skills to handle them so am even scared to approach. They might harm me", #8 "every psychiatric pt is different, so I would say it differs".*

Knowledge on how to assess an individual with psychiatric emergency: the majority (46.5%, n = 74) of the participants indicated that they are not knowledgeable on how to assess an individual with psychiatric emergency (P < 0.01) (cf. quotes #9-#11), only 19.5% (n = 31) indicated that they know how to assess such patient (cf. quotes #12 and #13), while 34.0% (n = 54) indicated that they are unsure (cf. quote #14). *#9 "usually we contact SAPS for assistance", #10 "no education on psychiatric patient", #11 "no proper guide lines, how to assess specifically psychiatric patient like other cases/emergencies", #12 "obtain hx. Talk to the pt ask relevant questions", #13 "assess mental status; patient behaviour ", #14 "I don't know the exact signs of a compute psychiatric patient".*

Knowledge on mental status examination/assessment protocol for psychiatric patients: *only 5.7% (n = 9) of the participants reported that they have knowledge of a mental status examination/assessment protocol for psychiatric patients (cf. quotes #15 and #16). The majority (64.2%, n = 102) of the participants reported lack of knowledge of a mental status examination/assessment protocol for psychiatric patients (P < 0.001), while 29.6% (n = 47) were unsure whether they possess this knowledge. #15 "I am aware of the MSE chart which provides many criterion to be taken into count", #16 "mini mental state examination (used in SA) DSM5".*

Knowledge on crisis intervention skill for managing psychiatric emergencies: *when asked to indicate whether they are knowledgeable on crisis intervention skill for managing psychiatric emergencies, the majority (73.6%, n = 117) of the participants indicate lack of knowledge i.e. "No" (cf. quotes #17 and #18) (P < 0.001), 23.3% (n = 37) were not sure if they possess such knowledge (cf. quote #19), while only 1.9% (n = 3) reported that they are knowledgeable on crisis intervention skill for managing psychiatric emergencies (cf. quote #20). #17 "no formal/informal training on the subject", #18 "no skills that is why when I approach them and realize they are insane I call the police", #19 "I have never been taught the skills for crisis intervention in managing psychiatric patients, and I am not sure if there is any skills required regarding psychiatric patients", #20 "stay calm and be careful when handling such patients call for assistance if patient becomes violent eg. Higher qualified person or police. If patient present with medical condition injury treat the emergency as per protocol"*.

Knowledge of the Mental Health Care Act 2002 (Act no. 17 of 2002) of the Republic of South Africa: here participants were asked whether they are conversant with the Mental Health Care Act 2002 (Act no. 17 of 2002) of the Republic of South Africa. Of the respondents, only 10.0% (n = 16) reported that they were knowledgeable on the Act, by indicating "Yes", the majority (76.7%, n = 122; P < 0.001) reported lack of knowledge of the Act, while 11.9% (n = 19) were unsure. Two participants did not respond to this question.

Participants' perceptions on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum.

Participants were asked to indicate the extent to which they "Agree" or "Disagree" with the statement in Table 1.

Discussion

According to the World Health Organization (WHO) report on mental disorders, around 450 million people worldwide currently suffer from mental disorders and one in four people in the world will be affected by mental or neurological disorders at some point in their lives [14]. Accompanying this high prevalence are reports confirming the increase in the frequency of psychiatric emergencies presenting to emergency departments and emergency medical services globally [15-19]. Pre-hospital emergency care is an essential part of the continuum of emergency health care provided by emergency medical services (EMS) responders [20]. EMCPs are the initial health care providers at the scene of any medical emergency and are often the first to evaluate the nature of the emergency, determine the need for medical resources, initiate management and provide medical transport for the sick and injured [20,21]. However, it has been reported that the EMC provider's ability to understand, assess and manage psychiatric emergencies remains poor [22], due to limited knowledge and insufficient training [18]. Moreover no known study has investigated the knowledge of EMCPs in SA on aspects of pre-hospital management of psychiatric emergencies. This present study assessed the knowledge of EMCPs, in the Free State province of SA, on aspects of managing psychiatric emergencies in the pre-hospital setting.

The South African health care sector has been described as a two-tiered system divided into the government funded public healthcare sector and the private healthcare sector, where citizens must purchase their own private medical insurance in order to be treated at a private healthcare facility [23]. Similarly, employment of health professionals is either through government institutions (public health sector) or self-employment/employment by cooperate bodies in the private sector [24]. Majority (78.0%) of the participants of this study indicated that they are employed in the public sector. Thus, suggesting that majority of EMCPs within the Free State province are employees of the Free State Department of Health. This is contrary to studies that report a preference for the private health sector by health professionals in South Africa, due to poor working conditions in the public health sector [25,26]. However, the disparity in public vs private employee reported herein is justified since only one private employer gave permission for its practitioners to participate in the study. Other private employers approached declined request to participate in the study.

