

https://dspace.org/

The opinion of various groups within the Faculty of Health Sciences at the University of the Witwatersrand regarding the use of the newly deceased for life saving skills competency training

Kramer, Efraim Benjamin

2014-02-12
http://hdl.handle.net10539/13743

Downloaded from a DSpace repository. https://dspace.org/

The Opinion of Various Groups within the Faculty of Health Sciences at the University of the Witwatersrand regarding the Use of the Newly Deceased for Life Saving Skills Competency Training.

Efraim Benjamin Kramer

Student number: 7347034

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfillment of the degree of Master of Science in Medicine in Bioethics and Health Law.

Johannesburg, January 2012

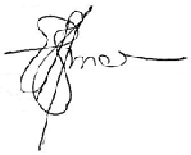
DECLARATION

I, Efraim Benjamin Kramer do hereby declare that this research report is my own, unaided work, except to the extent indicated in the acknowledgements and references. This research report is being submitted in partial fulfillment for the degree of Master in Science in Medicine in Bioethics and Health Law to the Faculty of Health Sciences. No element of the report, in partial or whole, has ever been submitted before for any degree or examination in this or any other academic institution.

I further declare that I have not intentionally or consciously plagiarised any other person's work and that all work used from others or with the assistance of others have been acknowledged or referenced.

I further declare that this research project has been undertaken in accordance with the approval of the Human Research Ethics Committee (Medical), clearance certificate number M10M101122.

Signed this 20th January 2012 in Johannesburg.



Efraim Benjamin Kramer.

DEDICATION

This research report is dedicated:

To He who is the Knower, the Knowledge and the Known

and

To my wife Nadine and daughters Amira, Yael and Aliza;

- Who constantly support me, so I can support others in critical need,
- Who constantly care for me, so I can care for others in critical need,
- Who regularly heal me, so I can heal others in critical need.

Their silent, sincere selflessness is amazing, acknowledged and always appreciated

ACKNOWLEDGEMENTS

I wish first and foremost to acknowledge and sincerely thank my supervisor and mentor, Professor Donna Knapp van Boggaert, who leads ethically by example, which is why so many follow.

I wish to acknowledge and sincerely thank Dr Alison Bentley, who lit the flame of research in me, and has continued to fan and guide these flames during this research report and hopefully into the future.

I wish to thank all the participants who completed the research survey questionnaire for their time and for the honesty they displayed. Hopefully, your efforts will not have been undertaken in vain.

Finally, I wish to state my appreciation to the Human Ethics Research Committee (Medical) of the Faculty of Health Sciences and Nita Lawton-Misra, Deputy Registrar: Academic of the University of the Witwatersrand for their sensitivity, understanding and pursuit of truth on a difficult research topic that may have fundamental ramifications in medical skills acquisition training within the Faculty of Health Sciences.

ABSTRACT

Background: Society expects that all on duty emergency department personnel will be competent in life saving medical procedures so as to adequately and appropriately resuscitate and stabilise the acutely ill or injured who may present for treatment. For competence to exist, the relevant medical skills have to be initially acquired and thereafter maintained, which necessitates sufficient training. This research report set out to gauge the opinions of various undergraduate and postgraduate groups within the Faculty of Health Sciences of the University of the Witwatersrand regarding the use of the newly deceased for life saving skills competency training, with or without surviving family permission. It also sought to ascertain whether use of the newly deceased was being practiced, and if so, with or without family permission.

Methods: This study made use of an anonymous online survey questionnaire, requiring the participant to select either ALWAYS, SOMETIMES, NEVER or DO NOT KNOW, to a series of questions which contained a list of ten potentially life saving medical procedures to be practiced on the newly deceased, with or without surviving family permission. Electronic mail (email) invitations, each with a link to the online questionnaire, were distributed to 299 and 227 first year and fourth year Graduate Entry Medical Programme registered students respectively, to 647 Master in Medicine registrars in training, to 60 currently and previously

registered Master in Science in Medicine in Emergency Medicine students and to 94 professors attached to the Faculty of Health Sciences.

Results: The ten listed potentially life saving medical procedures, were grouped for the purposes of analysis, into non, minimal, moderately and maximally invasive categories respectively. The results indicated an overwhelming positive response for use of the newly deceased with family permission, for all categories of invasiveness. Likewise a majority positive response was recorded for use of the newly deceased without family consent for minimally and non-invasive categories respectively, which diminished with increased invasiveness. The results also indicated that almost a third of participants had made use of the newly deceased for skills competency training, without family consent.

Conclusion: Participants completing the online survey questionnaire indicated their approval for use of the newly deceased for skills competency training, across a wide range of potentially life saving medical procedures if family permission was obtained, or for minimally and non-invasive medical procedures without family permission. It appears that the degree of invasion of a medical procedure influences the need for family permission, rather than as an obligatory ethical requirement.

TABLE OF CONTENTS

Contents	Page
Declaration	i
Dedication	ii.
Acknowledgement	iii
Abstract	iv
Table of Contents	vi.
List of Figures	ix
Lists of Tables	xii
Chapter 1 Overview of Research Report	1
Chapter 2 Literature Review	5

Chapter 3 Methodology	37
Chapter 4 Results	56
Chapter 5 Discussion	92
Chapter 6 Conclusion	119
References	126
Appendix 1. Ethics clearance certificate : M10M101122	137
Appendix 2. Electronic mail invitation sent to all GEMP students	139
Appendix 3. Electronic mail invitation sent to postgraduate Master in Medicine registrars in training, Master of Sciences in Medicine in Emergency Medicine students and Faculty Professors	141
Appendix 4. Approval letter from the Deputy Registrar: Academic, of the University of the Witwatersrand	143
Appendix 5. Fatwa No. 19348	145

LIST OF FIGURES

Figure	Page
Figure 4.1 Overall age distribution	58
Figure 4.2 Age distribution by group.	59
Figure 4.3 Overall Gender distribution	60
Figure 4.4 Gender distribution by group	60
Figure 4.5 Overall race distribution	61
Figure 4.6 Race distribution by group	62
Figure 4.7 Overall home language distribution	64
Figure 4.8 Home language distribution by group	65
Figure 4.9 Overall religious distribution	66

Figure 4.10 Religious distribution by group	67
Figure 4.11 GEMP I : mean percentage selection	70
Figure 4.12 GEMP IV : mean percentage selection	71
Figure 4.13 MMed : mean percentage selection	72
Figure 4.14 MScMed : mean percentage selection	72
Figure 4.15 Professor : mean percentage selection	73
Figure 4.16 GEMP I : mean percentage selection	75
Figure 4.17 GEMP IV : mean percentage selection	75
Figure 4.18 MMed : mean percentage selection	76
Figure 4.19 MScMed : mean percentage selection	76
Figure 4.20 Professor : mean percentage selection	77
Figure 4.21 GEMP I : mean percentage selection	80
Figure 4.22 GEMP IV : mean percentage selection	81

Figure 4.23 MMed : mean percentage selection	81
Figure 4.24 MScMed : mean percentage selection	82
Figure 4.25 Professor : mean percentage selection	82
Figure 4.26 GEMP I : mean percentage selection	85
Figure 4.27 GEMP IV : mean percentage selection	86
Figure 4.28 MMed : mean percentage selection	86
Figure 4.29 MScMed : mean percentage selection	87
Figure 4.30 Professor : mean percentage selection	87
Figure 4.31 Breakdown of participant groups with participants having undertaken endotracheal intubation on the newly deceased without family permission, ALWAYS or SOMETIMES	90

LIST OF TABLES

Table	Page
Table 4.1 Mean Number of participants per group answering each invasive group	69
Table 4.2 Mean Number of participants per group answering each invasive group	74
Table 4.3 Mean Number of participants per group answering each invasive group	80
Table:4.4 Participants with 5 or more NEVER selections for use of the newly deceased for skills competency training, with permission of the remaining family of the deceased.	84
Table 4.5 Mean Number of participants per group answering each invasive group	85
Table 4.6 Participants having undertaken life saving medical procedures on the newly deceased without family permission in order to acquire or improve skills competency.	90

CHAPTER 1 Overview of Research Report

1.1 Introduction to the work

In April 2010, I, a registered specialist emergency physician and Head of the Division of Emergency Medicine at the University of the Witwatersrand, was on duty in the Emergency Department (ED) in a university-affiliated teaching hospital. On this particular Saturday evening, five postgraduate Master of Science in Medicine in Emergency Medicine (MSc Med) part time postgraduate students were in attendance fulfilling their required ED observation period. In the resuscitation room lay a young male patient who had sustained a severe traumatic brain injury and was subsequently declared legally brain dead (Elliot 2003). The patient's haemodynamic status was clinically unstable and because of the inability to consider organ donation, no active resuscitative measures were instituted. Shortly thereafter the patient's heart stopped functioning permanently.

Having a newly deceased patient in the resuscitation room, I recommended to the MSc Med students that the opportunity should be used to undertake a number of medical procedures on this newly deceased. This was recommended to the students for the purpose of either acquiring or upgrading their skills which would be required in the future to potentially save the life of a patient.

Before a decision was made to undertake any medical procedures, I took a few minutes to first discuss the ethical considerations that were relevant regarding

use of the newly deceased for skills competency training. After this I asked each of the MSc Med students to write on a piece of paper (anonymously) whether or not they wished to proceed with the recommended practical exercise on this newly deceased. If but a single student would vote in the negative, the entire exercise would be forfeited. I left the room while the votes were cast. The result was a unanimous positive ballot to proceed.

Subsequently, a surgical cricothyroidotomy, bilateral saphenous venous “cutdown” cannulation and a left sided subclavian venous cannulation were performed under supervision, with respect for the newly deceased, and with all surgical wounds adequately and appropriately sutured on completion of the practical session.

A short time thereafter, whilst alone at the wash basin washing my hands, I was approached by a final year medical student who enquired most vehemently about who gave me or my students the right to abuse a newly deceased patient in that ‘most barbaric manner’. This resulted in me spending another thirty minutes with the angry medical student, debating the ethics of use of the newly deceased for skills competency training, with or without surviving family permission. That Saturday night it became evident to me that different students held oppositional views on this important subject.

This incident was the prompt to examine some ethical thoughts and medical reasoning concerning the use of the newly deceased for lifesaving skills

competency training (LSCT). It also served as the basis to seek answers to rising questions. In keeping, this study presents research which analyses the opinions of various selected groups within the university concerning if, and if so, what the level of invasiveness may or may not be considered as acceptable practice for LSCT on the newly dead, without the consent of the newly deceased's family.

1.2 Construction of research report

The purpose of this Introductory Chapter is to provide the reader with an overview of the flow of this research report.

Chapter two consists of a literature review. Following the purpose of a literature review, I will present a comprehensive international overview of published references regarding the subject of using the newly deceased for skills competency training. Findings are presented from a medical education perspective in which LSCT is included as part of a formal undergraduate and/or postgraduate medical training programme In this chapter I will offer some ethical considerations concerning use of the newly dead for lifesaving skills competency training. In the literature review, various English publications and academic treatises are discussed.

Chapter three comprehensively describes the research methodology and materials which were used in this study.

Chapter four presents the data from the study survey questionnaire and discussions concerning relevant aspects of the data.

Chapter five draws conclusions from the research related to its aim and objectives. Limitations and biases relating to the research study are presented in order to ensure that the methodology and results are appreciated in the specific context of this study.

Chapter six, the final chapter, merges the literature review and the empirical arm suggesting areas of further discussion. Moreover, this chapter offers suggestions for further empirical research on the topic of the use of the newly dead for LSCT.

1.3 Summary Chapter 1

This introductory chapter described the background and motivation for this research report as well as an overview of the flow of subsequent chapters.

CHAPTER 2 Literature Review

2.1 Introduction

This chapter presents a review the literature relating to the need for medical staff on duty in or outside the ED to be competent in lifesaving medical procedures and to various modalities of training that are available in order to acquire and maintain these necessary skills. The types of medical procedures needed in LSCT are discussed as well as a review of the classifications of 'death'. Included in this chapter are rising ethical issues which are discussed including arguments for and against obligatory surviving family consent/ permission.

2.2 South Africa: Emergency medical treatment & emergency medicine

The Constitution of the Republic of South Africa (Act 108 of 1996) states in section 27(3) of the Bill of Rights that "no one may be refused emergency medical treatment". The definition of an acute medical emergency is, however, found in the South African Medical Schemes Act 1998 (Act 131 of 1998), namely:

> … *the sudden and, at the time, unexpected onset of a health condition that requires immediate medical or surgical treatment, where failure to provide medical or surgical treatment would result in serious impairment to bodily functions or serious dysfunction of a bodily organ or part, or would place the person's life in serious jeopardy..*

In South Africa, there currently exists no legal definition for ‘adequate and appropriate emergency medical treatment’. In order to fill this vacuum and provide guidance for what should be regarded as the basic minimum standard of emergency medical care provided to any person presenting to a healthcare facility with an acute medical condition, the following minimum criteria were proposed (Kramer 2008):

- *attempted provision and protection of a patent airway;*
- *attempted provision of effective ventilation medically; manually or mechanically;*
- *attempted control of external bleeding;*
- *attempted relief of intolerable, unacceptable pain; and*
- *urgent attention and appropriate medical intervention in medical conditions which are time critical – these may include, but not be limited to, acute hypoglycemia, stroke, acute coronary conditions, active labour or severe sepsis.*

These proposed minimum emergency medical care standards, undertaken by professional emergency medical, nursing and/or emergency medical service (EMS) personnel, working in either pre- or in-hospital environments can only effectively be accomplished if the abovementioned personnel possess sufficient knowledge, skills and abilities in lifesaving emergency medical procedures. Moreover, they must work in adequately equipped emergency departments and

perform their duties according to recognised current best practice, protocols and policies.

It is the right and expectation of any acutely ill or injured person presenting for emergency medical care to any emergency department (ED) to expect that the medical, nursing and EMS staff on duty will be sufficiently competent to adequately resuscitate and stabilise their acute condition before being admitted for definitive medical care. If this is not present, medical procedures undertaken without adequate sufficient competency may result in complications. Such complications, as Iserson (1995b) points out, may include lung collapse, puncture and laceration of main arteries and veins and introduction of air into the circulation thereby causing harmful, unnecessary and possibly life threatening medical complications.

In order to progressively realise an acceptable standard of emergency medical care in South Africa, Emergency Medicine was registered as a principal specialty in December 2004 (Government Gazette, 2004) with the first registrar academic training programs commencing in 2005. In this postgraduate programme, candidates are required to undertake four years of supervised emergency medicine training, during which they are expected to develop a comprehensive knowledge of the practice of emergency medicine, both pre-and in-hospital environments.

This comprehensive programme encompasses both theoretical expertise concerning common clinical medical emergencies that present regularly and routinely to an ED, as well as expertise in performing lifesaving skills that would be required to resuscitate patients in such need (Chapman 1999). Furthermore, although these skills are paramount specifically for registrars in training in emergency medicine, lifesaving medical skills are also of great relevance to all EMS personnel who administer emergency medical care in the pre-hospital environment (Johnston, Seitz and Wang, 2006; Warner, et al., 2010). These medical skills are likewise just as mandatory for the non-specialist ED doctors and professional nursing personnel manning the many EDs nationally. Finally, medical students require practical training in various lifesaving skills as an integral part of their undergraduate curriculum (Boedeker, et al., 2011).

2.3 Practical competency in emergency medical care

Practical competency is recognised as the bedrock of medicine, and emergency medicine in particular (Iserson, 1993; Brattebø and Wisborg, 1995). Long ago, Ahasverius (1684) stated that “the first mortal sin of a (medical) doctor is practicing medicine without being thoroughly competent in the art”. In more contemporary times, Jonsen (1990) repeats this writing,

> *Competence, in the sense of a disciplined understanding of the science and skilled manipulation of the art, has long been medical virtue. If anything deserves the title "Hippocratic ethic", it is the imperative of competent practice of the art.*

Adequate competency therefore, requires acquisition of knowledge and skills with the necessary abilities; likewise maintenance of this competency requires regular repetition of the techniques after they have been initially learnt (Burns, Reardon, and Truog, 1994; Ardagh, 1997).

2.4 Lifesaving medical skills

What then are these lifesaving medical skills that all emergency medicine practicing professionals are expected to master and retain? For the purpose of this study, I have divided the various lifesaving medical skills into four arbitrary categories. These categories are defined by the extent of skin and tissue penetration and hence the degree of visible external evidence. They include: non-invasive (no external skin penetration), minimally invasive (needle penetration through the skin), moderately invasive (surgical blade width penetration through the skin) and maximally invasive (open surgical exposure of a body cavity) skills. A brief description of these categories follows.

1) Non-invasive. Included in the category of non-invasive lifesaving medical skills are intubation of the trachea (either via the mouth or nose) in order to ensure a patent and/or protected upper airway for adequate ventilation.

2) Minimally invasive. Minimally invasive lifesaving skills include procedures that involve penetration of the skin and underlying tissues with varying diameters of hypodermic needles. Some examples of these are needle cricothyroid membrane penetration (to establish a patent upper airway when alternative oral or nasal routes fail), central venous cannulation of the internal jugular and subclavian veins, intraosseous cannulation (needle insertion into the venous bone marrow), and needle pericardiocentesis (removal of blood under pressure from the pericardial cavity).

3) Moderately invasive. The moderately invasive category of lifesaving skills entail surgical dissection through the skin, superficial tissues and often into various body cavities. These include e.g. tube thoracostomy (placing of a tube into the pleural cavity to drain blood or air) and surgical cricothyroidotomy (surgical incision through the cricothyroid membrane to establish a patent upper airway).

4) Maximally invasive. The final category is maximally invasive which involves wide surgical incision into a body cavity in order to undertake resuscitative

procedures and include antero-lateral thoracotomy (surgically opening the lateral side of the chest wall to gain exposure to the heart and large vessels to control major life threatening bleeding).

All of these skills and procedures, undertaken in an emergency environment on acutely ill or injured patients can be immediately lifesaving when undertaken expeditiously with adequate and ample knowledge, skill and ability. [1]

2.4 Acquisition of lifesaving skills competency training (LSCT)

How are these mandatory lifesaving skills to be acquired by those practicing emergency medicine? As Iserson (2005) and Moore (2008) identify, competent emergency medical professionals do not simply appear nor do they emerge from the classroom after being exposed to didactic lectures only. Competency is only acquired through repeated regular practical training and clinical exposure.

In South Africa, there are a relatively limited number of acutely ill or injured patients that present daily to the emergency departments in the country's few university teaching hospitals. Concurrently, South Africa has a large number of undergraduate and postgraduate medical, nursing and EMS students requiring experiential training. So there are insufficient clinical cases available to provide adequate opportunity for supervised practical training for all. For this reason, alternative methods of lifesaving LSCT have had to be sought.

[1] This assumes adequately equipped emergency departments and performance in keeping with recognised current best practice, protocols and policies.

To achieve the expected level of medical competency, undergraduate and postgraduate medical, nursing and EMS students are required, as part of their academic curriculum, to perform a minimal number of lifesaving procedures experientially for practical skills competency.

2.5 Types of LSCT methods: Cadavers, animals, artificial models & virtual reality

World-wide, the various LSCT methods available include use of processed cadavers, anaesthetised animals (dogs, pigs, monkeys), artificial manikins and models, virtual reality computerised scenarios, living patients (awake or anaesthetised) and the newly deceased (Feinberg, 1985; PETA Victories, 2001; Santen, et al., 2005; Moore, 2008; Wang, et al., 2008; Wilson, 2008; Boedeker, et al., 2011). What follows is a brief description of the first four training methods.

1) Processed Cadavers. Processed cadavers, those donated to the universities for scientific research or acquired via legislated processes are inadequate and inappropriate for emergency medical skills training due to their rigidity and inflexibility acquired during the preservation process (Iserson, 2005; Jones 2011). Therefore a skill such as endotracheal intubation, which requires opening the patient's mouth in order to insert a metal laryngoscope blade into the pharynx (back of the throat) so as to visualise the vocal cords, thereafter inserting a tracheal tube under direct vision into the trachea, cannot be undertaken. The

problem of rigidity and inflexibility found in processed cadavers also affects other lifesaving skill practices and procedures.

2) Anaesthetised animals (e.g. dogs, pigs, monkeys). The use of anaesthetised animals for medical skills training presents two major hurdles. First and importantly, the anatomy of the various laboratory animals used is dissimilar to that of the human (Iserson, 2005). Upporting this, Chapman (1999) also suggests this method of instruction may be adequate for practical training in surgical technique. This is because LSCT requires learnt familiarity with human anatomical details, critical for urgent, skilful and successful patient outcome. Second, due to various thoughts regarding the (mis) use of live animals for scientific research and education (PETA Victories, 2001), and safety concerns for the participants and institutions involved (Iserson, 2005), this method of training is considered sub-optimal and has globally decreased significantly.

3) Artificial manikins and models. Artificial manikins and models are manufactured using a variety of plastic or silicone sources. When compared to living humans, they are considered to be devoid of human essences, too constant anatomically and too inflexible (Ardagh, 1997). However, they can be used for non-invasive LSCT such as endotracheal intubation, but are less suitable for minimally invasive techniques and totally inappropriate for the moderate and maximally invasive categories. Studies are generally mixed

regarding the competency and successful outcome by those students trained exclusively on artificial manikins, as opposed to a combination of training using artificial manikins and living patients (Stratton, et al., 1991; Hauswald, 1992).

4) Virtual reality computerised scenarios. The research and development of virtual reality computerised scenarios using human models is progressing at a rate that it may provide the answer to adequate practical training requirements in the future. Presently though, it is limited to very few medical institutions in developed countries and is exorbitantly expensive so as to preclude general use. In low-income countries such as South Africa, medical universities find it unaffordable. Simulation studies for the training of lifesaving skills currently include no standard method (Noeller, et al., 2008).

2.6 Types of LSCT: Use of the living

Use of the living patient for lifesaving competency skills training is currently the foundation of undergraduate and postgraduate medical, nursing and EMS student training, either on those fully alert and orientated or those under various levels of anaesthesia. Patients that are fully awake may be utilised to effectively train students in procedures that are generally minimally or non-invasive e.g. the performance of lumbar puncture, establishment of central venous access, intraosseous venous cannulation and various other needle penetrative

procedures, if and when appropriate. Surgically invasive procedures however are routinely undertaken under adequate levels of anaesthesia and/or analgesia, and in these clinical situations students should work under supervision.

Although this method of lifesaving LSCT appears ideal, there are various major ethical issues which exist, namely that training may be performed without the patient's consent (Oberman, 2005; Santen, et al., 2005; Wilson, 2005; Wilson, 2008).[2] Moreover, as evidenced in Mullins versus Parkview Hospital Inc. (2007) it may be harmful to the patient. In that ruling (ibid) it was viewed that lack of consent and patient harm 'should rightfully preclude the liberal use of the living patient for medical skills training generally and lifesaving skills specifically'.

2.7 Types of LSCT models: Use of the newly dead

Lifesaving skills competency training using the newly deceased has been undertaken for many years and is practiced in many emergency departments internationally, albeit often in a non-transparent fashion (Sperling, 2004; Moore, 2008; Wilson, 2008).[3]

[2] It is interesting to note as Hayes (1994) points out that even when consent is sought, it is usually obtained prior to anaesthesia and may well fall under the ambit of patient coercion.

[3] Some studies published on the use or not of the newly deceased for LSCT follow: Morhaim and Heller (1991) surveyed 5,397 emergency departments in the United States of America (USA). Of the 992 respondents, 54% admitted practicing endotracheal intubation on the newly deceased with 84% having no written policy regarding post mortem skills competency training. Similarly, Fourre (2002) undertook a survey of 116 Accreditation Council for Graduate Medical Education (USA)-approved residency programs in emergency medicine. His results indicated that use of the newly deceased for skills competency training was common practice. Ginifer and Kelly (1996), in

Historically, the use of the dead human body for medical education dates back in history to the early anatomists after the Church lifted its ban on dissection of corpses (Clayton, 1992) and more recently to the ignominious era of body snatching - the practice of digging up newly buried corpses from their fresh graves - in order to be sold to halls of anatomy. Such was the need for dead human bodies that famous pioneers of the science of surgery such as George Hunter, the "*Father of Scientific Surgery*" employed agents to illegally obtain stolen human bodies for scientific surgical education. This led to the infamous practices of Burke and Hare who, although they never robbed any freshly interned corpses, obtained their fresh stock of bodies for sale by smothering intoxicated patrons from whence they sold these unfortunate newly deceased to Dr Robert Know. Know, the director of the Edinburgh School of Anatomy approved greatly of their freshness but made no point to enquire as to the circumstances of the apparent endless supply of newly dead corpses (Tomasini, 2008).

Thomas Smith (1824) was the first to openly advocate the "use of the dead rather than the living" when he argued for anatomical dissection of the unclaimed deceased. Thus, the newly deceased patient, whose comprehensive resuscitation efforts to save his/her life under acute threat was unsuccessful,

---

their survey of 55 emergency departments in Australia, found that 46% of the 48 responses received made use of the newly deceased for resuscitation skills training. However, Denny and Kollek (1999), in a study undertaken in Ontario, Canada, found that lifesaving skills competency training on the newly deceased was not common.

became *post facto* the most appropriate anatomical and functional method of lifesaving skills competency training. This is because the body of a newly dead human enables the entire range of required emergency LSCT (whether in nature non-, minimally, moderately or maximally invasive) to be learned or revised by emergency medicine and related personnel.

2.7.1 What is the meaning of 'newly dead'?

When discussing the newly dead, it is important to define what is meant by the "newly dead" patient, so as not to distort any subsequent discussions or arguments. Although technically and legally a patient is dead only when a registered practicing medical practitioner says so, the "dead patient" can be divided into four categories (Iserson, 1993):

1) The *"definitely dead",* who exhibit no clinical, electrocardiogram (ECG) or electroencephalogram (EEG) evidence of any activity and which the layperson would easily regard as dead.

2) The "*brain dead*"[4] who exhibit physiologically cardiovascular signs of life, including normal ECG activity, but who have no clinical signs of brain activity on physical examination and who elicit no neurologically relevant responses to a

[4] The term 'brain dead' is according to Elliot (2003) attributed to the Ad Hoc Committee concerning the definition of the dead at Harvard Medical School in 1968. Once a patient is classified as "brain dead", the patient is legally dead and organs may be harvested for transplant purposes once any national informed consent processes have been successfully completed (ibid:24).

legislated battery of diagnostic tests and reflexes (Schold, et al., 2003; Wijdicks, et al., 2010).

3) The “*eerily dead*” who persist in a vegetative state with clinical signs of life, normal ECG activity but various EEG electrical patterns (Iserson, 1993).

4) The *“almost dead”* are patients who exhibit no clinical signs of life, a nonlife sustaining ECG pattern or cardiac output and who are still undergoing resuscitation but with no prognosis or hope of success.

In order for medical, nursing or EMS students in attendance at the resuscitation to perform various LSCT, the team leader or delegated deputy may postpone terminating the resuscitation, thereby allowing practical training on the “*still living or almost dead*”. In this procedure, only after everyone present has accomplished their elected training is the resuscitation terminated. Notably, the final category, the *“almost dead”,* has major adverse ethical, medical and financial considerations and consequences and is to be condemned. This is because the practice of delaying the pronouncement of death during resuscitation in order to teach or practise procedures is a "deceitful and harmful hypocrisy” (Iserson, 1993).

For purposes of using the 'newly dead' for life saving skills competency training, in this research report reference to use of the 'newly dead' is confined solely to those who are "definitely dead".

Until "realistic" manikins are available for lifesaving skills competency training and virtual reality computerised scenario based training become fully developed (Wang, et al., 2008), are cost effective and freely available commercially, the most appropriate method of training undergraduate and postgraduate medical, nursing and EMS students I suggest is use of the newly deceased.[5] This is because no model can yet mimic either the "real time" anatomy or resilience of the human body (Brattebø and Wisborg, 1995; Ashby, 1996; Moore, 2008). From a medical perspective, the entire spectrum of lifesaving skills, whether non, minimally, moderately or maximally invasive can be undertaken on a lifeless body whose fresh anatomy and "*still liquid*" body fluids, provide ideal circumstances for LSCT (McPherson, et al., 1993).[6]

2.8 Use of the newly dead for LSCT: Some ethical issues

[5] I suggest use of the living patient, awake or anaesthetised is also acceptable for LSCT however in this research report I will confine my focus on 'use of the newly dead'.

[6]Here it is interesting to note that no prospective empirical study has ever been done to show that lifesaving competency skills training on the living or newly deceased do, in fact, enhance the skill level of trainees (Schmidt, Abott and Geiderman, et al., 2004).

As mentioned previously, use of the newly dead for lifesaving skills competency training has been practiced for many years. However, beginning in the 1990s as Ashby (1996) and Wicclair (2002) identify, extensive debate developed on the ethics of using the newly deceased for medical education purposes. On the one hand, society agrees that competent, well-trained, and skilled emergency personnel are vital and necessary to the public good. Concurrently, the *means* to EMS LSCT is held to medicine's ethos e.g. to respect all persons, minimise any patient harm, and always ensure public trust (Berger, Rosner and Cassell, 2002; Sperling, 2004; Marco, 2005).

2.8.1 Some ethical considerations for the use of the newly dead in LSCT:

It has been argued that because a corpse has no autonomy[7] (Iserson, 1994), because a corpse *per se* cannot be benefitted or harmed in any manner (Wicclair, 2002) and if all [fresh] corpses in all resuscitation rooms are available for medical education (Iserson, 1995b) that the principles of biomedical ethics are met.[8] So from this perspective, we can argue that the practice of lifesaving competency training skills on a newly deceased patient is ethically acceptable. Indeed we could.

[7] A human corpse no longer an express a notion of self-governance, decision-making, 'rationality', imagination, ability to plan for the future and all other ideas of what it is to be an autonomous being.

[8] This is a very simplified version of the main points these authors raise and the reader is encouraged to read their arguments in full. Respect for autonomy, non-maleficence, beneficence and justice are considered the four principles of Biomedical ethics (Beauchamp and Childress, 1994).

However, what we should consider is the use of our words. We should recognise that in using the word ‘corpse’ we are distancing ourselves from the he-or-she who was and now is before us ‘newly dead’ as a softer more socially acceptable term. From the perspective of public trust this current usage is more suitable as it is socially expected that medical professionals will respect the dead as if they were still living. One of the difficulties lies in the idea that medical professionals, in performing LSCT are disrespecting the deceased. For those who practice medicine ethically, it is understood that LSCT practice does equate to stripping the newly dead of his or her dignity. When fresh corpses are used for LSCT purposes they are treated with respect. Treating a corpse with respect may be fortified at looking at the practice from a different perspective; as if the body of the he-or-she-who-was now gives a gift to humanity-to potentially save those who can be saved. In that view, another reason is given to ensure that the newly dead are treated with value. From these examples from a medical and medical education perspective there are good reasons why there should be no ethical objections to use of the newly dead for lifesaving skills competency training.

2.8.2 Some ethical considerations against the use of the newly dead for LSCT

As the use of the newly deceased for medical education purposes may be widespread internationally albeit with little apparent official institutional policy to guide this practice (Morhaim and Heller, 1991), it is possible that ethical

principles may be contravened with or without malicious intent. Therefore, a major consideration relating to this post-mortem practice is whether use of the newly deceased for skills competency training should be undertaken in the first place.

Instances where this ordinarily would *not* be undertaken include ante-mortem refusal of the patient, his or her surrogate or related family, if permission was requested during hospital admission or was requested as a pre-authorised donation of the body for scientific research. Legally, if a post-mortem forensic examination is required e.g. due to a possible unnatural cause of death, LSCT post- mortem would be contraindicated in order to prevent distortion of possible forensic evidence. Likewise, certain infectious diseases evident in the newly deceased would medically contraindicate procedures involving the newly deceased as per standard disease prevention protocols.

The rationality of such considerations is well-understood. The major problem in the practice of LSCT appears to arise in two major areas. The first is in the complexity of perceptions of death including the idea of bodily sanctity and the second lies in the notion of ‘informed consent’. It is to the first problem I now turn.

2.8.2.1 Use of the newly dead for LSCT: Religious, ethnic and cultural beliefs and values

There are external considerations which exist which make use of the newly deceased unacceptable, although not educationally contraindicated. These are religious, ethnic and cultural beliefs and values. These considerations may prohibit skills competency training on the newly deceased, due to strongly held beliefs that maintain that the deceased may still be spiritually “alive” (May, 1985) and possibly “harmed”, if any unacceptable practices were undertaken post mortem.

This would apply to the Jewish Orthodox (Steinberg, 1996) and Islamic faiths, as well as to some e.g. Native American, Southeast Asian, African and Chinese cultures, who believe that the deceased body must be left intact for later reincarnation or ancestral redemption (Olsen, Spilger and Windisch, 1995). For example, according to Islamic Law, the body of man has not been merely given to him for his personal use but has been entrusted to him and “to cause any harm to a believer after his death is tantamount to harming him whilst he is alive; the sin in both cases is heinous and offensive” (Fatwa 19348 – Appendix 5). Thus, to practice LSCT on a newly deceased Moslem is spiritually contraindicated. Interestingly, the traditional Orthodox Jewish perspective changed when the Chief Rabbi in Israel (Iserson, 2005) acquiesced to endotracheal intubation training on the newly deceased, based on the premise that the “newly deceased” may be indirectly instrumental in saving the life of the “next named” critically ill or

injured patient who may present to the ED requiring advanced airway management.

In practice, the stumbling block to religious consideration and acquiescence in managing the newly deceased is in identifying the religious beliefs (or any other beliefs) of patients in the ED resuscitation room who are frequently unknown to the resuscitation team prior to presentation. This is particularly relevant with religious secularisation occurring in many democratic societies as religious or other 'identifying' belief symbols may not be present on the newly deceased person (Gomes, et al., 2010).

The enigma of death and its culturally-associated rituals and customs also is worthy of reflection. For example as Kass (1985) identified in her study of medical students interviewed regarding their initial exposure to dissection of cadavers in the anatomy laboratory

> [they] … *understood and felt that they were engaged in something fundamentally disrespectful - albeit for a good cause … and would not let this happen to their family or themselves*.

The Norwegian Medical Association was amongst the first medical associations to rule that the practice of human dissection in medical schools be abandoned

(Brattebø, et al., 1993). On the other hand, a public telephonic survey of 1050 people aged over 15 years undertaken by Brattebø, et al (ibid) in the same country revealed that the public are far more supportive of using the newly deceased for teaching than the Norwegian Medical Association supposed.

The British Medical Association and the Royal College of Nursing (Tonks, 1992) are opposed to the use of lifesaving medical skills training on the newly deceased but do condone the practice under limited, rare teaching opportunities, namely patients succumbing from major facial trauma noting,

> *… practicing intubation on recently deceased patients who have suffered such injuries affords experience not obtainable in any other way.*

However, Hinchley (1992) in a letter to the editor takes issue with Tonks, stating that her interpretation, which is widely published as the BMA official position, is misleading of the BMA policy and the process taken in formulating the policy. In a different perspective, the Chairman of the Academic Affairs Committee of the American College of Emergency Physicians claims cadaver practice of endotracheal intubation is necessary or we do "our entire society a disservice" (Landwirth, et al., 1993; Ardagh, 1997).

Thus far we have seen that although there are instances where use of the newly deceased for lifesaving skills competency training should not or would not be considered. The ability to respect for religious, ethnic and cultural values is also as I have shown, problematic in emergency situations. Positions from medical associations range from acceptance to rejection. The way in which the practice is viewed most likely is dependent upon the type of society, the education and understanding of its citizens concerning the practice of LSCT as well as its ideology. The second consideration to which I now turn is concerns 'consent' or 'permission'.

2.8.2.2 Use of the newly dead for LSCT: Consent or Permission

A vociferous debate is the one that permits use of the newly deceased for medical education, but only if permission is initially obtained from either the live patient ante-mortem (Fernandes, 1995; Wicclair, 2002) or from the surviving family, legal guardian or surrogate decision maker post-mortem (Jones, McCullough and Richman, 2004; Sperling, 2004).

It must be stated initially that *permission* for use of the newly deceased is the operative word, and not informed consent. Informed consent is required to protect the patient's autonomy and general wellbeing, which is not applicable in the newly deceased, and has very little to do with minimising family stress

(Tomasini, 2008). [9]If possible without adding to family member distress and duress, obtaining permission for post mortem procedures becomes ethically and morally the preferred practice by many. On the other hand, use of the newly deceased for skills competency training *without* permission is regarded as unethical because of the great psychological "harm and hurt" it may cause to the surviving family (Iserson and Culver, 1986; Schmidt, et al., 2004).

The inclusion of the family is implemented not only out of respect but also because the family has "quasi" legal rights over the body such as its final means of disposal. As such the family may wish to be asked for their permission for any post-mortem training. Studies indicate that 74% to 87% of relatives of patients interviewed in the ED would wish to be asked permission if their relative died and the attending team wished to undertake post-mortem practice procedures (Tachakra, et al., 1998; Alden, et al., 1999; Manifold, Storrow and Rogers, 1999; Oman, Armstrong and Stoner, 2002; Hergenroeder, et al., 2007).

In spite of this, one study by Burns, et al. (1994) indicated that only 10% of institutions practising on the newly deceased obtain either verbal or written permission from surviving family members. It is of interest to note in a study which surveyed relatives' attitudes towards post-mortem procedures on the newly

[9] Informed consent as legally defined in South Africa requires full and accurate information about the nature of the patient's illness, planned diagnostic procedures, the proposed treatment and alternatives and the costs involved, none of which apply to the newly deceased. Obtaining permission is far more applicable and will be used throughout the research arm of this study, except where it has been specifically stated by various researchers and authors and thus quoted.

deceased, 87% of relatives wished to be asked permission prior to intended post mortem thoracotomy training, yet only 57% would agree to have the procedure undertaken (Alden, et al., 1999). Alternatively, he found that only 73% wished to be consulted prior to post mortem endotracheal intubation training with a positive response of 73% (ibid).

From most studies undertaken in the 1990's, 39% to 73% of families would permit use of their newly deceased family for lifesaving skills competency training (McNamara, Monti and Kelly, 1995; Olsen, et al., 1995). As Goldblatt (1995) states,

> *Using newly deceased bodies without permission often makes physicians and trainees uncomfortable, with good reason. Their actions are concealed, hidden from the public. Actions we conceal from others are often controversial and sometimes shameful.*

Many therefore regard it as unethical, dishonest and possibly deceitful (Kerns, 1997) to perform procedures on the newly deceased without the surviving family's knowledge and that this covert practice may even undermine professional ethical conduct (American College of Emergency Physicians 2011) and public trust in the medical profession (Martyn, 1986; DeVita, et al., 2003).

The Council on Ethical and Judicial Affairs of the American Medical Association (Rakatansky, et al., 2002) recommended that training of lifesaving skills on the newly deceased occur only as part of a structured, supervised training program

with appropriate permission from the family or someone with authority to grant permission. The policy goes one step further in stating that when …

> *reasonable efforts to discover the previously expressed preferences of the deceased or to find someone with authority to grant permission for the procedure have failed, physicians must not perform procedures for training purposes on the newly deceased patient* (ibid).

Likewise, other medical associations have taken the standpoint that practice on the newly deceased is acceptable under these circumstances. For example, the American Heart Association's Emergency Cardiac Care Committee states:

> *All institutions providing Emergency Cardiac Care should develop guidelines for and mechanisms to address these sensitive issues [research and procedures on the newly deceased] … Informed consent to use the newly deceased for research or training should be obtained unless institutional guidelines specifically address circumstances under which consent is unnecessary.* (Abramson, deVos and Fallat, 2001).

In a 1983 *President's Commission for the Study of Ethical Problems in Medicine and Biomedical Research Report*, it was recommended that every reasonable effort be sought to obtain permission from the next-of-kin when physicians go "beyond the normal scope of teaching". The report appears to counsel that

permission be obtained for medical education on the newly deceased if it is practically reasonable to do so. However, if permission is not obtainable, then the report seems to condone non-invasive and minimally invasive procedures on the newly deceased without permission, as these are more easily regarded as “within the normal scope of teaching”.

Finally, the Society for Academic Emergency Medicine in the USA, representing a large section of the USA emergency fraternity, issued a policy statement procedures on the newly deceased which states,

> *It is recognised that the recommendation to obtain permission may limit teaching opportunities on the recently deceased due to physician discomfort with asking for permission, family unwillingness to grant permission, family inaccessibility, and acute grief that impairs discussion. Despite these acknowledged challenges, it is believed that competent emergency physicians can be trained to obtain permission within the constraints of the SAEM position.* (Schmidt, et al., 2004).