Traditionally, the emergency medical care sector is considered a male-dominated field [27]. A male dominance of 66.7% compared to 32% female presented herein corroborates findings in published literature [28-30] and thus suggest that the EMC profession is still dominated by male practitioners in the Free State province. This situation is not unique to the Free State province as many EMS across the country are still lacking female practitioners and concerns about gender bias in the profession has been reported [28,31]. The predominance of male over female in the EMC profession is partly

because prior to the establishment of the EMC as a profession, pre-hospital emergency medical services were initially offered by the fire departments, a traditionally male-dominated field, in most communities [27,28]. Findings presented by this study suggest that EMCPs within the Free State province are relatively young (median age group 36-40 years) with majority having between 5 and 10 years of working experience in the EMC sector (Figure 2). This corroborates similar findings by Butler (2015) [31].The certification of an EMC practitioner can be categorized in to three main cadres namely; Basic Life Support (BLS), Intermediate Life Support (ILS) and Advanced Life Support (ALS) [32]. From this study it can be said that only a small number of EMC practitioners in the Free State province are in possession of ALS certification while, the majority are in possession of a BLS or ILS certification (Figure 1). Certification for BLS can be obtained after undergoing a 4-6 week course, while the ILS certification is obtained after attending a 4 months course that builds on the foundation laid during the BLS training (BAA course) [32]. The BLS practitioner (BAA), is capable of doing the basics including (but not limited to) simple airway management, extrication and splinting of fractures [33], but lack training in psychiatry emergency care. This may have an impact on the scope of pre-hospital emergency care delivered by such personnel and ultimately patient outcome [34].

Despite 64.2% of the participants indicating that they have attended to a psychiatric emergency case before, the majority (87.4%) of the participants across the cadres reported that they are not confident of their knowledge on pre-hospital management of psychiatric emergencies. Thus, suggesting that majority of the patients attended to by these 102 (64.2%) EMCPs were poorly managed. While the EMCP is not expected to diagnose patients with psychiatric emergencies, it is vital that the practitioner has a thorough understanding of the presentation and management of such patients in order to provide safe and expedient transport to definitive care [8]. In this presented study, the majority (47.8%) of the participants indicated that they are not knowledgeable on the different types of psychiatric emergencies. In cases involving suicidal ideations, the EMCP is expected to approach the individual with a degree of understanding of their turmoil and speak in a calm, supportive manner [22]. Findings by this study reveal that more than a third of the participants indicated that they are not knowledgeable on how to approach an individual with psychiatric emergency. This was attributed to lack of training or exposure (cf. quotes #6 and #7).

Mental State/Status Examination (MSE) is part of every mental health assessment. The MSE is used to gain an in-depth understanding of the patient's psychological functioning at a particular point in time in order to direct care appropriately [35]. In cases involving suicidal ideations, the EMCP is required to perform a thorough assessment to determine if there is enough evidence to seek help in obtaining an involuntary commitment/transport should the patient be unwilling to seek help [22]. Findings by this study reveal that only 5.7% of the participants indicated that they are knowledgeable on a MSE protocol (cf. quotes #15 and #16), while the majority (64.2%) reported lack of knowledge. In addition, only 19.5% of the EMC practitioners in this study indicated that they are knowledgeable on how to assess an individual with psychiatric emergency (cf. quotes #12 and #13), while the majority (46.5%) reported lack of knowledge, which they ascribe to no education and the absence of proper guidelines (cf. quotes #10 and #11). From these findings, it can be said that most EMC practitioners within the Free State province and indeed SA are not skilled in examining/assessing a case of psychiatric emergency in the pre-hospital setting. During psychotic relapse, sufferers may experience a sudden exacerbation of acute symptoms which could be life threatening to the patient or others. Initiating crisis intervention at this stage is crucial as it brings much needed relief for both the patient and their carer and can help prevent further deterioration [36]. Studies have reported that early crisis intervention, with immediate reduction of psychotic symptoms is beneficial for the long-term prognosis of this illness [37,38]. In this present study, the majority (73.6%) of the participants indicated that they are not knowledgeable on crisis intervention skill for managing a psychiatric patient (cf. quotes #17 and #18). This could lead to poorer long-term prognosis and poor patient outcome.

In SA, like in many other parts of the world, patient care takes place within a legal framework consisting of legislations, Acts, policies and laws to protect patient's rights. The Mental Health Care Act 2002 (Act no. 17 of 2002), ushered in a new era for South African psychiatry by replacing the Mental Health Act of 1973 [39]. A requirement of the Act is that mental health care user be treated in the least restrictive manner possible and ultimately with the least discomfort and inconvenience [40]. Findings presented herein reveal that the majority (76.7%) of the EMCPs who participated in this study indicated that they are not knowledgeable on the provisions of the Act. Thus, suggesting that a good majority of EMCPs in the Free State province and indeed SA are not conversant with the provisions within the Mental Health Care Act. This may lead to varying malpractices that may be detrimental to patient's health. When asked about their opinion on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum, the majority (94.3%

and 86.8%, respectively) of the EMCPs agree that teaching and prior exposure to a psychiatric facility, as in work integrated learning, will empower EMC graduates with skills to effectively manage psychiatric emergencies.

Limitations of the study: limitations of this study include; selective answering of the questions in the questionnaire by the participants i.e. in some cases, respondents only answered the first part of a question and not the follow up second part of the question, for example giving reasons for their answer, unequal representation as the majority of the participants of this study are only BLS and ILS certified. While, this is recognised as a limitation, the overall goal of the study was to assess the knowledge EMC practitioners on pre-hospital management of psychiatric emergencies.

Conclusion

EMCPs are often the first healthcare professionals arriving at any scene of medical emergencies including psychiatric emergencies. It is therefore of utmost importance that EMCPs are well trained and equipped to manage any form of medical emergency including those involving psychiatric patients. Enhancing their knowledge and skill in pre-hospital management of psychiatric emergencies will ensure that adequate and comprehensive pre-hospital emergency care is given to this vulnerable group of patients. Resources such as management guidelines and or structured protocol on how to manage psychiatric emergencies in the pre-hospital environment may be useful. Furthermore, organising continuing professional development (CPD) course on management of psychiatric emergencies in the pre-hospital setting can be useful in training EMCPs already in practice.