The protagonists for use of the newly deceased *without* the necessity of obtaining permission argue that permission is not required as society expects all emergency medical, nursing and EMS personnel to be competent in lifesaving medical skills when on duty in the emergency department. Since this is the case, then this entails obtaining the necessary skills in whichever manner, as long as

no harm is being done to any patient (Orlowski, Kanoti and Mehlman, 1988). Iserson was the most vocal of advocates for use of the newly deceased without permission arguing that permission,

> … *ignores the nature and purpose of informed consent, contravenes patient altruism, and disregards society's interest in having an optimal number of medical care providers experienced in lifesaving techniques* (Moore, 2001).

It is further argued that no harm can be done to the newly deceased patient and surviving families should not be burdened with issues of permission at this most inopportune time (Orlowski, et al., 1988; Iserson, 1991; Iserson, 1993; Iserson, 1995b). In one study, 12% of families that were approached for permission for post mortem training, could not recollect being asked, indicating the stressful situation that grieving families are in after death of a loved one (Olsen, et al., 1995). It is further argued that there seems very little concern either in the USA or Europe for the ethical concerns that pertain to use of the living patient (Brattebø and Wisborg, 1995), either awake or anaesthetised, for competency medical skills training without informed consent, so why should the same consideration not apply to the newly deceased.

The problem of double standards are raised by Brattebø, and Wisborg (1995) who state when

… teaching and training takes place in an ill-defined ethical context

[the practice] conveys dubious moral and ethical values to trainees.

Furthermore, it is also argued that if permission were to be sought from the surviving family, it would possibly stifle this form of training as doctors would find it very difficult attempting to obtain permission for lifesaving skills competency training from a family in mourning. Perkins and Gordon (1994), who instituted obligatory permission prior to use of the newly deceased for medical education, noted that it had "the unintended effect of significantly stifling this important training".

Logistically, it takes longer to obtain permission for post mortem training procedures than it does to inform the family of the patient's demise and this is a major consideration in extremely busy emergency departments as the time spent in obtaining permission could be used for emergency skills training (Olsen, et al., 1995). Finally, in one study 48% of respondents in a Brooklyn academic hospital emergency department responded with anger for even being asked whether they would give permission for post mortem training procedures on themselves or a family member (Morag, et al., 2005).

It is of interest to note that many who do not believe in seeking permission initially for skills competency training on the newly deceased *would support* permission for "mutilating' surgical invasive procedures e.g. an emergency thoracotomy with

cross clamping of the aorta. This is because of the extensive technical expertise required to perform the surgical procedure involved. (Burns, et al., 1994; Iserson, 1995a; McNamara, et al., 1995; Olsen, et al., 1995; Ashby, 1996).

The conviction of the necessity of skills training-even of those surgically invasive - may explain the result from Alden's (1999) study which seems to be imply that it is not the degree of "invasiveness" but the possibly of the visible remnant of any invasive procedure at the funeral that may influence the consenting process.

Use of the newly deceased to practice lifesaving medical skills occurs in many international training programs. Studies indicate that 54% to 63% of emergency medicine training programs in the USA and Australia and 58% of neonatal critical programs allow the practice (Morhaim and Heller, 1991; Ginifer and Kelly, 1996; Hudson, 2000; Fourre, 2002). However, permission from the remaining family is rarely obtained and most maintain a "don't ask, don't tell" attitude. Concerning this ethical dilemma, it appears that the major issues in the debate concern not whether the newly deceased should be used for medical skills competency training *per se,* but whether the practice should be preceded by prior permission from either the patient prior to death or from the surviving family or surrogate decision makers post mortem. What is rather incongruous is the dichotomy of obtaining permission regarding lifesaving skills competency training when considering the differences between the alive and newly deceased patient.

If one is to approach the ethical foundation from a purely utilitarian point of view, as is invoked for medical skills training on the live patient (Santen, et al., 2005) - both conscious and anaesthetised- then the absence of informed consent that exists in many medical schools prior to skill performance (Wilson, 2008) is understandable and arguable as it fits the premise of providing a cadre of adequately and appropriately competent medical professionals whose priority goal is the health and welfare of society. The utilitarian calculus, it can be argued, has greater significance than the personal autonomy of the patient; his/her single beneficence and may even exonerate the infrequent complications resulting from inexperience that may maleficently occur. Furthermore, it can likewise be contended, that if all medical skills competency training on the living must initially obtain adequate informed consent from every patient, either appropriately prior to anaesthesia (not coercively immediately prior to anaesthesia) or from the awake patient prior to skills performance, this would probably result in insufficient patient numbers to adequately satisfy all curriculum demands for all undergraduate and postgraduate students.

Therefore, based upon a utilitarian pragmatic view of the needs of society, the living patient, used extensively for medical skills competency training, appears not to be afforded the basic principles of modern bioethics (Schniederjan and Donovan, 2005; Wilson, 2005), namely autonomy, beneficence or non-maleficence. If this is currently the situation internationally, should the same

rules and values not be applied for use of the newly deceased for skills competency training, particularly those medical skills which are potentially lifesaving in nature?

2.9 Use of the newly dead for LSCT: The University of the Witwatersrand

In the Faculty of Health Sciences at the University of the Witwatersrand (the Faculty), medical skills, including lifesaving skills, are traditionally taught to all undergraduate and postgraduate medical and nursing students using a variety of methods mentioned above. The use of imported plasticised manikins for advanced airway, cardiac, trauma and paediatric training is well established, as is the use of anaesthetised pigs for surgical and trauma skills training. However, the vast majority of medical skills, traditionally and historically, are acquired using either the anaesthetised surgical patient in the operating theatre, for example endotracheal intubation for airway management skills training, or the awake (or decreased level of conscious) patient for skills which include intravenous access, tube thoracostomy and wound suturing.

With little exception, informed consent is not obtained from the patients prior to skills performance. Use is made of preserved cadavers for anatomical dissection studies in the basic science years of undergraduate medical study, which possibly customises the students to working on the deceased. How this practice may relate to use of the newly deceased for lifesaving competency skills training

within the Faculty is not known, has never been researched, and therefore this practice, with or without permission, is not known.

2.9 Summary

This chapter presented a literature review concerning the various methods available to emergency medical personnel to acquire and maintain, lifesaving skills competency, particularly focusing on use of the newly deceased. The literature was also reviewed concerning various positions pro and con LSCT and this practice. Finally, justification for research, within the Faculty of Health Sciences of the University of the Witwatersrand, vis-à-vis use of the newly deceased for undergraduate and postgraduate skills training, was reviewed.

Now I turn to the research arm in which I investigate the opinions of undergraduate “Graduate Entry Medical Programme” (GEMP) medical students, postgraduate Master of Science in Medicine in Emergency Medicine students, Master of Medicine in Emergency Medicine registrars in training and all grades of professors, all attached to and within to the Faculty, regarding the use of the newly deceased for lifesaving skills competency training.

CHAPTER 3 Methodology

3.1 Introduction

This chapter will describe the detailed methodology undertaken in developing the Internet based research survey questionnaire, the ethical considerations that were involved regarding permission to invite undergraduate and postgraduate students registered within the Faculty to participate in the study, a description of the study population including inclusion and exclusion criteria and the methodology of data analysis. This chapter will also discuss limitations of the research study and potential sources of bias.

3.2 Purpose of the study

The purpose of this study was to undertake an anonymous questionnaire, targeting undergraduate medical students in their first and last year of study (junior and senior undergraduate medical students), Master of Medicine (M Med) registrars undergoing clinical specialty training and MSc Med students sitting for the degree in Emergency Medicine (postgraduate medical doctors in clinical practice) and professors attached to the Faculty of Health Sciences (senior members or the academic staff who were responsible for curriculum development and its assessment; ‘Faculty’).

The questionnaire would list ten potential lifesaving medical procedures, involving various levels of invasiveness, and the participants to the survey questionnaire would be asked their opinion as to whether the relevant listed procedure should be undertaken on the newly deceased in order to either acquire or upgrade the medical skill, additionally with or without surviving family permission.

3.3 Aim and Objectives

3.3.1 Aim

To investigate the opinions of students and staff within the Faculty of Health Sciences of the University of the Witwatersrand regarding the use the newly deceased patient for lifesaving skills competency training.

3.3.2 Objectives

1. To determine the demographic data, home language and religious denominations of the participants completing the online questionnaire.
2. To determine which medical procedures listed on the online questionnaire are regarded by participants as being lifesaving in nature.
3. To determine which medical procedures listed in the online questionnaire are regarded as competency necessary for a doctor on duty in the emergency department.
4. To determine the opinions of first year medical students (GEMP I) and fourth year medical students (GEMP IV) of the Faculty regarding the use

of the newly deceased patient for lifesaving skills competency training, with and without surviving family permission.

5. To determine the opinions of M Med registered registrars in training, MSc Med postgraduate students and professors within the Faculty regarding the use of the newly deceased patient for lifesaving skills competency training, with and without surviving family permission.
6. To determine if any of the study participants have made use of the newly deceased for skills competency training, without surviving family permission

3.4 Research Ethics: Ethical considerations and approval

Ethical permission to conduct this study, granted as "approved unconditionally", was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, certificate M10M101122 (Appendix 1).

The research topic of the study, namely "*The opinions of various groups within the Faculty of Health Sciences at the University of the Witwatersrand regarding the use of the newly deceased for lifesaving skills competency training"* required involvement of undergraduate and postgraduate students who would likely be exposed to skills competency training, and their clinical teachers.

The study therefore sought ethics approval to include the Graduate Entry Medical Programme (GEMP) undergraduate medical students in the Faculty of Health Sciences, namely the GEMP students in their first (GEMP I) and fourth (GEMP

IV) year of study. Ethical approval was also sought for inclusion in the study of all clinical Master in Medicine (M Med) postgraduate student registrars in training and all Master in Science in Medicine in Emergency Medicine (MSc Med) postgraduate students, both passed and presently registered. Finally, ethics approval was sought for inclusion all professors currently attached to the Faculty because of their role and responsibilities in undergraduate and postgraduate curriculum medical education, as active teachers and instructors, as well as curriculum policy developers and auditors.

In seeking ethics approval for use of undergraduate and postgraduate students in this research study (particularly as it was to be undertaken by a senior member and Head of a division within the Faculty) it was fully appreciated that potential ethical difficulties needed to be addressed, mainly that of hierarchal vulnerability and strict participant confidentiality. As a result, a detailed explanation was provided during ethics application for the reasons to include undergraduate and postgraduate medical students, the issues of potential hierarchal vulnerability and strict participant confidentiality.

Inclusion of these students was to allow them a voice in what is a vital aspect of their training, namely the manner in which the Faculty pursues its goal of achieving adequate and appropriate undergraduate and postgraduate life-saving skills competency training. It is always possible that numbers of students, due specifically to hierarchical vulnerability to senior registrars (in training) and specialist consultants in the teaching hospitals, or out of ignorance, may not

object to use of the newly deceased patient for lifesaving skills competency training, even though permission may not have been obtained from the live patient beforehand, or from the surviving family, legal guardian or surrogate decision maker, believing that this form of training has Faculty approval.

Likewise, clinical teaching staff of the Faculty, namely senior registrars (in training) and specialist consultants may instruct undergraduate and postgraduate students to perform various clinical skills on the newly deceased patient, without any consideration or knowledge of the feelings and attitudes of medical students towards such skill competency practices.

Therefore, in order to obtain the view of undergraduate medical students to the use of the newly deceased for lifesaving skills competency training, the GEMP I and IV classes were selected for inclusion in this research study, as they are actively and currently involved in clinical medical training which involves life-saving skills competency training e.g. intravenous cannulation, lumbar puncture and tracheal intubation.

It was also stated during the ethics application that although it was not critical to the success of this study to assess the views of the GEMP I and IV students, it would have been a great pity if their views were to be silenced on such an issue, particularly as it is integral to their training and possible future practice. Likewise, all clinical postgraduate registrars in training were selected in order to canvass

their views on use of the newly deceased for lifesaving skills competency training. The inclusion of all current and previously enrolled MSc Med students, who sit for this two year part time degree, was obvious, as these students, the overwhelming majority of whom are registered with the Health Professions Council of South Africa either as registered medical practitioners or advanced life support paramedics, are all involved daily in the management of patients with life threatening illness or injuries where skills competency is paramount.

To prevent any of the abovementioned ethical concerns, strict measures were taken to ensure stringent participant confidentiality, by the use of SurveyMonkey.com, an internet based survey solutions provider who ensured confidentiality of all survey questionnaire responding participants. Additionally, the researcher had no knowledge of the date that the GEMP I and IV invitation electronic mail (email) was distributed, no knowledge of to whom, in the respective GEMP I and IV classes, the email questionnaire were distributed to and how many “failed” emails occurred due to various technical problems. This latter state was due to the distribution of the GEMP emails being undertaken by a Faculty Officer, independent of the study and having no direct links to the researcher.

A letter of explanation regarding the research project was included in the body of the email communication (Appendices 2 and 3) to all candidates with a statement that completion of the attached questionnaire would be regarded as tacitly providing informed consent and that the study had received approval from the

Human Research Ethics Committee (Medical) of the University of the Witwatersrand. . Additionally, an approval letter from the Acting Registrar: Academic (Appendix 4), stating that the research study had been distributed in accordance with the University of the Witwatersrand approved procedures and that ethical clearance had been obtained, was attached to all GEMP I and IV research distributed emails. The attached letter also stated that the student could withdraw from the process if the contents were found to be too intrusive, too time-consuming, or inappropriate.

3.5 Study design

This was a prospective, cross sectional, descriptive study which utilised an Internet web-based confidential questionnaire comprising open-ended and closed questions.

3.6 Study protocol

A questionnaire was developed using SurveyMonkey.com, an Internet-based survey solutions provider. All participants were initially sent an invitation to participate in the study using electronic mail (email), with an explanation of the study inside the body of the email. An Internet link was included in the body of the email and directed the participant to the study questionnaire. Once the study questionnaire was opened, all questions were answered by “clicking” on the circle in the relevant column. The standard selection of answers, in all the

columns containing a list of medical procedures, were either “Always, Sometimes, Never, Do not know”.

A “comment” box was provided for those who wished to add any additional information regarding a particular question. Participants were not required to answer any or all of the questions and could terminate their participation at any point, with SurveyMonkey.com recording whatever questions had been answered.

The researcher had the opportunity to visit the survey site at any time, using a dedicated password, and obtain an analysis of the answers from participants to the questionnaire, but was unable to trace the participants’ email addresses, thus ensuring strict confidentiality.

3.7 Study Questionnaire

The study questionnaire invited the participant to provide various biographical data, namely:

- Age
- Gender
- Race
- Home Language
- Religion
- Medical School position

After the biographical questions, participants were asked the following 5 questions:

1. Which of the following medical skills would you regard as lifesaving in nature in the acutely ill or injured patient?
2. Which of the following medical skills should any doctor on duty in the emergency department be able to undertake competently in an acutely ill or injured patient?
3. Which of the following medical skills do you think should be taught using the newly deceased patient, with consent from the remaining family of the deceased?
4. Which of the following medical skills do you think should be taught using the newly deceased patient, without asking consent from the remaining family of the deceased?
5. Have you ever undertaken any of the following medical skills on a newly deceased patient, without family consent, in order to acquire or improve your practical competency?

The medical skills listed in the above questions comprised the following:

- Endotracheal intubation
- Needle cricothyroidotomy
- Surgical cricothyroidotomy
- Central venous cannulation

- Intraosseous venous access
- Needle pericardiocentesis
- Intercostal tube insertion
- Saphenous venous cut-down
- Peritoneal lavage
- Emergency thoracotomy

The study questionnaire was set up online using SurveyMonkey.com in such a way that the candidate was at liberty to complete whichever question, or part thereof, that they wished and thus not obliged to mandatory complete the entire questionnaire.

3.8 Study population

Study questionnaire invitation emails were circulated to the following prospective participants:

- GEMP I and IV class of students as per the 2011 student registration list.
- MMed registrars in the School of Clinical Medicine within the Faculty, as per the 2011 MMed registrar registration list.
- MScMed postgraduate students registered for the academic years 2005-2011.
- All professors attached to the Faculty as per a list provided by the Faculty administration office

All email invitations to the MMed registrars, MScMed postgraduate students and Faculty professors, with the relevant internet-based link embedded inside the body of the email, were circulated directly from the researcher's computer, located in office 10M12, on the 10th floor of the University of the Witwatersrand Medical School, located at 7 York Road, Parktown. The MMed list of currently registered registrars was provided by the Assistant Registrar: Faculty of Health Sciences, and comprised 647 email addresses which were sent in batches of 100 emails, so as not to technically overload any system in the process.

Similarly, email invitations were sent to 94 professors in the Faculty whose name appeared on a faculty email address list. According to a Faculty list of names of professors attached to the Faculty, the total number on the list was 273. However, thorough investigation of this list indicated that a substantive number of professors had either emigrated, retired or were deceased. Therefore, another alternative list was, taken from a Faculty working list used routinely to communicate with senior members of the Faculty. This second list may have excluded a number of professors eligible for participation. This possible limitation is acknowledged.

Email invitations were sent to 60 MScMed postgraduate students who are currently or were previously registered in the Faculty, derived from an email list that the researcher has on file spanning the 2005-2011 academic years.

Email invitations, with the relevant internet-based link for the GEMP I and IV students, was sent to a faculty officer dealing with student affairs, who attached the approval letter from the Acting Registrar: Academic of the University of the Witwatersrand, and distributed the invitation to participate electronically to the class of GEMP I and IV students. The researcher had no knowledge when the invitation emails were sent, the number initially, the destination addresses, nor of the number of “failure to send” emails.

All of the abovementioned lists of names and email addresses used for circulation of the email invitations, and which are available under password protection on the researcher’s Faculty computer, will not be attached as appendices to this research study for reasons of confidentiality and privacy.

3.9 Inclusion criteria

GEMP I and IV 2011 registered students who have email addresses known to the Faculty administration office and are over the age of 18 years.

MMed registrars in training, as per the 2011 student registration list, who have email addresses known to the Faculty administration office.

MScMed in Emergency Medicine students, currently or previously registered with the Faculty, who have email addresses on a list held by the researcher.

All Professors within the Faculty whose names, and email addresses, appear on a current email communication list.

3.10 Exclusion criteria

GEMP I students who were under the age of 18 years.

All nominated categories of candidates who did not have emails available to the Faculty administration on the date the invitation emails were sent.

All emails which did not reach the intended candidate, for reasons which included but were not limited to the following problems:

- Emails that were returned due to problems with email addresses.
- Emails that were returned due to the recipient's inbox being full.
- Emails replies that automatically stated: "Out-of-office".
- Emails replies that automatically stated: "Failure-of-delivery".
- Online participants who did not indicate their Medical School position, preventing them from being placed appropriately into one of the five participant categories.
- Online participants completing the questionnaire after the cut-off date of the 30th April 2011 at noon.

3.11 Data collection

All answer selections of the study questionnaire are automatically entered and stored inside an electronic file created during development of the study questionnaire. All of the data, and analysis thereof, could be downloaded if and when required.

3.12 Data analysis

All data from the survey questionnaire, recorded using the SurveyMonkey.com web-based survey solution service, was downloaded using a Microsoft Excel® spreadsheet (Microsoft Office 2007, Microsoft Corporation).

All respondents who completed the survey were grouped together into one of the appropriate 5 respondent groups, namely GEMP I, GEMP IV, MMed, MScMed or Professor participant groups.

Since the nature of the study was primarily an investigation into the ethical concerns of using the newly deceased patient for lifesaving skills competency training, analysis of the precise quantitative data collected from the various respondent groups relating to each medical skill was not regarded as central. Therefore, although the questionnaire required each participant to select a choice of either ALWAYS, SOMETIMES, NEVER or DO NOT KNOW for each of the ten medical procedures listed for each of the five questions, the data was analysed by grouping the various medical procedures in one of four categories, namely non-invasive, minimally invasive, moderately invasive and maximally invasive categories.

The non-invasive category was defined as any medical procedure that did not involve penetration of the deceased patient’s skin, and which required a device to be placed through a natural body orifice, thus leaving no external trace after the

procedure had been accomplished. The only listed procedure in this category was endotracheal intubation.

The minimally invasive category was defined as any medical procedure that involved needle penetration through the deceased patient's skin, thus leaving, at most, a small puncture mark, as external evidence, after the procedure had been accomplished. This group included needle cricothyroidotomy, needle pericardiocentesis, intraosseous venous access and central venous catheter cannulation.

The moderately invasive category was defined as any medical procedure that involved a "surgical blade width" type incision through the deceased patient's skin and underlying tissues, thus leaving a surgically sutured scar as external evidence, after the procedure had been accomplished. This group of medical procedures included surgical cricothyroidotomy, saphenous venous cut-down, tube thoracostomy (intercostal drain insertion) and peritoneal lavage.

The maximally invasive category was defined as any medical procedure that required extensive surgical incision to fully expose a major body cavity, thus leaving a large sutured wound as external evidence, after the procedure had been accomplished. The only listed procedure in this category was emergency (antero-lateral) thoracotomy.

Once the listed medical procedures had been inserted into the elected category, based on the degree of invasiveness, the percentage selection of answers of

each ALWAYS, SOMETIMES, NEVER or DO NOT KNOW category, relative to the total number of answers for the particular procedure, was calculated. Once the percentage answers of the individual medical skills were calculated, a mean percentage was then calculated to represent the entire invasive group. The mean percentages from the invasive groups were used when comparisons were undertaken during data analysis.

It is appreciated that this form of data analysis has limitations because the non and maximally invasive groups only had one listed procedure, whereas the minimally invasive and moderately invasive groups had three and four listed procedures respectively. However, as the requirement of the data analysis was to indicate any trends in respondents' answers relative to the degree of invasiveness, and not necessarily according to each listed skill, this limitation has been accepted in the context of this study.

3.13 Study limitations

The success of email invitations reaching the desired destination addresses was paramount in canvassing participants and depended to a large extent on technological efficiency. Although all registered students of the Faculty are routinely provided with Faculty email addresses on registration, many students have their own personal address or addresses. If the student chose not to routinely use the designated Faculty email address that was used by the faculty officer in circulating the email invitations, then that student may not have received

the email invitation to participate in the study. Likewise, any technological problems, namely, “email address inboxes” that may have reached their allowable capacity or were no longer functional, would not have received the invitation to participate. Any participant who received an invitation, but who, for whatever reason, could not successfully link to SurveyMonkey.com, would likewise have technologically been excluded from the study.

Students and professors who do not have email addresses at all, and may therefore not be on any email list, will not have been included in this study. All of these limitations may prevent intended participants from partaking of the study, all for technical reasons only.

It is also possible that, participants actively involved in answering the study questionnaire, may have their electronic participation interrupted due to technical or other unknown reasons, which may result in the questionnaire not being completed and the results thus not truly representative on final analysis. This number, if it did occur, was not expected to be of any significant number.

It is also technically possible for any participant, if they should have wished to answer the questionnaire a number of times, as long as they would do so from a different email address on each occasion. Unless a participant has particularly zealous views on the topic, it is probably not a practical limitation that requires serious consideration.

3.14 Sources of Bias

The low response rate amongst the registrar group compared to the high response rate from amongst the MScMed postgraduate group may have been as a result of the latter's daily confrontation with life threatening medical emergencies compared to the former group's lack of similar exposure. This may have biased the results toward the MScMed group, even though the School of Clinical Medicine of the Faculty has substantially greater numbers of currently registered postgraduate registrars in training in 2011, namely 647 doctors, than the total number of currently and previously registered MScMed students (60).

It is also highly possible that the MScMed high participant response rate was due to their familiarity with the researcher and the Division of Emergency Medicine, where they are or were registered for their degree in the first instance.

The high response rate from the GEMP I medical students, who have not yet been practically involved in clinical training, as they had just entered medical school at the beginning of the 2011 year, may in part be due to the "*privilege*" of receiving an Invitation to Participate email from a senior member of the Faculty, and this being the first of its kind in their limited medical school experience, may have accounted for their high response rate. However, the opposite, namely low rate of response from the GEMP IV medical students, might reflect their extremely committed academic schedule and/or lack of interest, in their final year

of study, to concern themselves with research questionnaires, particularly with this emotive subject.

All of the above may bias the findings of this study, as the various numbers of participants could not always be regarded a representative.

3.15 Summary

This chapter described the methodology involved in developing the internet based study questionnaire, the sensitive ethical considerations involved, and a description of the study population including inclusion and exclusion criteria. The method of data analysis pertaining to this study was described, including various inherent limitations and potential sources of bias.

CHAPTER 4 Results

4.1 Introduction

This chapter will describe the results obtained from the participant's completion of the study questionnaire. The participants were groups according to their medical school position of GEMP I and GEMP IV undergraduate medical students, MMed registrars in training, MScMed in emergency medicine postgraduate students and faculty professors. The listed medical skills were categorised according to previously defined degrees of invasiveness, namely non, minimally, moderately and maximally invasive categories respectively. This chapter will also describe various demographic features relating to the participants. Finally, the results of the five questions posed in the study questionnaire will be described.

4.2 Distribution of Emails.

The email invitations for the group of participants to complete the online study questionnaire, were sent out in the 2nd week of February 2011. The official number of registered GEMP I and IV students for the 2011 academic year was 299 and 227 medical student respectively. Six hundred and forty-six (647) email invitations were sent to the MMed registrar group, sixty (60) to the MScMed postgraduate student group and 94 to Faculty professors. Thirty emails (30) from the MMed registrar list, five (5) from the MScMed postgraduate student list and five (5) from the Faculty professor list were returned to the researcher's email inbox , as they were unable to reach their intended electronic destination due to

recipient mailbox capacity limitations. Two hundred and nine (209) participants responded to the email invitation, comprising 61 GEMP I students, 28 GEMP IV students, 45 MMed registrars, 33 MScMed postgraduate students and 24 Faculty professors, with 9 participants not indicating a designated category.

4.3 Demographics

In total 209 participants participated in the survey. Each participant had the freedom to elect which questions to answer, which resulted in a difference in between the numbers of participants answering individual questions. Additionally nineteen (19) participants did not indicate a particular medical school position and were therefore excluded. A number of participants elected not to complete all of the biographical data requested, once again causing a discrepancy between the various demographic subsets.

4.3.1 Age

Ninety-seven of the 190 (51%) participants fell within the 21-30 year old age group. This was due to the large proportion of undergraduate GEMP medical students that responded, namely 45 GEMP I and 28 GEMP IV students respectively. The number of MMed registrars in the 21-30, 31-40 year old age group, namely 22 and 19 respectively, indicate a response that spanned from junior to senior registrars, as the majority of academic rotations span 4 years of specialist training. The MScMed postgraduate students, in contrast, fell mainly within the 31-40 and 41-50 year old groups, numbering 19 and 15 respectively.

The Faculty professor group (24/190) spanned the spectrum from 41 to greater than 60 years of age.

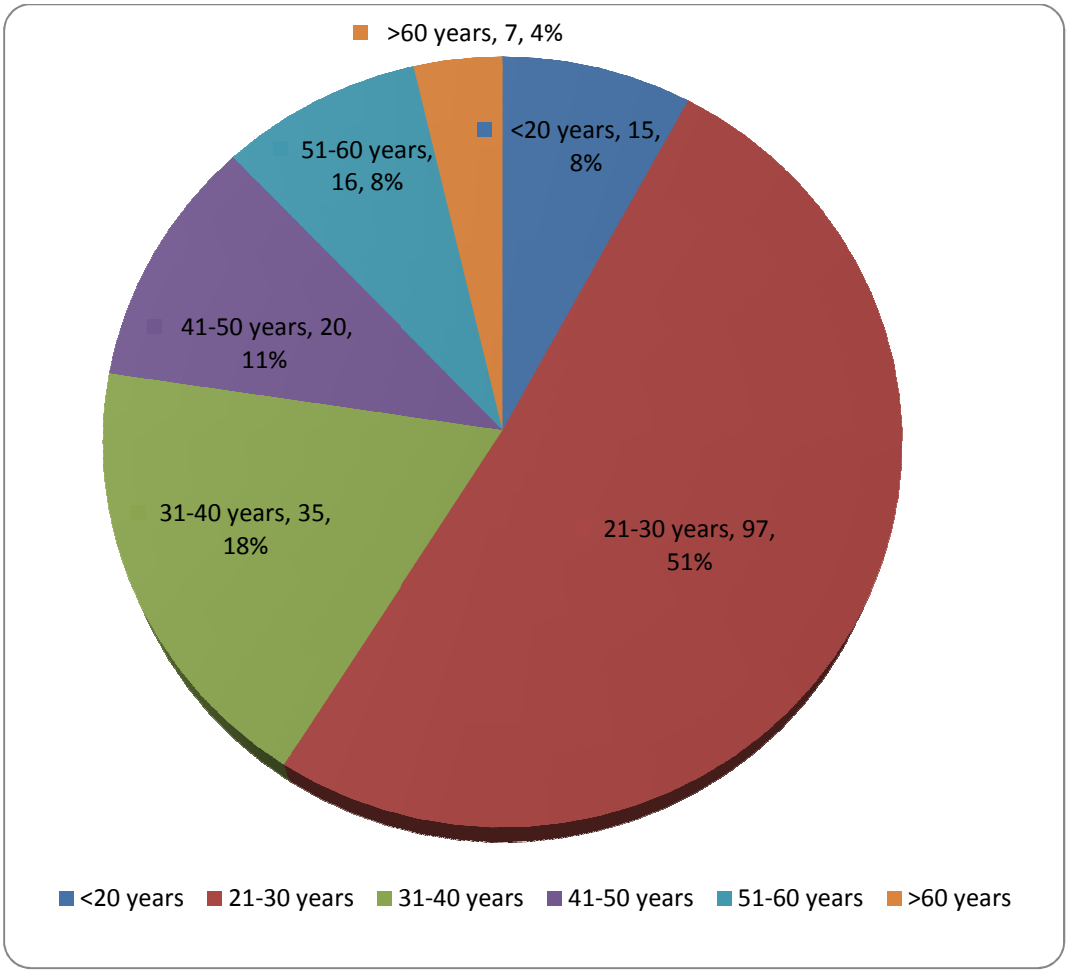


Figure 4.1 Overall age distribution.

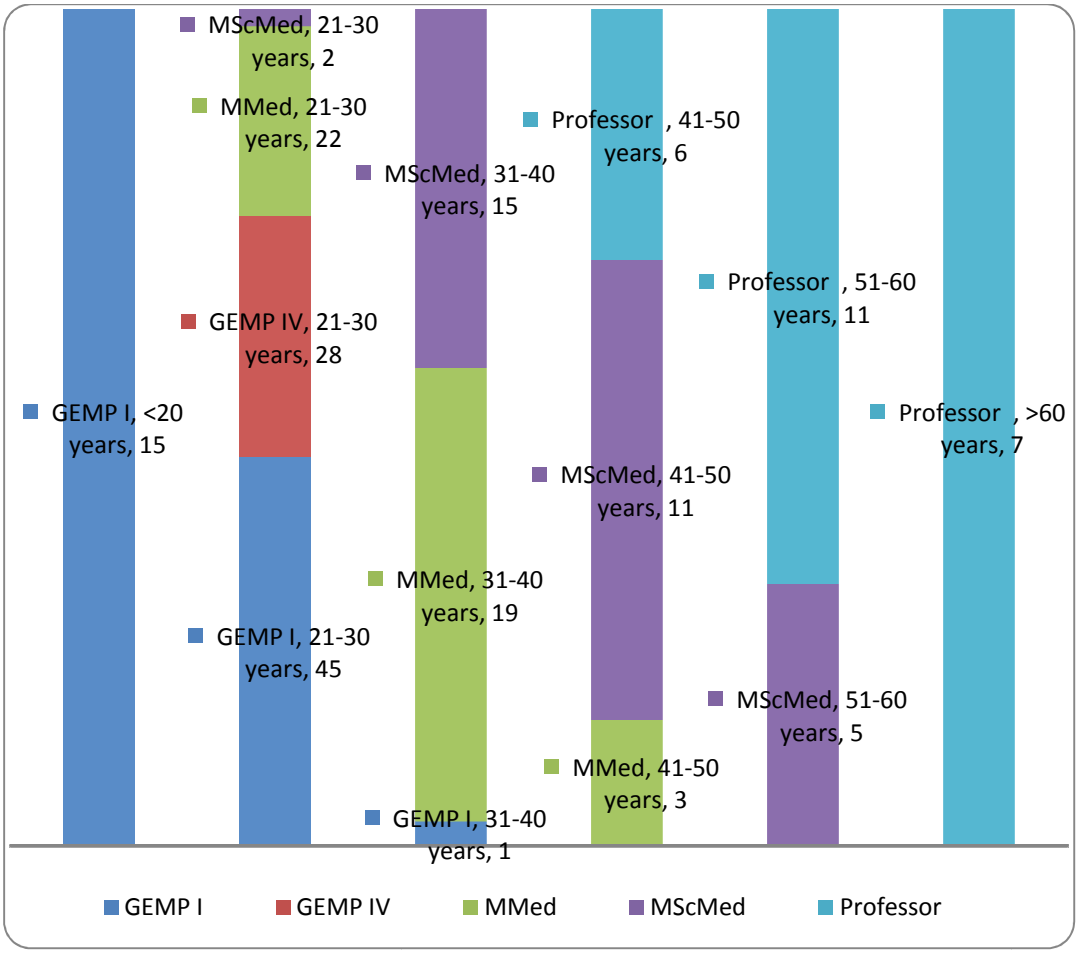


Figure 4.2 Age distribution by group.

Of the 15 students under the age of 20 years old, all in the GEMP I group. However, it was not possible to ascertain whether any of the GEMP I participants should have been excluded due to their age being younger than 18 years of age.

4.3.2 Gender

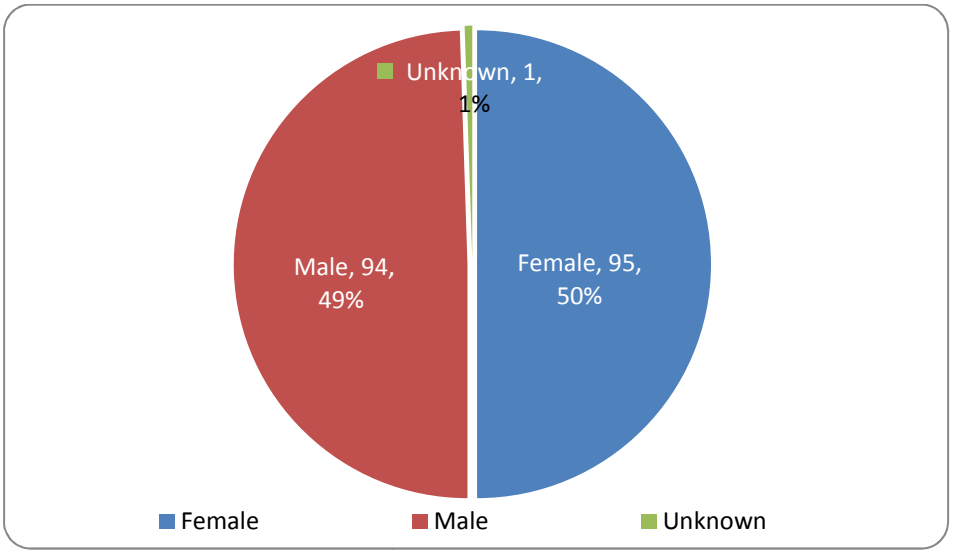


Figure 4.3 Overall Gender distribution

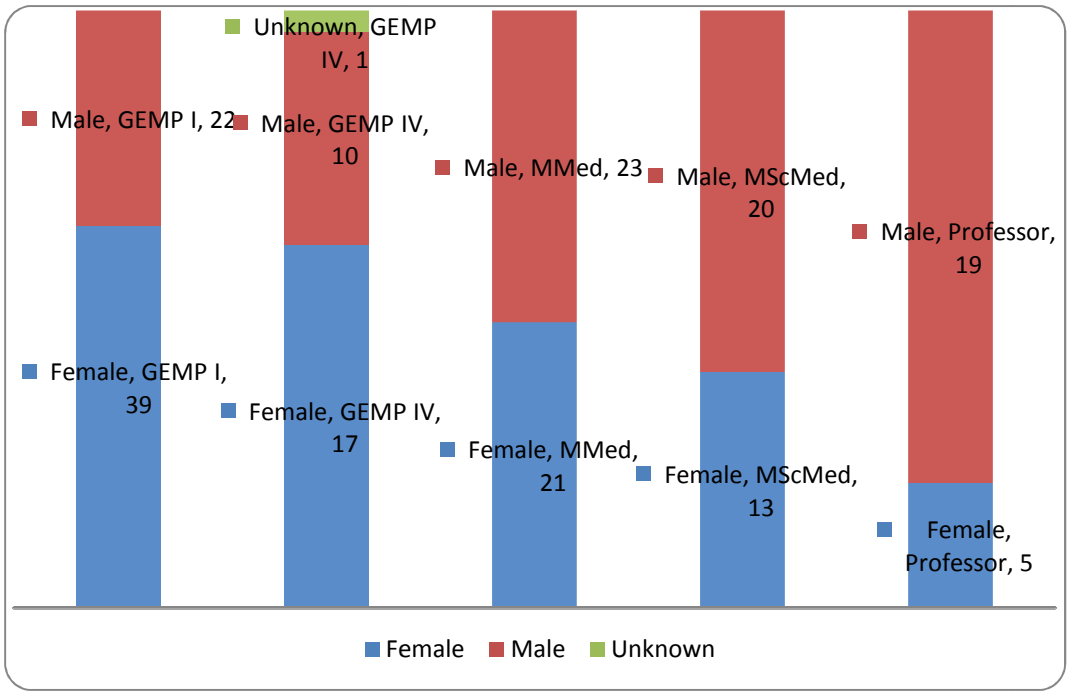


Figure 4.4 Gender distribution by group

There is equal distribution of genders amongst participants as a whole. However, amongst the various groups the gender distribution is varied. The single unknown gender classification is due to a participant failing to complete the relevant section.