What is known about this topic

- It has been established that there is a poorly coordinated emergency health care system in some parts of Africa;
- Prior studies in Germany and Australia have documented the poor knowledge of EMCPs in the management of psychiatric emergencies, but no known study has investigated the knowledge of EMCPs in SA on the pre-hospital management of psychiatric emergencies.

What this study adds

- This study found that some EMCPs in the Free State province of SA are not knowledgeable about aspect of pre-hospital management of psychiatric emergencies and are not conversant with the provisions of Mental Health Care Act 2002 (Act no. 17 of 2002) of SA;
- This study adds, furthermore, that poor or lack of knowledge by the EMCPs could lead to varying malpractices that may be to the detriment of the patients;
- To address this knowledge gap and prevent malpractice, this study offers implementable recommendations (providing management guidelines and or structured protocol, organising CPD course on management of psychiatric emergencies in the pre-hospital setting, and inclusion of training on pre-hospital management of psychiatric emergencies in the EMC curriculum in SA) to enhance the knowledge of EMCPs personnel in the province and indeed SA on pre-hospital management of psychiatric emergencies.

Competing interests

The authors declare no competing interests.

Authors' contributions

JDM conceptualized the study, collated the data and reviewed the manuscript, AOA collated and analysed the data, wrote the manuscript, MJ reviewed the manuscript.

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Table and figures

Table 1: participants' perceptions on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum

Figure 1: EMC certification of participants

Figure 2: duration of service as a pre-hospital emergency medical care practitioner (n = 158)

References

1. World Health Organization. Mental disorders. 2018. Accessed on 12 February 2019

2. Sudarsanan S, Chaudhury S, Pawar A, Salujha S, Srivastava K. Psychiatric emergencies. Med J Armed Forces India. 2004;60(1):59-6. **PubMed** | **Google Scholar**

3. Mavrogiorgou P, Brüne M, Juckel G. The management of psychiatric emergencies. Dtsch Arztebl Int. 2011;108(13):222-30. **PubMed** | **Google Scholar**

4. Calzada RR, Marcos MS, Arisso PR, Fuentes MS, Alonso LD, Calzada MR *et al*. Psychiatric emergency prehospital: incidence and management of agitation in Valladolid (Spain). Eur Psychiatry. 2016;33(suppl):S44. **Google Scholar**

5. Barratt H, Rojas-García A, Clarke K, Moore A, Whittington C, Stockton S *et al*. Epidemiology of mental health attendances at emergency departments: systematic review and meta-analysis. PLoS One. 2016;11(4):e0154449. **PubMed** | **Google Scholar**

6. News 24. The reasons for the Life Esidimeni tragedy hidden in Moseneke's report. 2018. Accessed on 12 February 2019.

7. Freeman M. Esidimeni: global lessons from a local tragedy. 2018. Accessed on 12 February 2019.

8. Ritchie JD, Wilson AG. Evaluation and management of psychiatric emergencies in the prehospital setting. Journal of Emergency Medical Services. 2014. **Google Scholar**

9. Sharrock J, Happell B. The role of the psychiatric consultation-liaison nurse in the general hospital. Aust J Adv Nurs. 2000;18(1):34-9. **PubMed** | **Google Scholar**

10. Shaban R. Mental health assessments in paramedic practice: a warrant for research and inquiry into accounts of paramedic clinical judgment and decision-making. Journal of Emergency Primary Health Care. 2004;2(3-4):1-8.

11. Roberts L. The implications of mental health call outs on paramedic practice. Department of Paramedic and Social Health Sciences. 2007.

12. Shaban R. Paramedics and the mentally ill. Paramedics in Australia: contemporary challenges Sydney, Australia: Pearson Education. 2009:1-15.

13. The British Computer Society (BCS). Levels of Knowledge & Levels of Skill and Responsibility (SFIA Levels). 2014. Accessed on 12 February 2019.

14. World Health Organisation (WHO). World health report: mental disorders affect one in four people. 2001. Accessed on 16 January 2019.

15. Kalucy R, Thomas L, Lia B, Slattery T, Norris D. Managing increased demand for mental health services in a public hospital emergency department: a trial of 'Hospital-in-the-Home' for mental health consumers. Int J Ment Health Nurs. 2004;13(4):275-81. **PubMed** | **Google Scholar**

16. Hazlett SB, McCarthy ML, Londner MS, Onyike CU. Epidemiology of adult psychiatric visits to US emergency departments. Acad Emerg Med. 2004;11(2):193-5. **PubMed** | **Google Scholar**

17. Zeller SL. Treatment of psychiatric patients in emergency settings. Primary Psychiatry. 2010;17(6):35-41.**Google Scholar**

18. Pajonk FG, Bartels H, Biberthaler P, Bregenzer T, Moecke H. Psychiatric emergencies in preclinical emergency service; incidence, treatment and evaluation by emergency physicians and staff. Der Nervenarzt. 2001;72(9):685-92. **PubMed** | **Google Scholar**

19. Pajonk FG, Schmitt P, Biedler A, Richter JC, Meyer W, Luiz T *et al*. Psychiatric emergencies in prehospital emergency medical systems: a prospective comparison of two urban settings. Gen Hosp Psychiatry. 2008;30(4):360-6. **PubMed** | **Google Scholar**

20. Hanfling D, Altevogt BM, Viswanathan K, Gostin LO. Crisis standards of care: a systems framework for catastrophic disaster response. National Academies Press; 2012.