4.3.3 Race

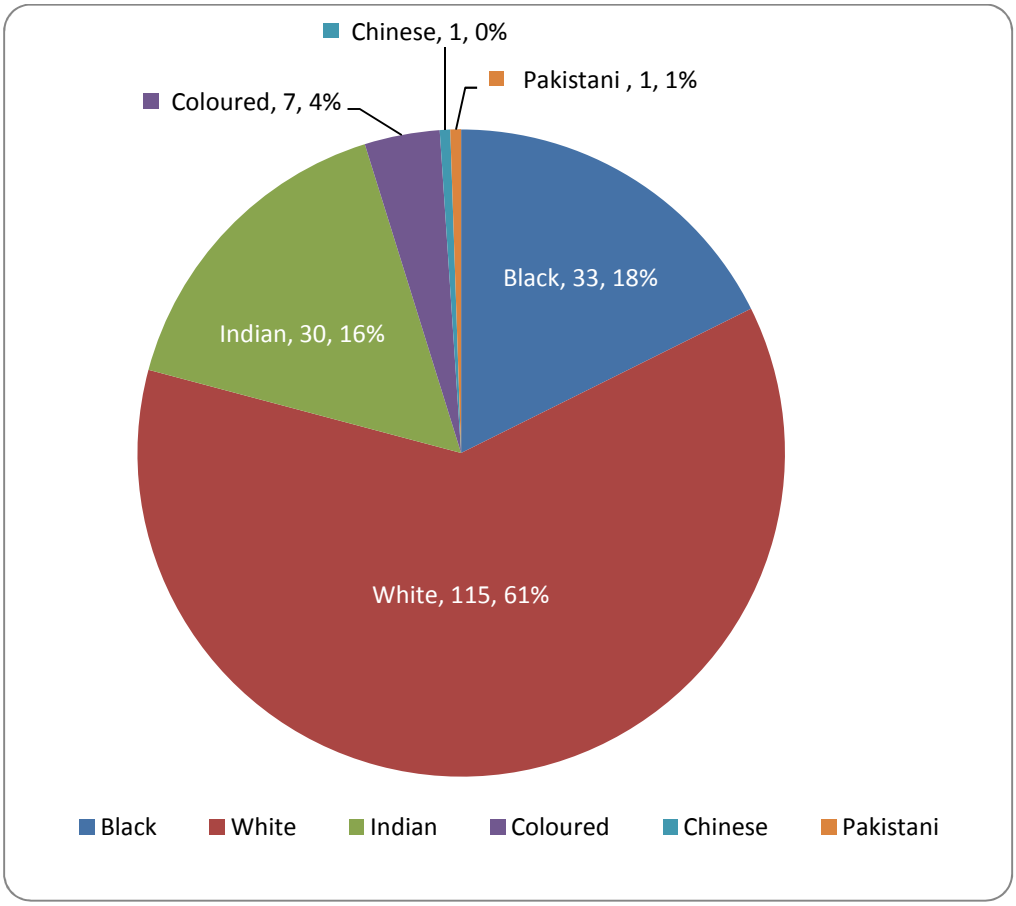
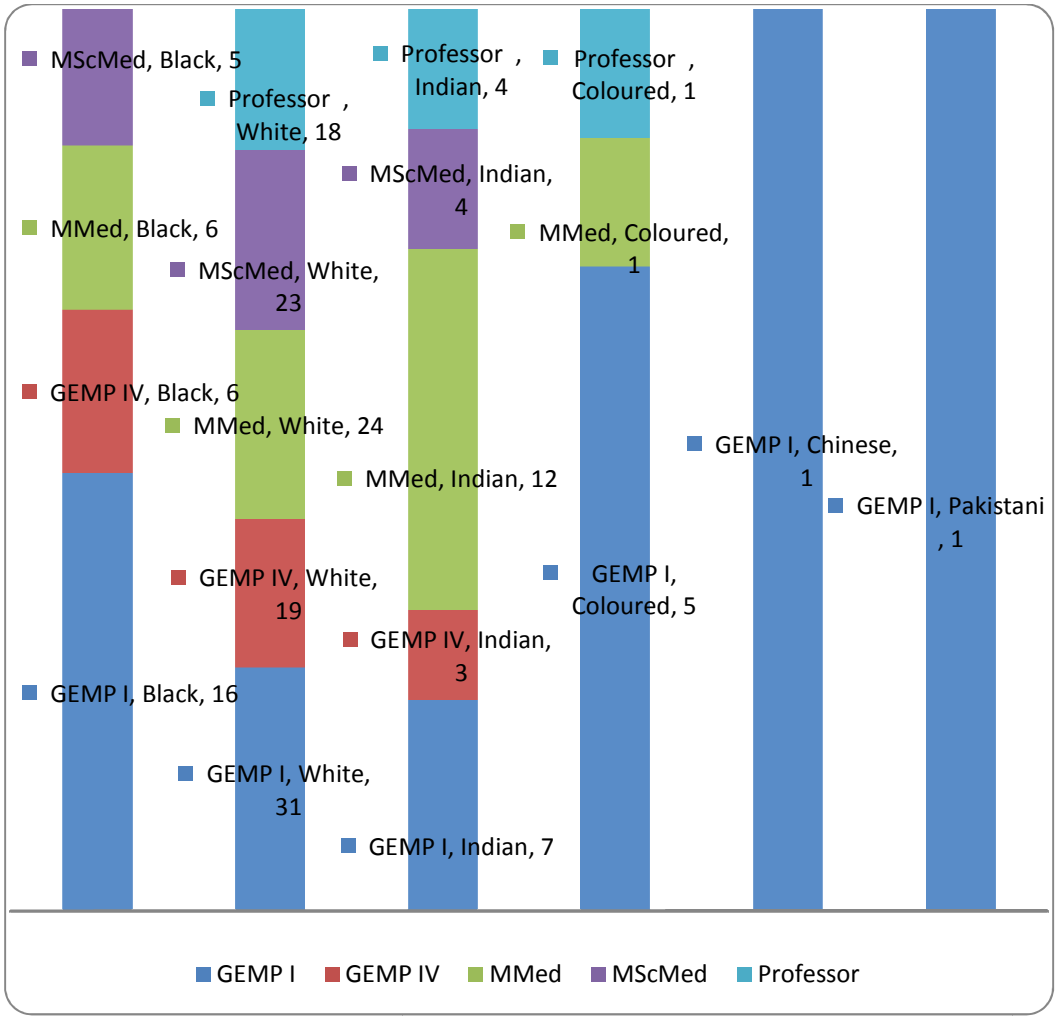


Figure 4.5 Overall race distribution



. Figure 4.6 Race distribution by group.

One hundred and eighty-seven (187) participants completed the race question. The racial distribution of participants indicated a predominantly White (115/187) majority, with Black and Indian participants numbering 33 and 30 respectively. The choice for racial group selection did not originally include a Pakistani group, but was added subsequently due to a single entry being made in the comment box stating “Pakistani” as the elected race classification. Amongst the Black

participants, 48.5% (16/33) were GEMP I students, whilst amongst Indian participants 40% (12/30) were from the MMed registrar in training group.

4.3.4 Home language

One hundred and ninety-seven (197) participants completed the home language question. The overwhelming majority of participants (141/197) indicated English as their home language medium, indicating that the majority of participants should have had little, if any problem, understanding the questionnaire and its related instructions. Four participants indicated either Chinese (1), French (1), Urdu (1) and Kinyarwanda (1) as their primary home language whilst another 8 participants added an additional language to their chosen primary selection, namely Chichewa (1), Dutch (1), Gujarati (1), Polish (1), German (1), Bulgarian (1), French (1) and Shona (1).

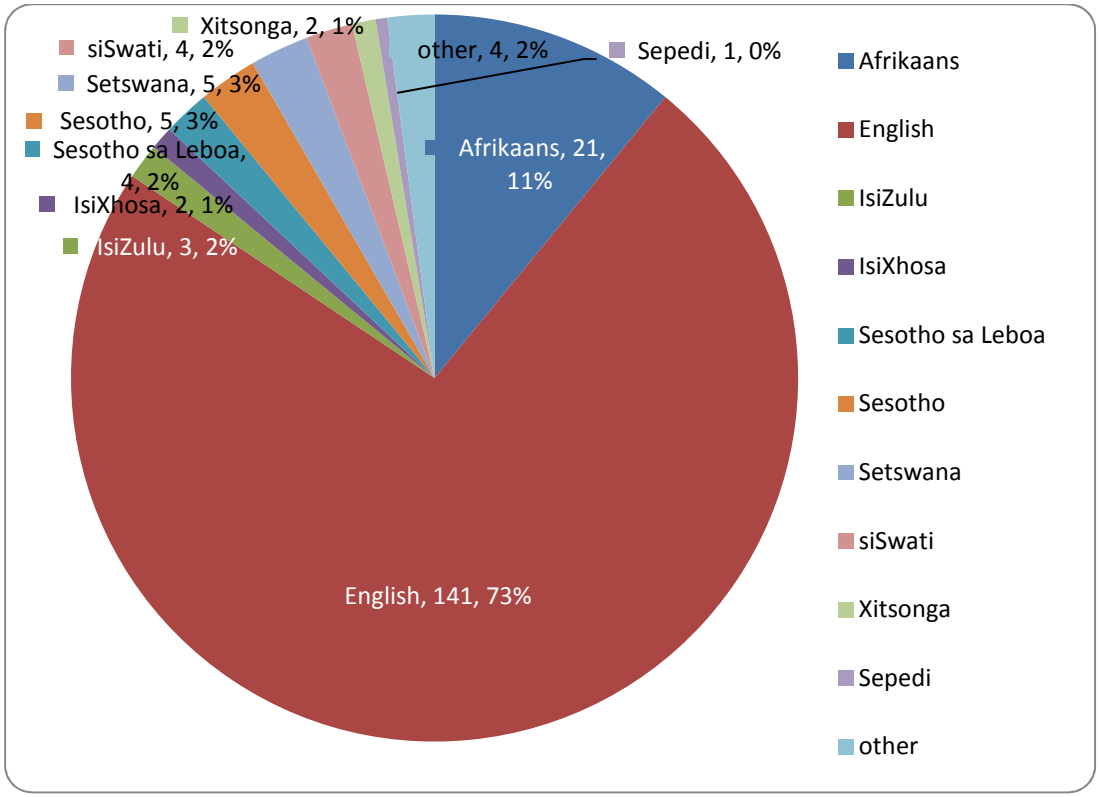


Figure 4.7 Overall home language distribution.

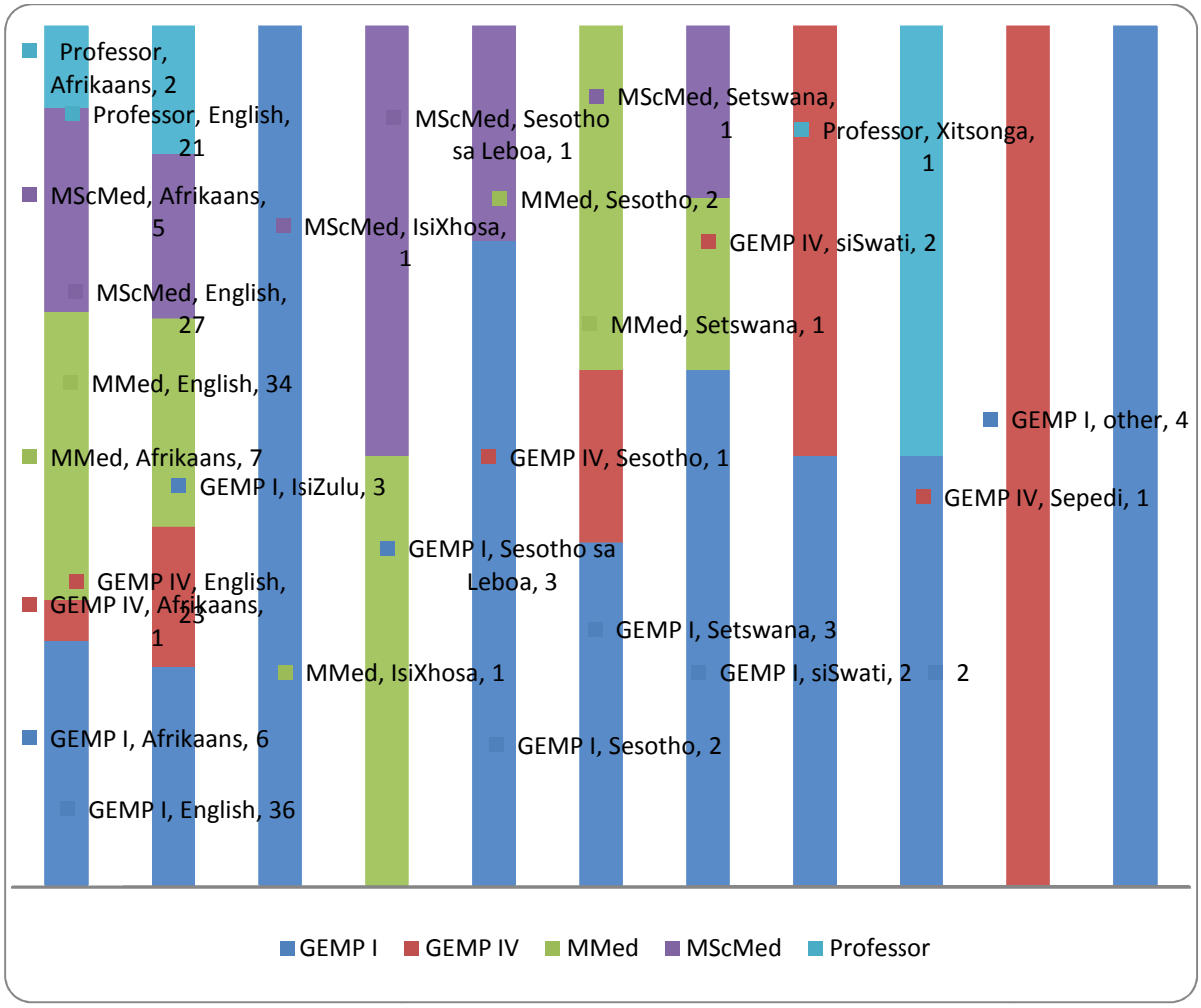


Figure 4.8 Home language distribution by group

4.3.5 Religion

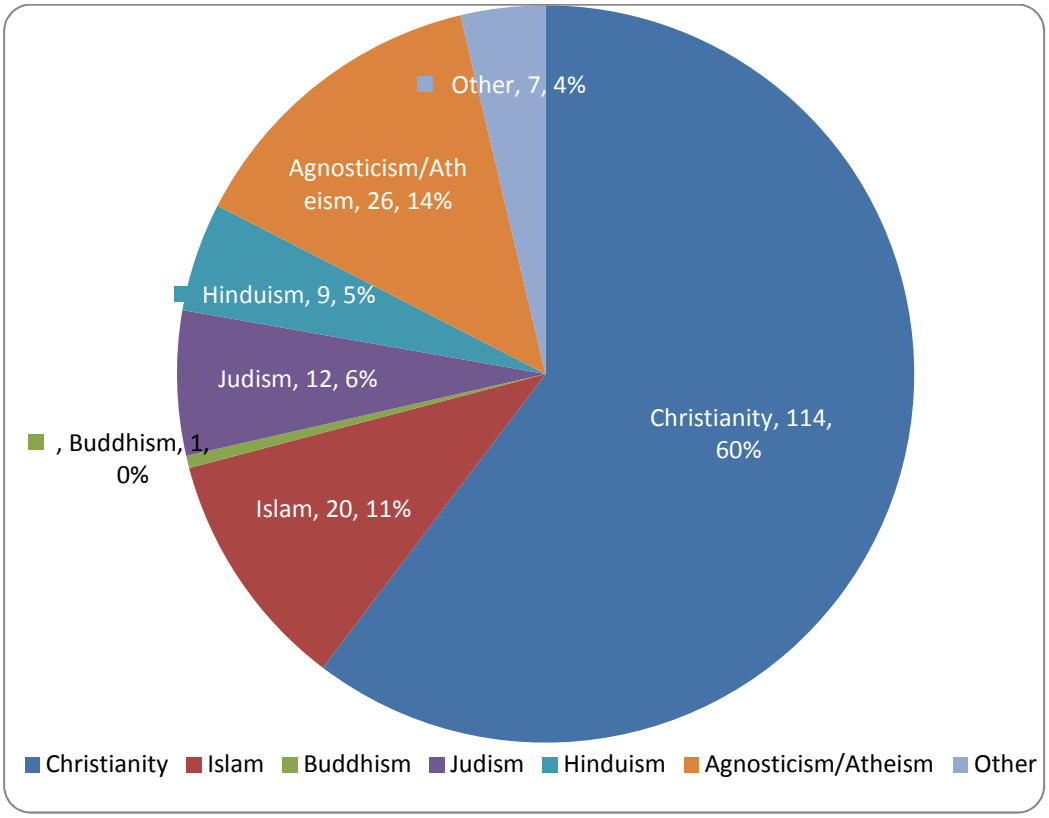


Figure 4.9 Overall religious distribution

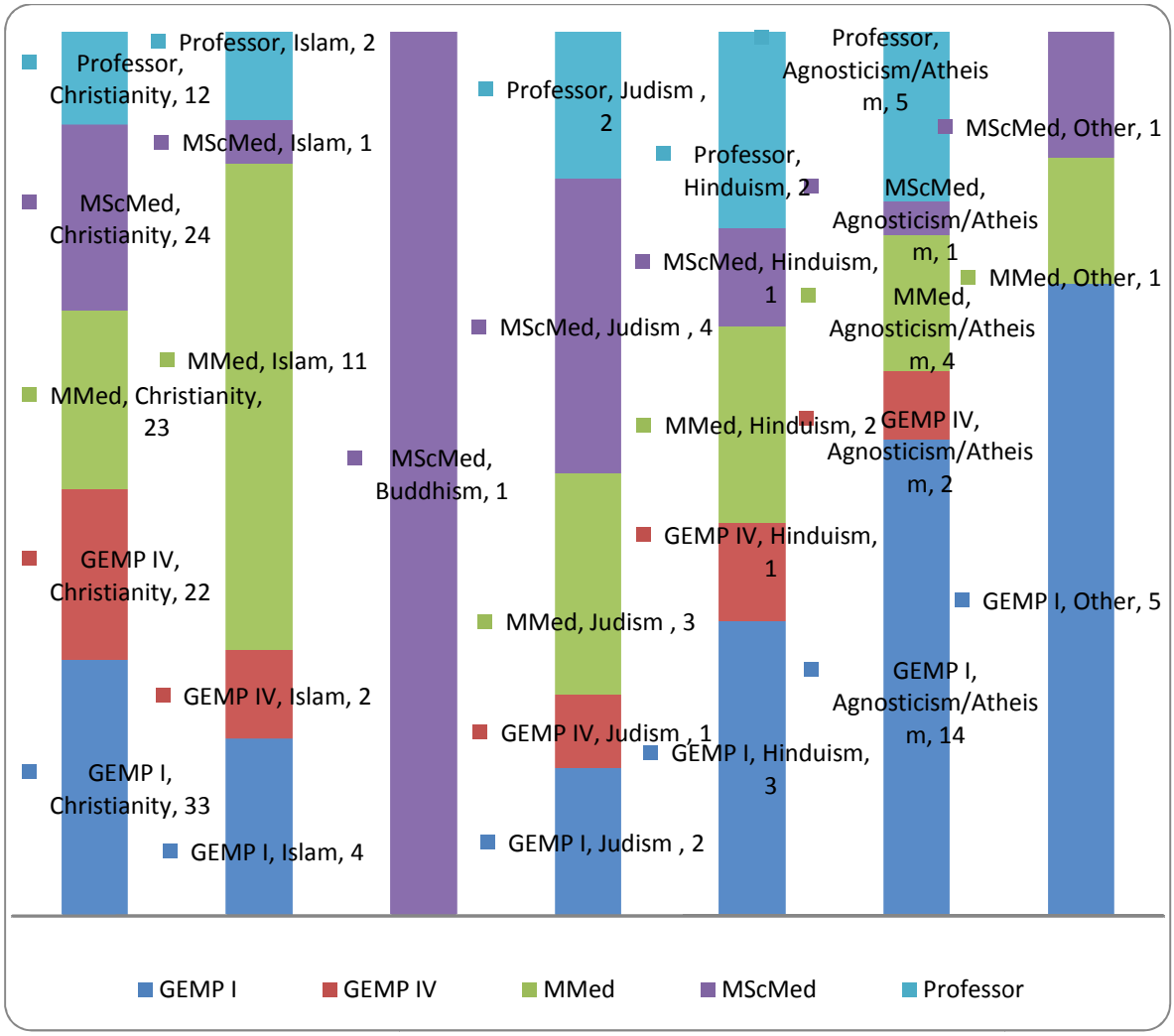


Figure 4.10 Religious distribution by group.

One hundred and eighty-nine participants completed the religion question. Originally, religious affiliation was initially divided into Catholic, Protestant, Islam, Buddhism and Judaism. However, a large number of Christian participants entered a specific branch of Christianity, namely Anglican, Baptist, Dutch Reformed, Lutheran, Methodist, Born again Christian or simply Christian in the comment column, making it impractical to use only Catholic or Protestant. As a

result, all Christian denominations were placed into a single column, with the realisation that this may have biased any apparent homogeneity in the Christian group regarding the group's religious beliefs and their attitude towards use of the newly deceased for skills competency training. Additionally, Hinduism was added as a column, having being erroneously omitted originally. Similarly Atheism and Agnosticism were combined as a single group for the purposes of the survey. The column which indicated "other" (7/189) included denominations entitled "10 commandments", Jedi, Tamil, Bahai and those entering "undecided". Christianity (114/189) was the overwhelmingly most common religion selected by participants.

4.4 Results of Question 1

"Which of the following medical skills would you regard as lifesaving in nature in the acutely ill or injured patient?"

This is the first question in the study questionnaire that expose the participants to the set of ten potentially lifesaving medical procedures that may be clinically indicated in the acutely ill or injured patient. This initial question was introduced in order to obtain an initial assessment of the medical knowledge of the various groups of participants regarding the indications and use of the medical procedures listed.

The mean number of participants, per group, answering Question 1 is listed in Table 4.1, as the participants had freedom of choice as to which questions they

wished to answer. Any value with a decimal greater than 0.5 was rounded off to the next whole numeral and the opposite with any value with a decimal less than 0.5.

	Non-invasive	Minimal invasive	Moderate invasive	Maximal invasive
GEMP I	23	23	23	23
GEMP IV	16	23	24	24
MMed	36	36	36	36
MScMed	28	27	27	26
Professor	17	17	17	17
Total	**120**	**126**	**127**	**126**

Table 4.1 Mean Number of participants per group answering each invasive group

The GEMP I participant group indicated a large mean percentage of DO NOT KNOW selections, particularly with regard to the invasive medical procedures listed. Selection of SOMETIMES by the GEMP I group is difficult to analyse, as each of these procedures were either potentially lifesaving or not and thus these selections may have related to ignorance of the procedures as these students had only just recently entered medical school. Very few, only 5% and 4% selected NEVER for the moderately and maximally invasive categories respectively, as an answer.

The GEMP IV participant group, who were in their final year of undergraduate study, had a high mean percentage of SOMETIMES, ranging from a mean

percentage of 50% for both non and moderately invasive, 58% for minimal invasive and finally 62% for maximally invasive respectively. The low comparable level of the ALWAYS category selection, for what are essentially lifesaving medical procedures, is surprising.

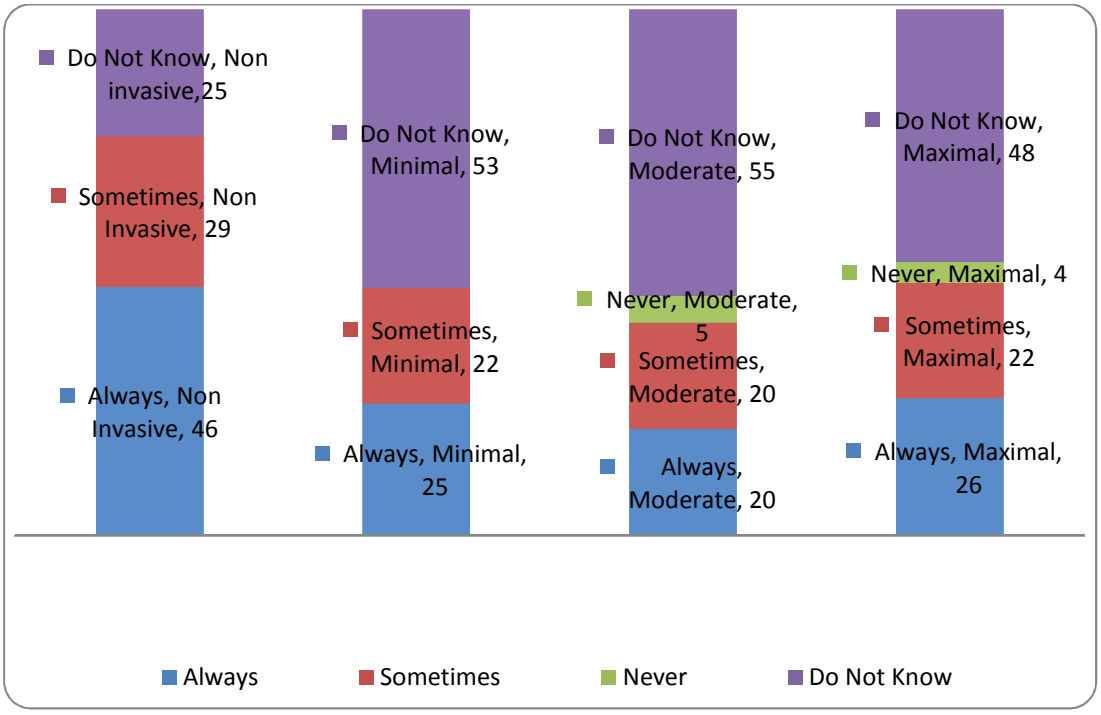


Figure 4.11 GEMP I : mean percentage selection

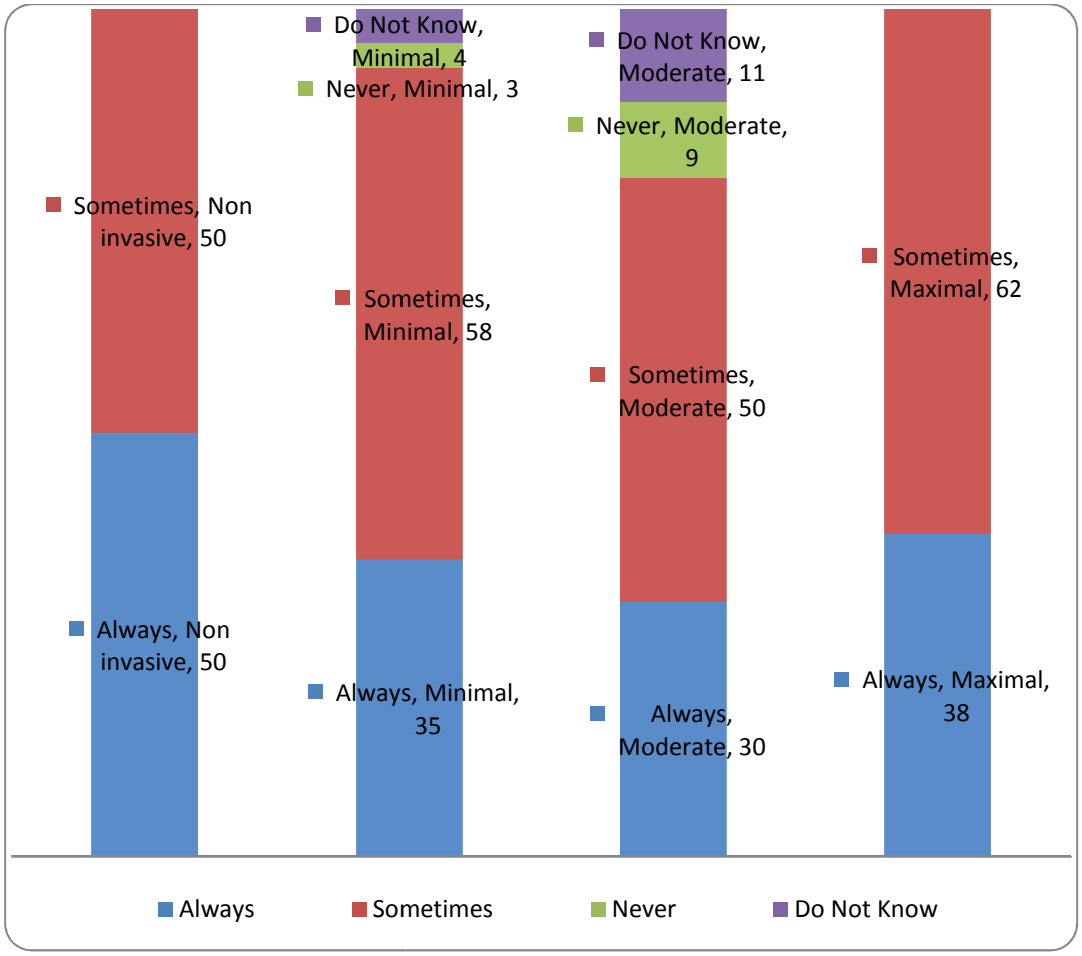


Figure 4.12 GEMP IV : mean percentage selection

The MMed and MScMed participant groups have similar mean percentage selection trends, ranging from the highest selection percentages for non-invasive medical procedures, diminishing for the minimally invasive and least of all for the moderately and maximally invasive medical procedures. Consistent with every group of participants, was a decreasing trend for the ALWAYS selection with increased invasiveness, from non-invasive to

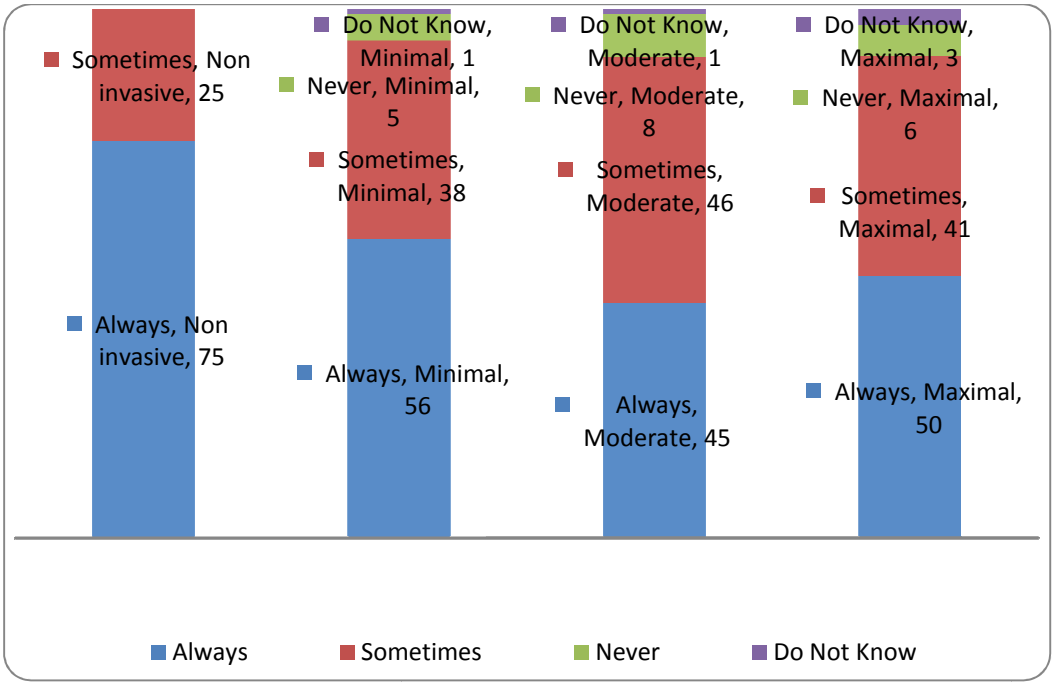


Figure 4.13 MMed : mean percentage selection

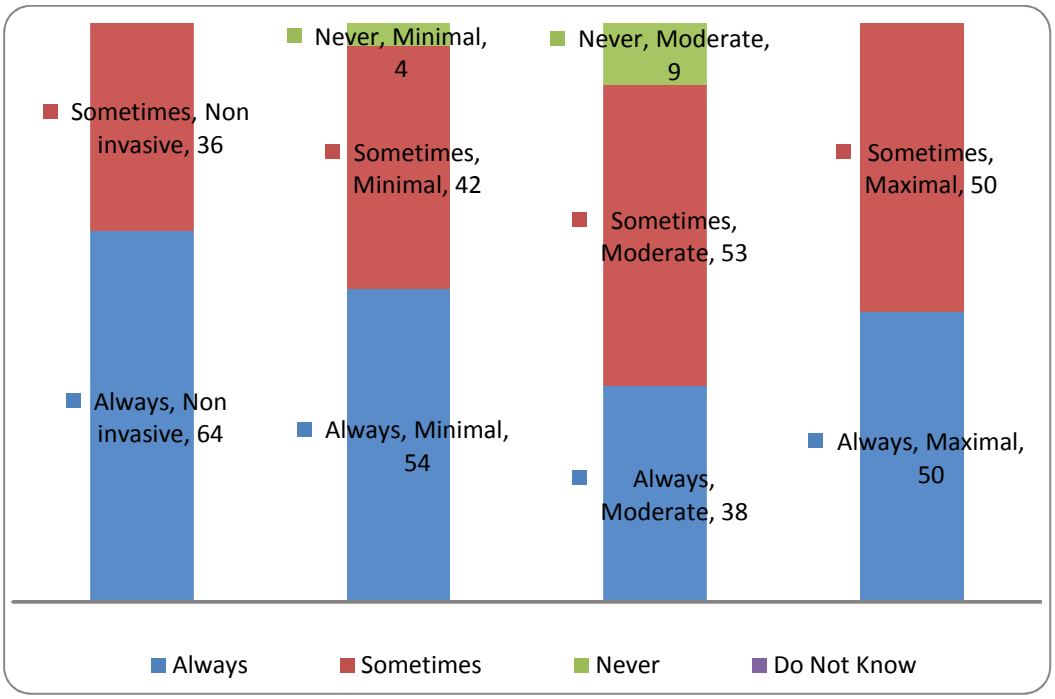


Figure 4.14 MScMed : mean percentage selection

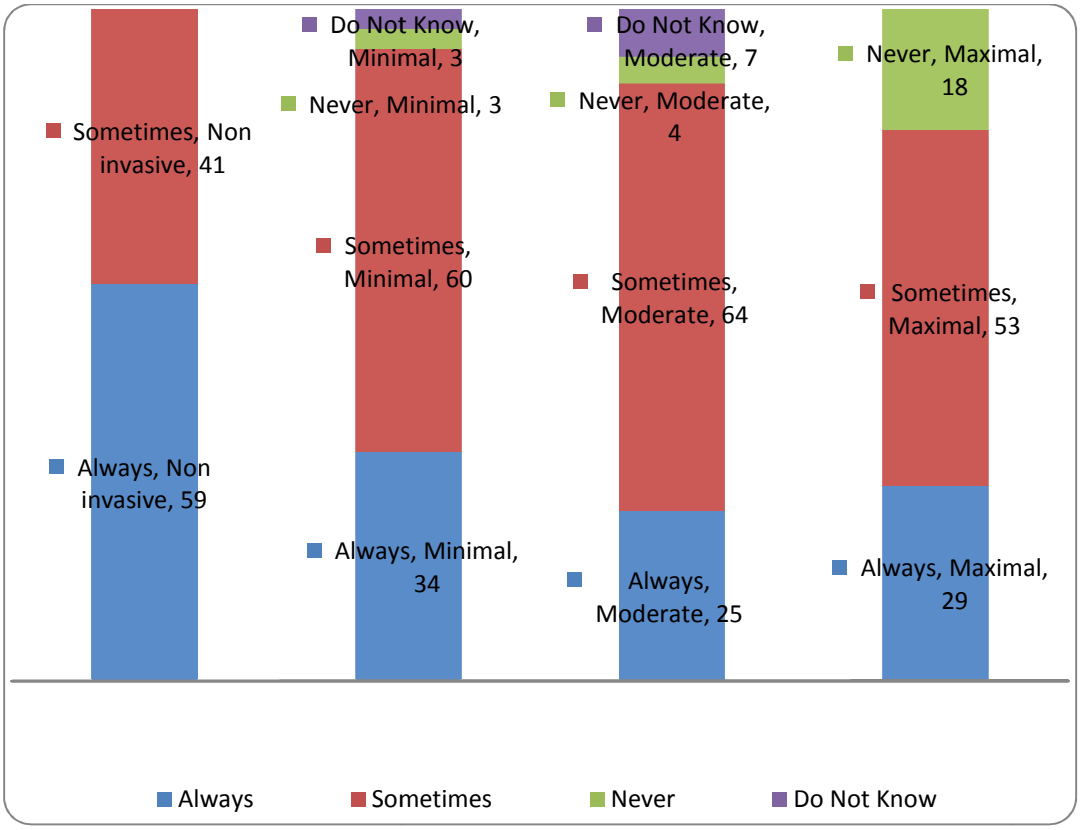


Figure 4.15 Professor : mean percentage selection

moderately invasive procedures, followed consistently by an increase in the ALWAYS selection for the maximally invasive medical procedure category. Combining the ALWAYS and SOMETIMES selections indicate an overall consensus that each medical procedure is potentially lifesaving, some or all of the time.

4.5 Results of Question 2

"Which of the following medical skills should any doctor on duty in the emergency department be able to undertake competently in an acutely ill or injured patient?"

The mean number of participants, per group, answering Question 2 is listed in Table 4.2, as the participants had freedom of choice as to which questions they wished to answer. Any value with a decimal greater than 0.5 was rounded off to the next whole numeral and the opposite with any value with a decimal less than 0.5.

	Non-invasive	Minimal invasive	Moderate invasive	Maximal invasive
GEMP I	23	23	23	23
GEMP IV	24	24	24	23
MMed	36	36	36	35
MScMed	26	26	26	25
Professor	16	16	16	16
Total	**125**	**125**	**125**	**122**