21. Institute of Medicine (IOM). Emergency Medical Services at the Crossroads Washington, DC: the national academies press; 2006. P 230 .

22. Kevin T. Collopy. EMS World: managing psychiatric emergencies. 2001. Accessed on 9 January 2019.

23. Young M. Private vs public healthcare in South Africa. Michigan: Western Michigan University; 2016.

24. Mahlathi P, Dlamini J. Minimum data sets for human resources for health and the surgical workforce in South Africa's health system: a rapid analysis of stock and migration. Pretoria, South Africa: African Institute of Health and Leadership Development and WHO. 2015.

25. Medical Brief: African's medical digest. SA's shortage of medical doctors-a bleak picture . 2016. Accessed on 18 January 2019.

26. Shipley J. Private practice (RWOPS) and overtime for state-employed specialists. SA Orthopaedic Journal. 2015;14(1):18-9. **Google Scholar**

27. Gonsoulin S, Palmer CE. Gender issues and partner preferences among a sample of emergency medical technicians. Prehosp Disaster Med. 1998;13(1):41-7. **PubMed** | **Google Scholar**

28. Franks PE, Kocher N, Chapman S. Emergency medical technicians and paramedics in California. Citeseer; 2004. **Google Scholar**

29. Hunter SL. Defining and valuing diversity in EMS. Emerg Med Serv. 2003;32(11):88-9. **PubMed** |**Google Scholar**

30. Steeps RJ, Wilfong DA, Hubble MW, Bercher DL. Emergency medical services professionals' attitudes about community paramedic programs. West J Emerg Med. 2017 Jun;18(4):630-639. **PubMed** |**Google Scholar**

31. Butler MW. Experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care. Bloemfontein: University of the Free State; 2015. **Google Scholar**

32. Arrive Alive. **Different levels of emergency personnel**. 2018. Accessed on 11 November 2018.

33. Charmaine C. The end of the short course route to become a SA paramedic. 2017. Accessed on 12 Febrary 2019.

34. Sun JT, Chiang WC, Hsieh MJ, Huang EPC, Yang WS, Chien YC *et al*. The effect of the number and level of emergency medical technicians on patient outcomes following out of hospital cardiac arrest in Taipei. Resuscitation. 2018;122:48-53. **PubMed** | **Google Scholar**

35. The Royal Children's Hospital Melbourne. Clinical practice guidelines: mental state examination Melbourne. 2018. Accessed on 18 January 2019.

36. Weisman G. A clinical guide for the treatment of schizophrenia. Bellack A, editor. New York: Plenum Press; 1989.

37. McGorry PD, Edwards J, Mihalopoulos C, Harrigan SM, Jackson HJ. EPPIC: an evolving system of early detection and optimal management. Schizophr Bull. 1996;22(2):305-26. **PubMed** | **Google Scholar**

38. Murphy S, Irving CB, Adams CE, Waqar M. Crisis intervention for people with severe mental illnesses. Cochrane Database Syst Rev. 2015;(12):CD001087. **PubMed** | **Google Scholar**

39. Szabo CP, Kaliski SZ. Mental health and the law: a South African perspective. BJPsych Int. 2017;14(3):69-71. **PubMed** | **Google Scholar**

40. Government of the Republic of South Africa. Mental health care ACT 17 of 2002. 2004. Accessed on 21 January 2019

Table 1: participants' perceptions on the inclusion of teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum			
Statements	**Agree n (%)**	**Disagree n (%)**	**No response n (%)**
Do you think you are likely to attend to a psychiatric call?	117 (73.5)***	40 (25.2)	2 (1.3)
Do you think prior exposure to psychiatric facilities will empower EMC graduates with skill to manage psychiatric patients?	138 (86.8)***	18 (11.3)	3 (1.9)
Do you think it is necessary to include teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum?	150 (94.3)***	6 (3.8)	3 (1.9)
***, P < 0.001			

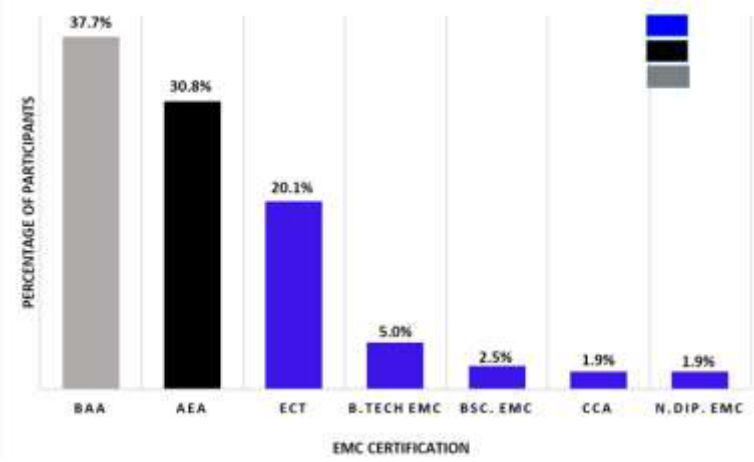

Figure 1: EMC certification of participants

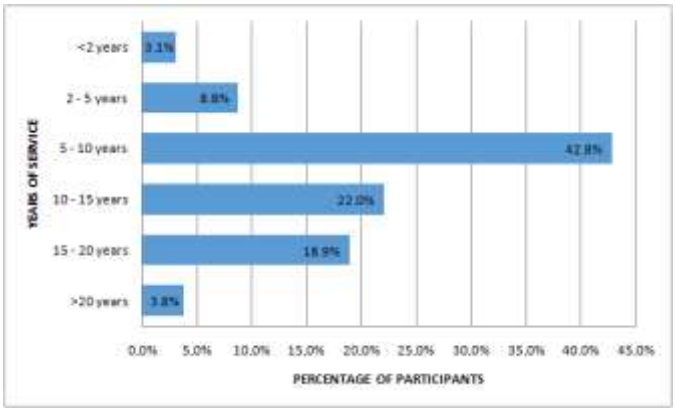

Figure 2: duration of service as a pre-hospital emergency medical care practitioner (n = 158)

APPENDIX B

APPENDIX B1 APPROVAL FROM HEALTH SCIENCES RESEARCH ETHICS COMMITTEE, UFS

APPENDIX B2 APPROVAL FROM FREE STATE DEPARTMENT OF HEALTH

APPENDIX B3 APPROVAL FROM ER 24

APPENDIX B1

APPROVAL FROM HEALTH SCIENCES RESEARCH ETHICS COMMITTEE, UFS

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

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

Health Sciences Research Ethics Committee

23-Apr-2018

Dear **Mr Jani Mothibi**

Ethics Clearance: **DETERMINING THE NEED FOR TEACHING ON PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES IN THE EMERGENCY MEDICAL CARE CURRICULUM IN SOUTH AFRICA**

Principal Investigator: **Mr Jani Mothibi**

Department: **School of Allied Health Professions (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-HSD2017/1184**

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

APPENDIX B2

APPROVAL FROM FREE STATE DEPARTMENT OF HEALTH

health
Department of Health
FREE STATE PROVINCE

26 March 2018

Mr. JD Mothibi
School of Allied Health Profession
Faculty of Health Science
UFS

Dear Mr. JD Mothibi

Subject: DETERMINING THE NEED FOR TEACHING ON PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES IN THE EMERGENCY MEDICAL CARE CURRICULUM IN SOUTH AFRICA.

- 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 the Free State Emergency Medical Service & Free State College of Emergency Care 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 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 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 **before you commence with the study**
- No financial liability will be placed on the Free State Department of Health
- Please discuss your study with the institution manager/CEOs on commencement for logistical arrangements
- 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)
- You are encouraged to present your study findings/results at the Free State Provincial health research day
- Future research will only be granted permission if correct procedures are followed see http://nhrd.hst.org.za

Trust you find the above in order.
Kind Regards

Dr D Motau
HEAD: HEALTH
Date: 29/03/18

APPENDIX B3

APPROVAL FROM ER24

Mediclinic Corporate Office
25 Du Toit Street
Stellenbosch 7600

PO Box 456
Stellenbosch 7599

www.er24.co.za

09 March 2018

Jack Mathobela
Department Health Sciences
University of the Free State

Dear Mr Mothibi,

RE: PROJECT 02/2018
PROJECT TITLE: Determining the need for teaching on pre-hospital management of psychiatric emergencies in the emergency medical care curriculum in South Africa.

The above research protocol has been reviewed by the ER24 Research Committee and I am pleased to inform you that your request has been approved. Access is hereby granted to the data required as stipulated in your protocol. You may contact the respective branch managers to recruit a cohort of ER24 employees.

Should your methodology change or any concerns arise during the data collection period, it is your responsibility to inform the ER24 Research Committee in due course. You are also required to forward the completed project to ER24. In addition, an annual report is due yearly in April, regardless of when the project was approved or when it is due for completion.

I look forward to viewing the results of your study. I am positive that the science that you will generate will be of benefit to the profession.

Kind Regards,

Craig Wylie
ER24 Research Committee

APPENDIX C

APPENDIX C1 INVITATION LETTER TO PARTICIPANTS

APPENDIXC2 QUESTIONNAIRE

APPENDIX C1

INVITATION LETTER TO PARTICIPANTS

INVITATION LETTER TO PARTICIPATE IN QUESTIONNAIRE SURVEY

Date:_____

To: Participants in the questionnaire survey

Principal Researcher: Mr Jani Daniel Mothibi, Lecturer, Free State College of Emergency Care, Free State Department of Health

Dear Colleagues

I am conducting research in fulfilment of the requirements of a Master's Degree in Health Professions Education. The aim of the study is to determine the need for teaching on pre-hospital management of psychiatric emergencies in the EMC curriculum in SA through the knowledge, attitude and practice of Emergency Medical Care Providers in the Free State Province with regards to managing psychiatric emergencies in the pre-hospital environment. The overall goal of the study is to make informed and evidence-based recommendations that will initiate the review of the EMC undergraduate training curriculum to include teaching and training on pre-hospital management of psychiatric emergencies.

You have been selected to participate (to complete the attached questionnaire) in this study because you are an emergency medical care provider working in the Free State Emergency Medical Services, and having current active registration with Health Professions Council of South Africa (HPCSA). In addition, you should at least have one year or more of work experience in the field of EMC. Therefore, I feel that your participation and contribution in this study will be valuable.

I therefore would like to request your participation in this research. Participation is voluntary and anonymous. Thus to ensure that no one can be able to connect any questionnaire document to any participant in the study. Therefore, there is no need for giving informed consent as the study is anonymous. However, should you feel concerned during this process, you may withdraw your participation at any stage of completing the questionnaire. Please note that you are not allowed to talk to other participants or look up the answers anywhere.