Table 4.2 Mean Number of participants per group answering each invasive group

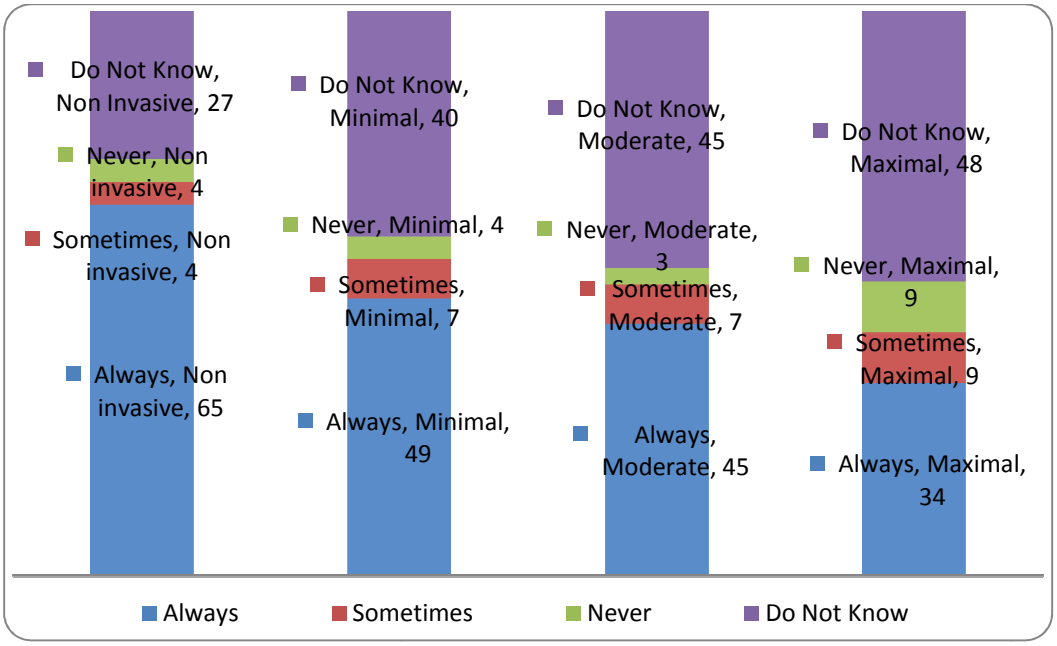


Figure 4.16 GEMP I : mean percentage selection

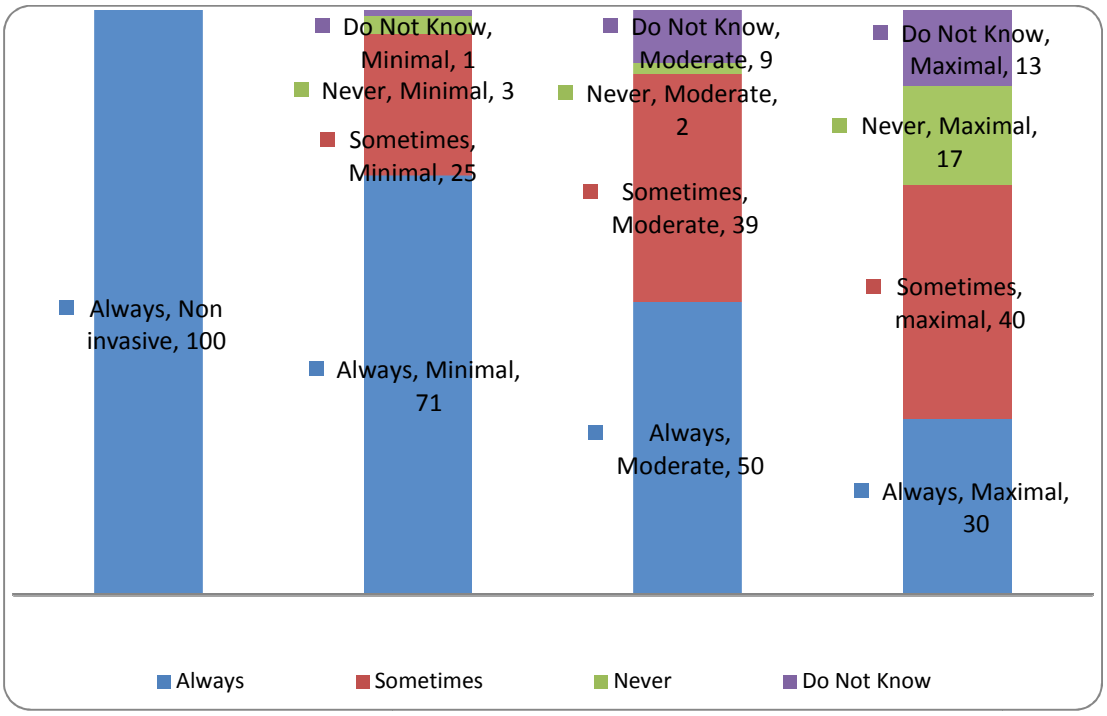


Figure 4.17 GEMP IV : mean percentage selection

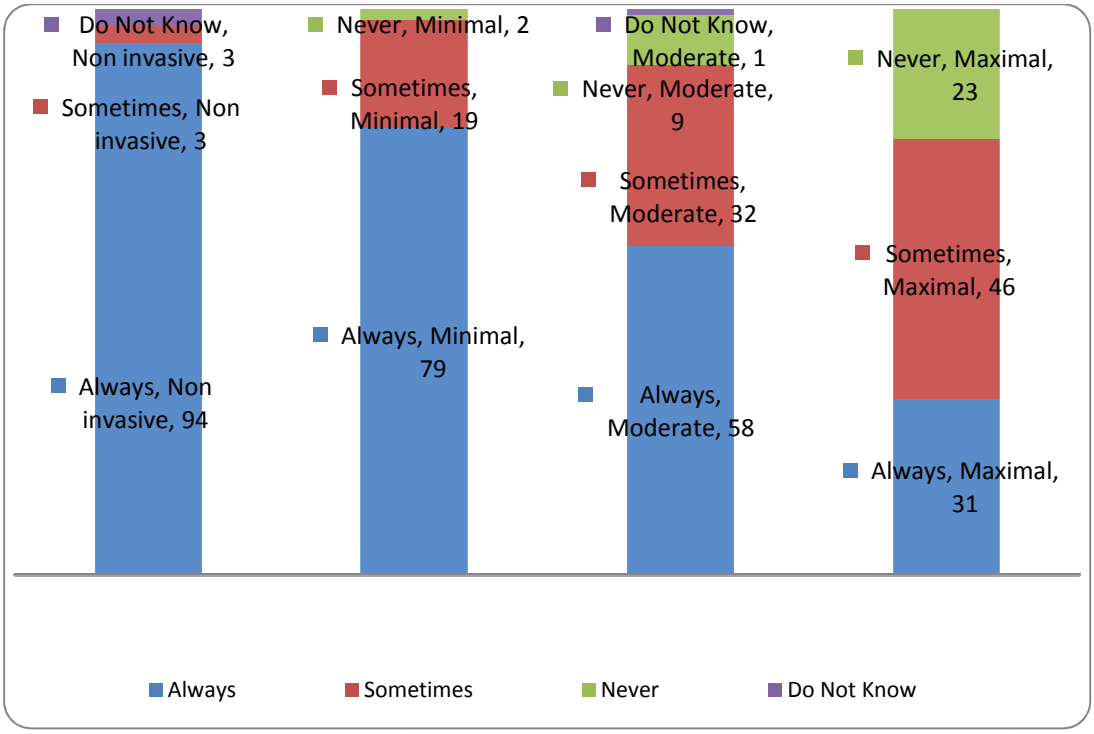


Figure 4.18 MMed : mean percentage selection

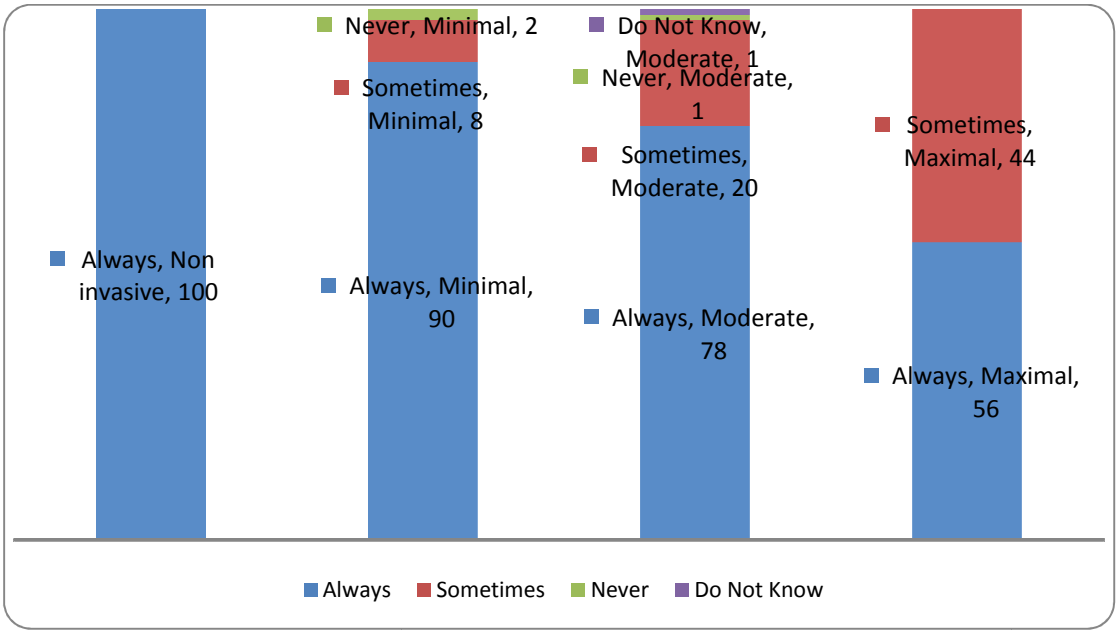


Figure 4.19 MScMed : mean percentage selection

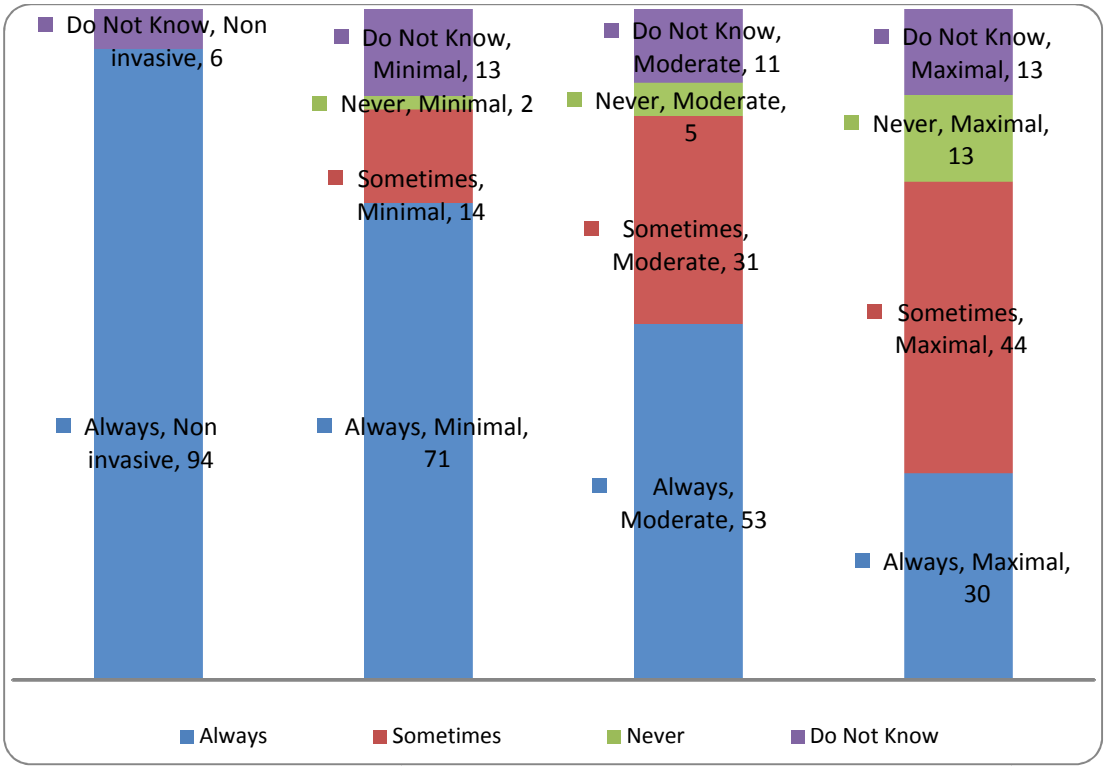


Figure 4.20 Professor : mean percentage selection

When analysing the results of whether a doctor on duty in the emergency department should be able to competently undertake all of the listed medical procedures in an acutely ill or injured patient, an ALWAYS selection would indicate that all doctors on duty in the emergency department should be able to competently perform the medical skill listed at all times. A NEVER selection would likewise indicate that no doctor on duty in any emergency department need ever be competent in the listed medical procedure.

However, the precise meaning of the SOMETIMES selection is once again, in this context, not clear, but may be taken to indicate that not all doctors, only some, on duty in the emergency department are required to have competency in the relevant medical procedure listed, as it would be illogical and impractical to

suppose that it meant a doctor on duty in the emergency department would only be required to be competent in a medical procedure some of the time, but not necessarily all the time.

The results indicate an overwhelming ALWAYS selection for the non-invasive category, which equals selecting endotracheal intubation specifically, in all participant groups, with a subsequent diminishing trend with increasing invasiveness. Correspondingly, with the exception of the GEMP I participant group, the trend was reversed for the SOMETIMES selection, with an increased trend occurring with increased invasiveness, such that the combination of ALWAYS and SOMETIMES denoted an overwhelming agreement that all or some doctors, on duty in the emergency department, were expected to be competent in the various selected lifesaving skills, if SOMETIMES is to be interpreted as such. Amongst the MMed and Professor groups, the trend for the NEVER selection increased with increasing invasiveness of the medical procedures.

Surprisingly, every individual medical skill listed had at least one (1) NEVER selection, which is to be interpreted practically as indicating that not a single doctor on duty in the emergency department had to be competent for any of the skills listed. However, this single repetitive NEVER selection originated from the same GEMP I student for all listed medical skills, except for the maximally invasive group, and it should therefore be considered for exclusion.

A large number of GEMP I participants selected the DO NOT KNOW category for the listed medical procedure groups, which increased with increasing invasiveness. However, due to these students only having just entered medical school at the beginning of 2011, it is understandable that the answers may reflect an ignorance of the actual procedure and their intended medical indication. This is in contrast to the GEMP IV participants, who in their final year of undergraduate study had a lower mean percentage of DO NOT KNOW selections, lower than the corresponding Professor group.

In the Professor group, one participant selected the DO NOT KNOW category for every medical skill, stating in the comment section that he was not a registered clinical specialist.

4.6 Results of Question 3

"Which of the following medical skills do you think should be taught using the newly deceased patient, with permission from the remaining family of the deceased?"

The mean number of participants, per group, answering Question 3 is listed in Table 4.3 as the participants had freedom of choice as to which questions they wished to answer. Any value with a decimal greater than 0.5 was rounded off to the next whole numeral and the opposite with any value with a decimal less than 0.5.

	Non-invasive	Minimal invasive	Moderate invasive	Maximal invasive
GEMP I	23	23	23	23
GEMP IV	24	24	24	24
MMed	36	36	36	35
MScMed	26	26	26	25
Professor	16	16	16	16
Total	**125**	**125**	**125**	**123**