Furthermore, please note that there will be no payment made to you or required from you for participation. This questionnaire will take less than 45 minutes to complete. After completion of the questionnaire, please return it to the EMS station manager or

insert it in to the box at the EMS station labelled for such. Please note that the results of this study may be published.

Permission to conduct the study had already been obtained from the following institutions, the ethics committee of the Faculty of Health Sciences, University of the Free State, Head of the Department, Free State Provincial Department of Health, and ER24.

Please note that by completing this questionnaire you are voluntarily agreeing to participate in this research study. You will remain anonymous and your data will be treated confidentially at all times.

Thank you in advance for your consideration to take part in this research project.

Regards

Jani Daniel Mothibi
Principal Researcher
Contact details:
Study Leader: Dr A Adefuye
Division: Health Sciences Education
Tel: (office) 0514921373 / (cell) 0730247110
Email address: janimothibi@gmail.com

APPENDIX C2

QUESTIONNAIRE

QUESTIONNAIRE SURVEY

QUESTIONNAIRE: DETERMINING THE NEED FOR TEACHING ON PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES IN THE EMERGENCY MEDICAL CARE CURRICULUM IN SOUTH AFRICA

N.B: You have been asked to participate in a research study. Please note that by completing this questionnaire you are voluntarily agreeing to participate in this research study. You will remain anonymous and your data will be treated confidentially at all times. You may withdraw from this study at any given moment during the completion of the questionnaire. Please note that the results of the study may be published.

Questionnaire

Topic	**DETERMINING THE NEED FOR TEACHING ON PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES IN THE EMERGENCY MEDICAL CARE CURRICULUM IN SOUTH AFRICA**	
Mark as shown:	☒	Please use a ball pen or thin felt tip
Correction:	■	Please follow the example as shown on the left
Section A:	**Demographic details.**	

Please complete the following questions:

1.1.	**Indicate your age in years**					
1.2.	**Please indicate your gender**		**Male**		**Female**	
1.3.	**Indicate your highest educational qualification?**		**Doctorate**		**Master's**	
			Degree		**Diploma**	
			Certificate		**Grade 12**	
			Grade 10		**Other**	
	Please specify if Other					

1.4.	**Indicate your highest clinical qualification?**		**Doctorate EMC**		**Master's EMC**
			Prof. Degree EMC		**B-Tech EMC**
			N.Dip EMC		**ECT**
			ECA		**CCA**
			AEA		**BAA**
			Other		
	Please specify if Other				
1.5	**How long ago did you obtain this clinical qualification?**		**Less than 2 years**		**10-15 years**
			2-5 years		**15-20 years**
			5-10 years		**More than 20 years**
1.6	**What is the total number of years' experience you have in the emergency medical services?**		**Less than 2 years**		**10-15 years**
			2-5 years		**15-20 years**
			5-10 years		**More than 20 years**
1.7	**Are you currently employed in the public or private sector**				**Public**
					Private
1.8	**Which region/district you are currently working in?**		**Lejwe-Leputswa**		**Motheo**
			Fezile-Dabi		**Xhariep**
			Thabo-Mofutsanyane		
1.9	**What area type is it?**		**Metropolitan**		**City**
			Small town		**Rural area**
			Other		
	Please specify if Other				
1.10	**Please indicate your level of employment**		**Managerial**		**Operational**
			Lecturer		**Other**
	Please specify if Other				

Section B:	Knowledge survey regarding management of psychiatric emergencies

Please complete the following questions:

2.1.	Have you managed a patient with psychiatric emergencies before?		Yes		No		Not sure
2.2.	Do you know what a psychiatric emergency is?		Yes		No		Not sure
2.3.	If yes, please explain what is psychiatric emergency.						
2.4.	Do you know the different types of psychiatric Emergencies?		Yes		No		Not sure
2.5.	If yes, please state five types of psychiatric emergencies.						
2.6.	Do you know how to identify psychiatric emergency?		Yes		No		Not sure
	Please state the reason for your answer.						
2.7.	Do you know how to approach psychiatric patient?		Yes		No		Not sure
	Please state the reason for your answer.						

2.8.	**Do you know how to assess psychiatric patient?**		**Yes**		**No**		**Not sure**
	Please state the reason for your answer.						
2.9.	**Do you know any mental status examination/assessment for psychiatric patients?**		**Yes**		**No**		**Not sure**
2.10.	**If yes, please state any mental status examination/assessment for psychiatric patients.**						
2.11.	**Do you know the causes of psychiatric emergencies?**		**Yes**		**No**		**Not sure**
2.12.	**If yes, please state five causes of psychiatric emergencies.**						
2.13.	**Do you know signs and symptoms of psychiatric emergencies?**		**Yes**		**No**		**Not sure**
2.14.	**If yes, please state five signs and symptoms of psychiatric emergencies.**						

2.15.	**Do you know communication techniques for communicating with psychiatric patients?**		**Yes**		**No**		**Not sure**
	Please state the reason for your answer.						
2.16.	**Do you know crisis intervention skills for managing psychiatric patients?**		**Yes**		**No**		**Not sure**
	Please state the reason for your answer.						

Section C:	**Practice survey regarding management of psychiatric emergencies**
Please complete the following questions:	

3.1.	**Do you know the Mental Health Act no 17 of 2002?**		**Yes**		**No**		**Not sure**
3.2.	**Do you know how to physically restrain the psychiatric patient?**		**Yes**		**No**		**Not sure**
3.3.	**If yes, are you allowed to perform such a skill?**		**Yes**		**No**		**Not sure**
3.4.	**Does your organisation equip you with physical restraining equipment?**		**Yes**		**No**		**Not sure**

3.5.	**Does your organisation have physical restraining policy for psychiatric patients?**		**Yes**		**No**		**Not sure**
3.6.	**Do you know chemical restraints for psychiatric patient?**		**Yes**		**No**		**Not sure**
3.7.	**If yes, are you allowed to perform such a skill?**		**Yes**		**No**		**Not sure**
3.8.	**Do you feel comfortable with the level of your knowledge regarding psychiatric emergencies?**		**Yes**		**No**		**Not sure**
3.9.	**Do you have the contact numbers of your local psychiatric facility?**		**Yes**		**No**		**Not sure**
3.10.	**Do you transport the psychiatric patient to hospital even if they refuse transportation?**		**Yes**		**No**		**Not sure**
3.11.	**Have you attended any Continuing Professional Development (CPD) programmes regarding psychiatric emergencies in the last two years?**		**Yes**		**No**		**Not sure**
3.12.	**Do you think psychiatric patients threatens yours safety?**		**Yes**		**No**		**Not sure**
3.13.	**Do you call the police for assistance when a psychiatric patient refuses transportation?**		**Yes**		**No**		**Not sure**

Section D:	**Attitude survey regarding management of psychiatric emergencies**		
Please complete the following questions:			
4.1.	**Do you think you are likely to attend to a psychiatric call?**		**Strongly agree**
			Agree
			Disagree
			Strongly disagree
4.2.	**Do you think that psychiatric patients are dangerous?**		**Strongly agree**
			Agree
			Disagree
			Strongly disagree

4.3.	**How would you feel if you are called out to attend a psychiatric patients?**		**Fear because they may harm me**
			Compassionate and desire to help
			Nothing because it is part of my job
			No particular feeling
4.4.	**What would be your first reaction when you meet violent psychiatric patients?**		**Help them**
			Call for back-up
			Call police
			Call psychiatrist
4.5.	**Do you think prior exposure to psychiatric facilities can assist paramedics to manage psychiatric patients?**		**Strongly agree**
			Agree
			Disagree
			Strongly disagree
4.6.	**Do you think it is necessary for EMC curriculum to include psychiatric emergencies?**		**Strongly agree**
			Agree
			Disagree
			Strongly disagree

THANK YOU FOR YOUR TIME

APPENDIX D

LETTER FROM LANGUAGE EDITOR

5 August 2019

To whom it may concern

RE: Proofreading and academic editing of Research Project for Jani Daniel Mothibi

I, Cindy Schoeman of CS Language Solutions, hereby confirm proofreading and academic editing of the Research Project: DETERMINING THE NEED FOR TEACHING ON PRE-HOSPITAL MANAGEMENT OF PSYCHIATRIC EMERGENCIES IN THE EMERGENCY MEDICAL CARE CURRICULUM IN SOUTH AFRICA BY JANI DANIER MOTHIBI – 2014183947.

Please contact me on 076 381 8999 or at cslanguagesolutions@gmail.com regarding any queries that may arise.

Kind Regards,

Cindy Schoeman

CS Language Solutions

APPENDIX E

JOURNAL SUBMISSION GUIDELINES

As of November 19, 2009

Instructions for authors

This guide aims to providing support for an effective online submission process of your manuscript to the Pan African Medical Journal (PAMJ).

Outlines

1. General

PAMJ is an online open access peer-reviewed journal. Authors are encouraged to submit original research, systematic review and short reports from the field of medicine and public health in Africa.
Prior to submit your first article, you should apply for a user name and password. PAMJ offers a user friendly process for online submission.

Short reports will include case report, commentary, conference proceedings, editorials, viewpoints, and letter to the editors. Short Communications should be no longer than 1500 words. They must have an abstract and references, but the main body of the text does not have to follow the original research's format. We give privilege to invited reviews and encourage prospective authors of systematic reviews to discuss the project with the editorial office before development.

After initial screening, which takes only a few days, manuscripts are sent to two-three referees. If appropriate, a statistical reviewer is involved. On average, we will report back to authors within 4-6 weeks with a first decision.

Manuscripts must be submitted by one of the authors of the manuscript, and should not be submitted by anyone on their behalf. The submitting author takes responsibility for the article during submission and peer review.

Languages of publication are English and French. Each author should provide an abstract of his article in the other

language prior to submission. Poor English of French do not prevent acceptance provided the paper's content is of high scientific quality. All accepted manuscripts are copy-edited.

To facilitate rapid publication and to minimize administrative costs, PAMJ accepts only online submission. The submission process is compatible with version 3.0 or later of Internet Explorer, Opera, and Netscape Navigator.

Files can be submitted as a batch. The submission process allows the authors to interrupt it at any time, and continue where they left off at their return on the site.

During submission you will be asked to provide a cover letter. Use this to explain why your manuscript should be published in the journal and to elaborate on any issues relating to our editorial policies detailed in the instructions for authors.

Assistance with the process of manuscript preparation and submission is available from the customer support team (submission@panafrican-med-journal.com). We also provide a collection of links to useful tools and resources for scientific authors, on our resources for authors' page.

2. Submission of a paper

Online submission
Authors may submit article to Pan African Medical Journal online. Simple onscreen instructions are provided.

Submission by email
Authors may submit article by email if the have limited or unstable Internet connection. Articles and associated material should be sent to any of the following email address:

- submission@panafrican-med-journal.com

Conflict of interest
Will be mentioned in the manuscript as "Authors declared they have no conflict of interest".

The editorial office will acknowledge receipt of all manuscripts by email

3. Organization of a full-length paper

Download the journal manuscript template.

Maximum length: 4000 words in main text (i.e., excluding abstract, references, legends, tables and figures), 6 tables/figures, and a structured abstract of 250 words plus up to 50 references.

Title page – This page should states: a) The title of the paper (include the study design if appropriate; for example: A versus B in the treatment of C: a randomized controlled trial; X is a risk factor for Y: a case control study), b) Authors names (full name – no qualification), c) institution(s) of origin, d) Corresponding author plus his/her address, telephone and fax number, e-mail address, e) Word count (for both abstract and the main text)

Abstract - The abstract of the manuscript should not exceed 250 words and must be structured into separate sections: **Background:** the context and purpose of the study; **Method:** how the study was performed and statistical tests used; **Results:** the main findings; **Conclusion:** brief summary and potential implications. Please minimize the use of abbreviations and do not cite references in the abstract.

Keywords. Up to ten keywords (suitable for Index Medicus listing) should be provided at the end of the Abstract.
Abbreviations Please do not provide a list of abbreviations. Abbreviations should be spelled out the first time they appear in the text.

Background The background section should be written from the standpoint of researchers without specialist knowledge in that area and must clearly state - and, if helpful, illustrate - the background to the research and its aims. Reports of clinical research should, where appropriate, include a summary of a search of the literature to indicate why this study was necessary and what it aimed to contribute to the field. The section should end with a very brief statement of what is

being reported in the article.

Method Sufficient information should be given to permit repetition of the experimental work. This should include the design of the study, the setting, the type of participants or materials involved, a clear description of all interventions and comparisons, and the type of analysis used, including a power calculation if appropriate.

Results - The Results should be stated concisely without discussion and should not normally contain any references. The same data should not be presented in figures and tables. Do not repeat all the data that is set out in the tables or figures in the text; emphasize or summarize only important observations.

Formatting tables

- **Any table should be able to old on a single page** and should be included at the end of the manuscript. Download sample of correctly formatted tables (Microsoft Word 2002-2003, *.DOC): **Table 1**, **Table 2**.

Formatting figures

- Formats: PNG, JPEG only. **MUST BE SUBMITTED AS SEPARATE FILES**, not embedded in the main manuscript. Submit the best quality possible
  Files must be named with the three letter file extension appropriate to the file type (eg: .jpeg, .png). You will be asked to provide figure labels during the submission process. (The label is the small comment that usually goes with the figure. Example: **Figure 1:** Prevalence of diabetes in the study population aged 18 years and above. Findings of the TRICARE Diabetes Study, Uganda, 2006.)
  If you use excel to generate your graph, avoid 3D, crowded axes, colored background, strong grid etc.. Use Tahoma font (size 10 maximum) for all items in your graphs (Title, legend, axes etc..). Expand your Excel graph to obtain a large image, copy and paste it in Paint (Microsoft Paint), crop any white border and save the image as PNG or JPEG. Loot at an acceptable **formatted Excel graph here**

Discussion - The Discussion should deal with the interpretation of the results and not recapitulate them. We encourage authors to write their Discussion in a structured way, as follows:a) statement of principal findings; b) strengths and weaknesses of the study; c) strengths and weaknesses in relation to other studies; d) discussion of important differences in results; e) meaning of the study; f) unanswered questions and future research.

Conclusion - The conclusion should provide a brief summarize of the key findings, potential implications and the way forward.

Acknowledgements - Please acknowledge anyone who contributed towards the study by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship. Please also include their source(s) of funding. Please also acknowledge anyone who contributed materials essential for the study. The role of a medical writer must be included in the acknowledgements section, including their source(s) of funding. Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements. Please list the source(s) of funding for the study, for each author, and for the manuscript preparation in the acknowledgements section. Authors must describe the role of the funding body, if any, in study design; in the collection, analysis, and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication.

Competing interest - Authors are responsible for recognizing and disclosing conflicts of interest that might bias their work. They should acknowledge in the manuscript all financial support for the work and other personal connections. Authors are required to complete a declaration of competing interests. All competing interests that are declared will be listed at the end of published articles. Where an author gives no competing interests, the listing will read 'The author(s) declare that they have no competing interests'. When completing your declaration, please consider the following questions:

Financial competing interests

- In the past five years have you received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? Is such an organization financing this manuscript (including the article-processing charge)? If so, please specify.
- Do you hold any stocks or shares in an organization that may in any way gain or lose financially from the

publication of this manuscript, either now or in the future? If so, please specify

- Do you hold or are you currently applying for any patents relating to the content of the manuscript? Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript? If so, please specify.
- Do you have any other financial competing interests? If so, please specify.

Non-financial competing interests

- Are there any non-financial competing interests (political, personal, religious, ideological, academic, intellectual, commercial or any other) to declare in relation to this manuscript? If so, please specify.
- If you are unsure as to whether you, or one your co-authors, has a competing interest please discuss it with the editorial office.

Authors' contributions - In order to give appropriate credit to each author of a paper, the individual contributions of authors to the manuscript should be specified in this section.

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- CD DeAngelis, PB Fontanarosa, A Flanagin: **Reporting financial conflicts of interest and relationships between investigators and research sponsors.** JAMA 2001, 286 :89-9
- R Smith: **Beyond conflict of interest.** BMJ 1998, 317 :291-292
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