Table 4.3 Mean Number of participants per group answering each invasive group

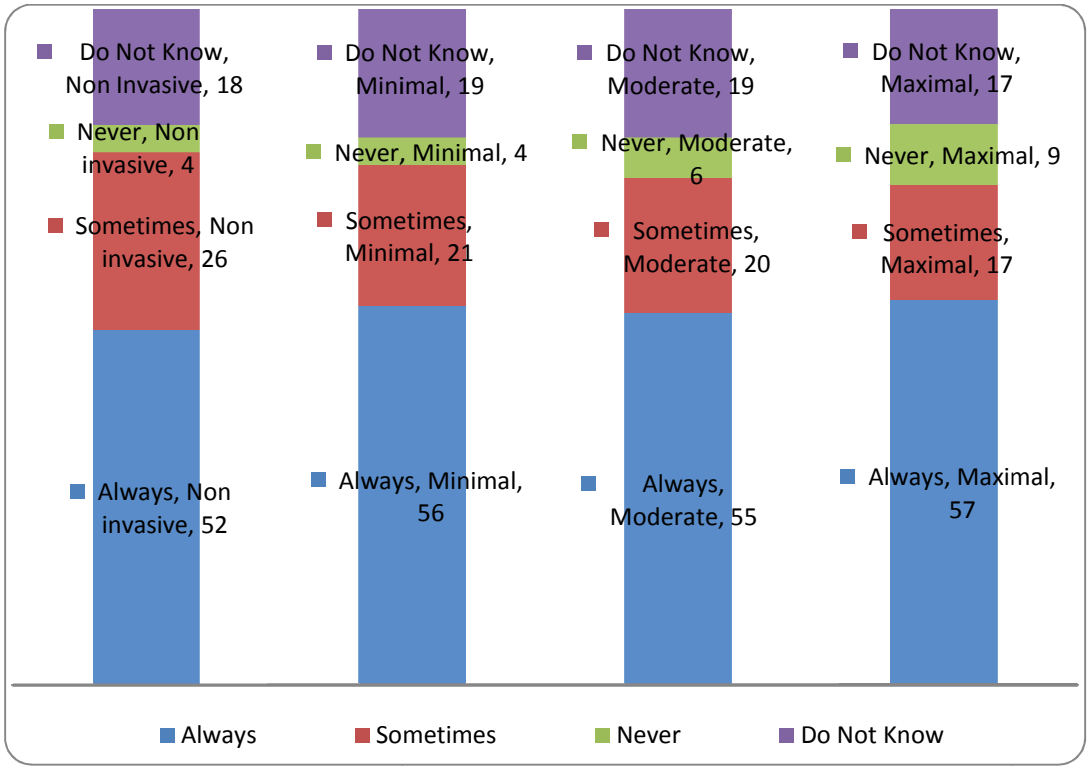


Figure 4.21 GEMP I : mean percentage selection

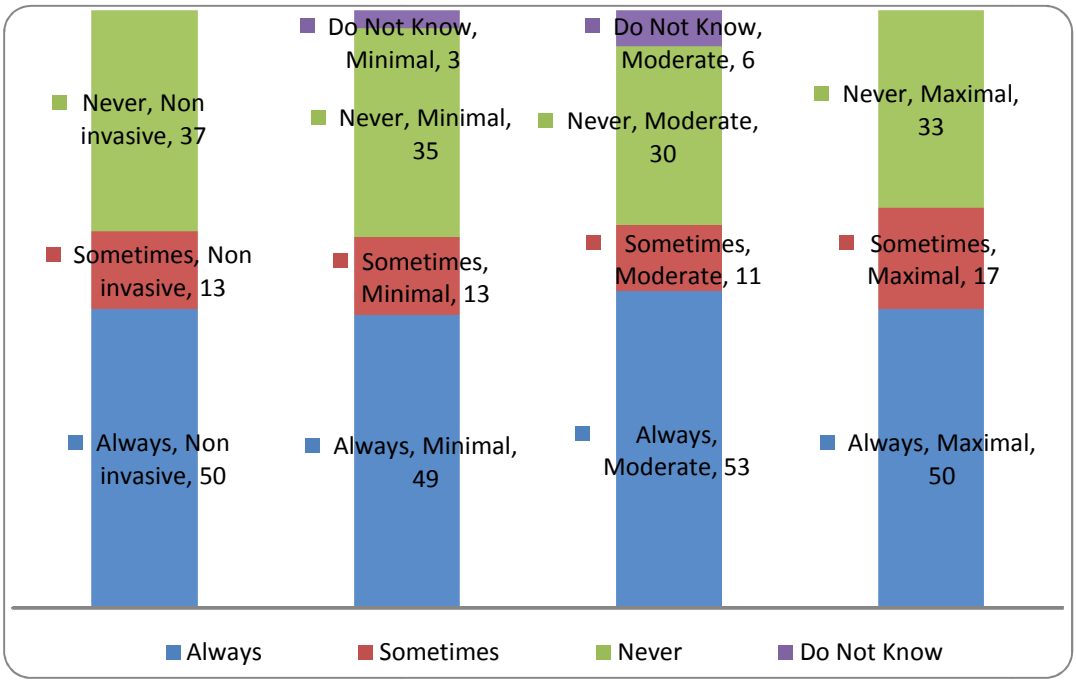


Figure 4.22 GEMP IV : mean percentage selection

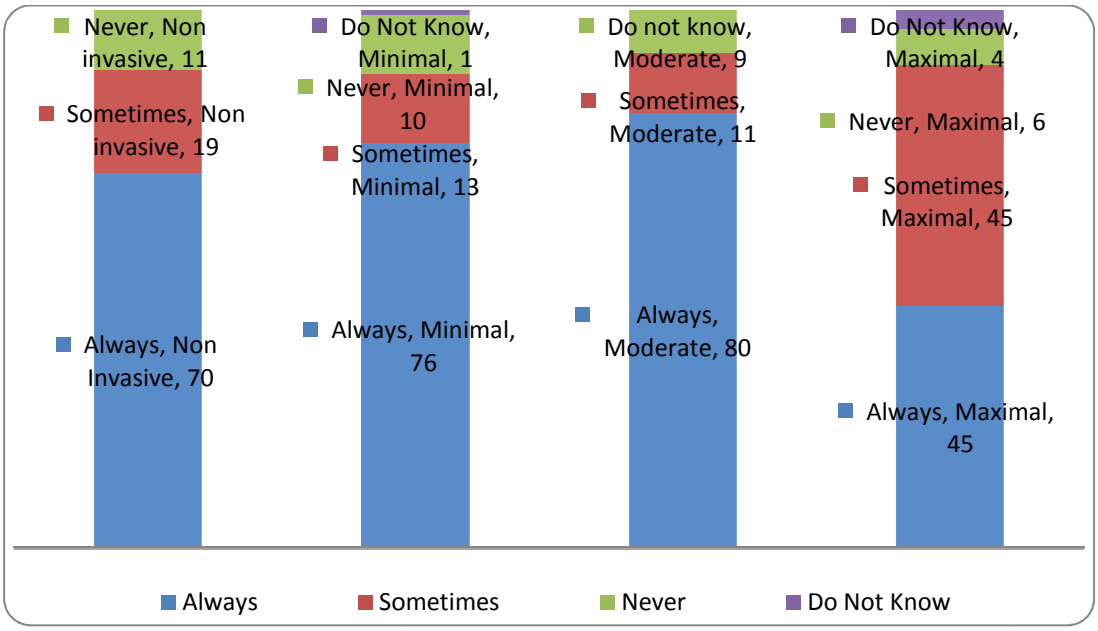


Figure 4.23 MMed : mean percentage selection

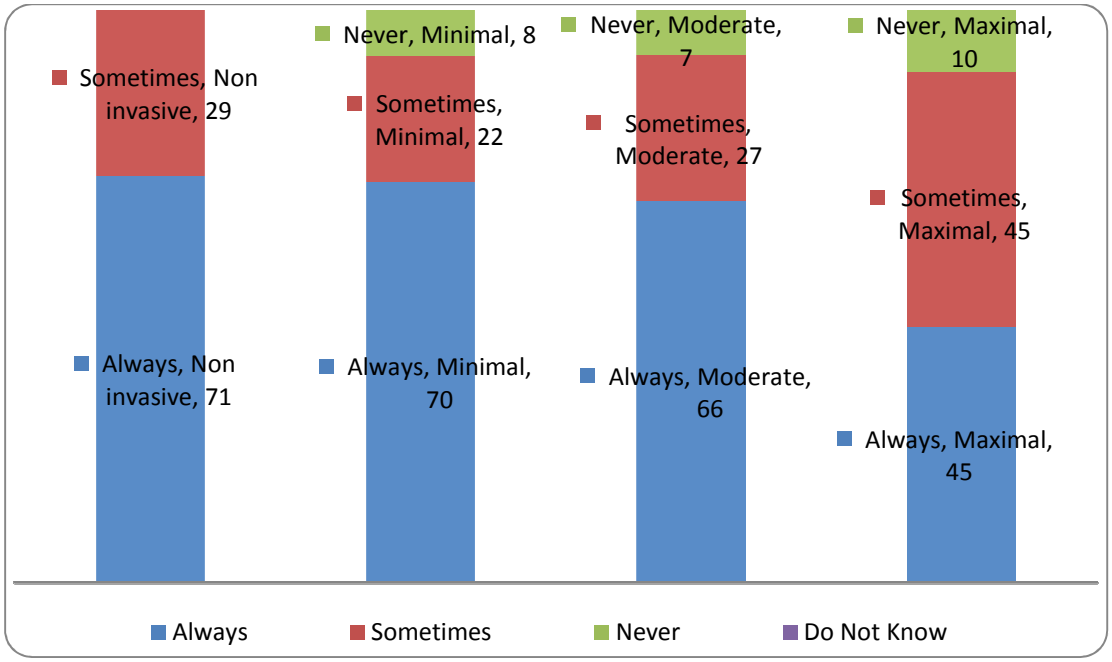


Figure 4.24 MScMed : mean percentage selection

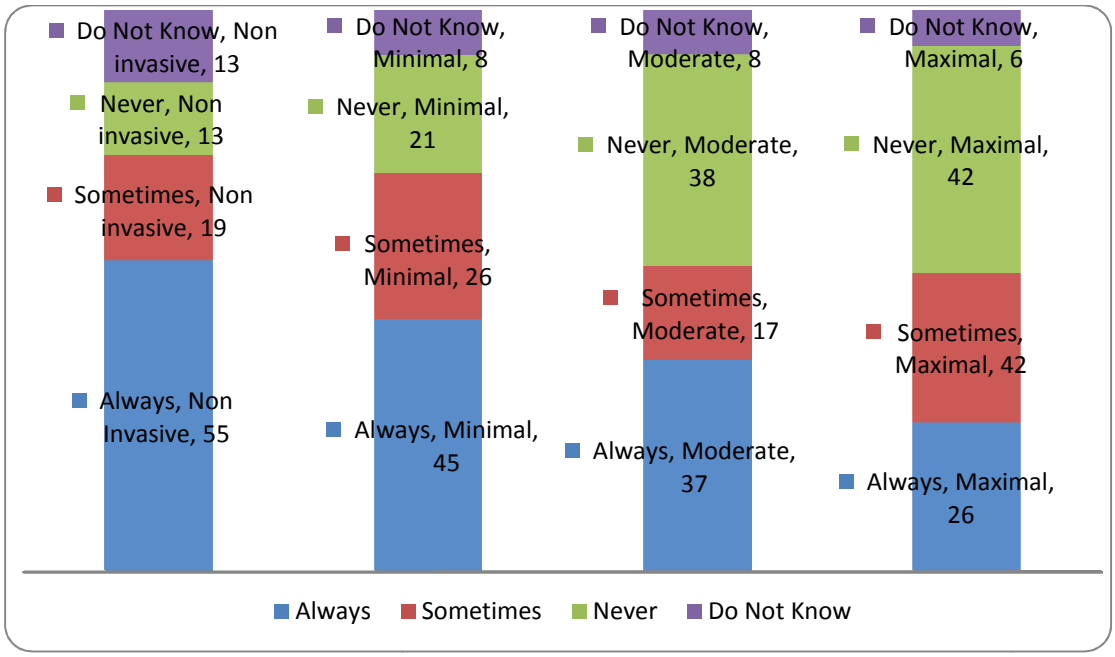


Figure 4.25 Professor : mean percentage selection

As mentioned above, it is not possible to explain what each participant may have meant when selecting SOMETIMES for use of the newly deceased for skills competency training with permission from the remaining family of the deceased. If the selection of SOMETIMES can be taken to imply that use can be made of the newly deceased with permission at certain times, but not at all times, then combining the ALWAYS and SOMETIMES selections results in a favourable opinion for use of the newly deceased with family permission. The ALWAYS category had a mean percentage greater than 50 in all invasive categories with the exception of the GEMP IV minimal invasive selection of 49, the MMed and MScMed maximal invasive selection of 45 and the Professor minimal, moderate and maximal invasive selections of 45, 37 and 26 respectively. The GEMP IV and Professor group had a high NEVER mean percentage selection, ranging from 30-37 and 13-42 for the two groups respectively. The Professor participant group had a clear decrease ALWAYS trend with increasing skills invasiveness, with the reverse for the NEVER selection.

The selection of NEVER amongst the participant groups in all categories of procedure invasiveness may be indicative of some individual participants selecting NEVER for use of the newly deceased for most, if not all procedures, irrespective of whether permission was obtained from the surviving family or not, thus indicating their general disapproval of use of the newly deceased for practical education.

The GEMP I group had the highest DO NOT KNOW selection, with a mean 18.25% across all invasive groups, which is consistent with these students only having just entered medical school at the beginning of 2011, and therefore unsure of many correct practices, polices or protocols.

Age	Gender	Race	Home Language	Religion	Medical School position
<20	Female	White	English	Christian	GEMP I
21-30	Female	Black	Setswana	Christian	MMed
41-50	Male	Coloured	English	Atheist	MScMed
41-50	Male	Indian	English	Islam	Professor
41-50	Female	White	Bulgarian / English	Christian	MMed
41-50	Female	White	English	Christian	MScMed
51-60	Male	White	English	None	Professor
51-60	Male	White	English	Jewish	Professor
51-60	Male	White	English	Christian	Professor

Table: 4.4 Participants with 5 or more NEVER selections for use of the newly deceased for skills competency training, with permission of the remaining family of the deceased.

4.7 Results of Question 4

"*Which of the following medical skills do you think should be taught using the newly deceased patient, without permission from the remaining family of the deceased?"*

The mean number of participants, per group, answering Question 4 is listed in Table 4.5, as the participants had freedom of choice as to which questions they wished to answer.

Any value with a decimal greater than 0.5 was rounded off to the next whole numeral and the opposite with any value with a decimal less than 0.5.

	Non-invasive	Minimal invasive	Moderate invasive	Maximal invasive
GEMP I	21	21	21	21
GEMP IV	22	22	22	22
MMed	34	34	33	32
MScMed	28	27	27	26
Professor	16	16	16	16
Total	**121**	**120**	**119**	**117**

Table 4.5 Mean Number of participants per group answering each invasive group

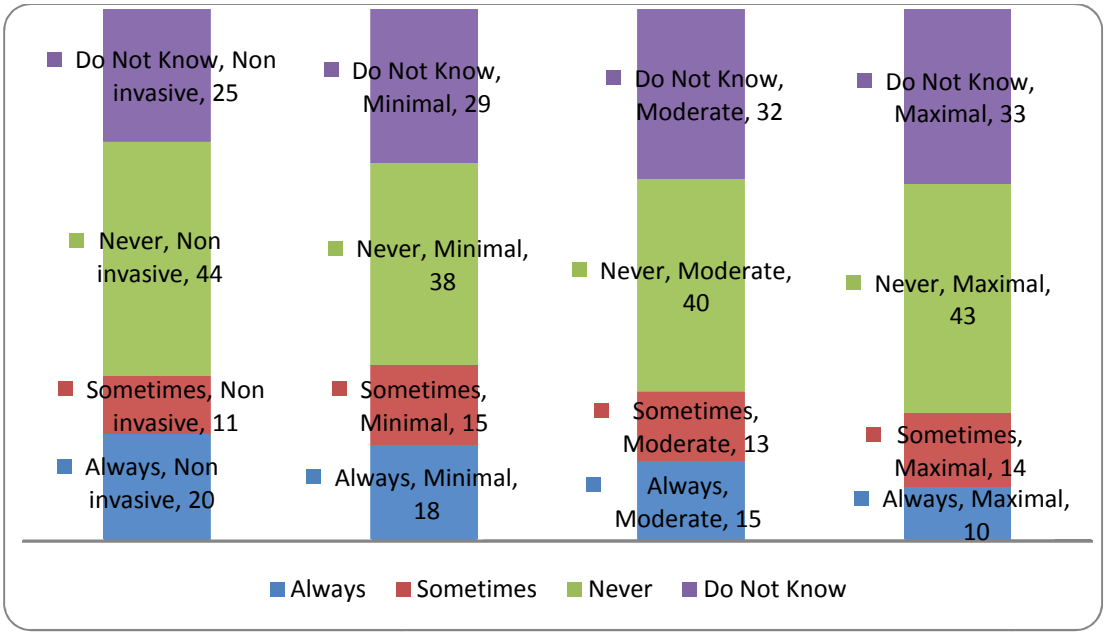


Figure 4.26 GEMP I : mean percentage selection

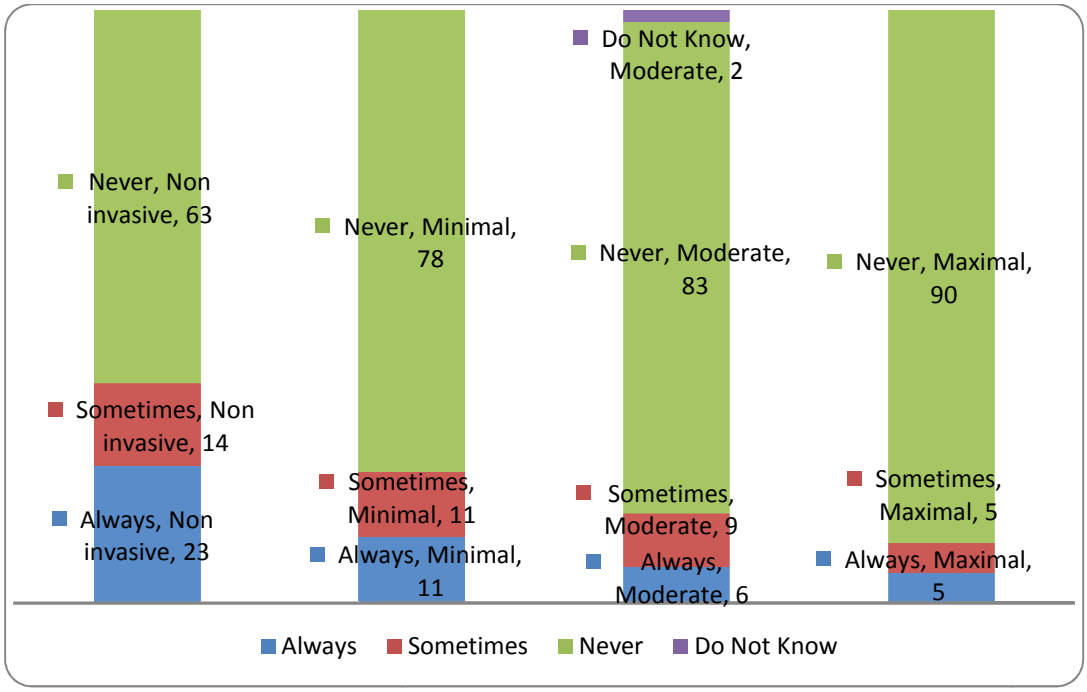


Figure 4.27 GEMP IV : mean percentage selection

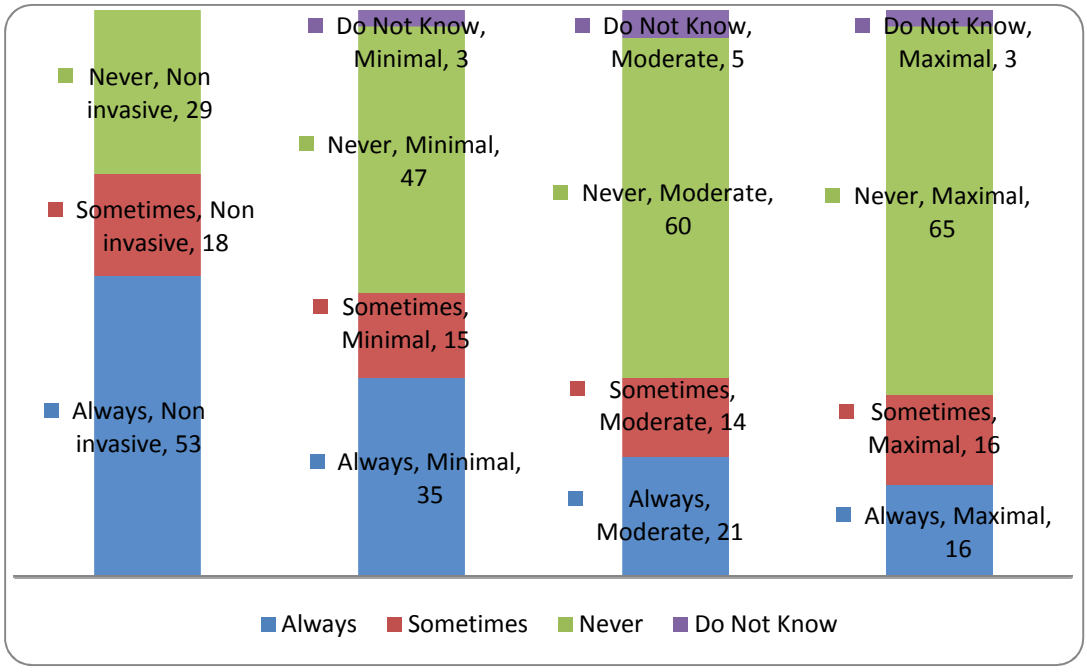


Figure 4.28 MMed : mean percentage selection

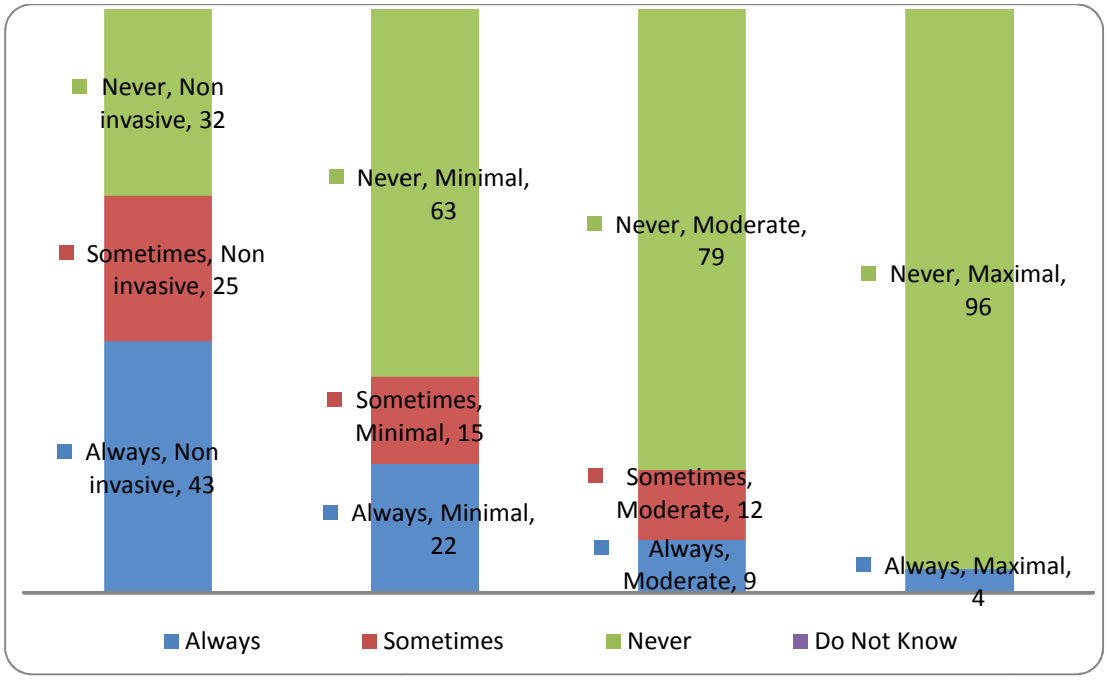


Figure 4.29 MScMed : mean percentage selection

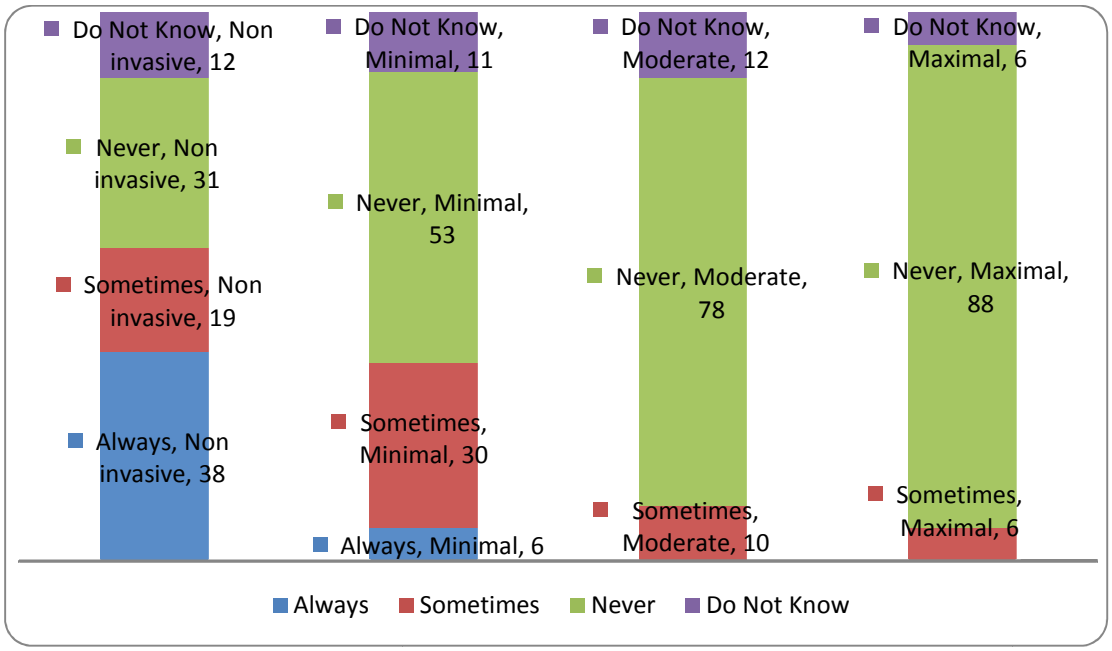


Figure 4.30 Professor : mean percentage selection

As mentioned above, it is not possible to explain what each participant may have meant when selecting SOMETIMES for use of the newly deceased for skills competency training without permission from the remaining family of the deceased. It is possible, that in the absence of surviving family members inside the hospital, when permission may not be immediately available use of the newly deceased may be considered, whereas if the family were present and permission could be immediately obtained, attempts to use the newly deceased may have been abandoned. Likewise, the beliefs of those present in the resuscitation room may influence on which occasions the newly deceased may be considered for skills competency training, thereby resulting in an answer of SOMETIMES for this question.

Similar to the previous question, combining the ALWAYS and SOMETIMES group selections, indicating that use of the newly deceased without permission of the surviving family may occur at certain, but not necessarily at all times, results in a greater than 50% mean percentage approval by the MMed, MScMed and Professor groups for the non-invasive category, namely endotracheal intubation, with results of 71,68 and 57 respectively, but decreases consistently down to 32, 4 and 6 for maximally invasive procedures respectively. This may indicate increasing disapproval with increasing degrees of invasiveness, and consequently the size of remaining sutured external wound. Similarly, with regards to minimally invasive procedures, if the ALWAYS and SOMETIMES selections are combined for the MMed, MScMed and Professor groups, with

mean percentage selections of 50, 37 and 36 respectively, this was an affirmative indication that there is significant approval for use of the newly deceased for non and minimally invasive procedures, without family permission, for lifesaving skills competency training.

Selection of NEVER for use of the newly deceased without surviving family permission is the overwhelming selection opinion amongst all participant groups, with the selection increasing consistently with the level of invasiveness, with exception of the GEMP I participant group. The GEMP I group have a large DO NOT KNOW selection for use of the newly deceased without family permission, with mean percentages ranging from 25 -33, which may be due to possible medical ignorance of the procedure per se including the ethical and legal ramifications involved. As a result, if the GEMP I, NEVER and DO NOT KNOW selections are combined, there is overwhelming disapproval of use of the newly deceased without surviving family permission, with mean percentage disapproval rates ranging from 67-76.

4.8 Results of Question 5

“Have you ever undertaken any of the following lifesaving medical skills on a newly deceased patient, without family permission, in order to acquire or improve your practical competency?”

	ETT	NC	SC	CVA	IO	NP	ICD	VCD	DPL	Thorac
ALWAYS	15	4	0	2	1	1	0	1	0	1
SOMETIMES	30	6	5	8	8	11	4	3	2	3
NEVER	89	122	126	122	122	121	128	126	129	127
DO NOT KNOW	2	2	2	2	3	2	2	3	3	2
TOTAL	137	134	133	134	134	135	134	133	134	134

ETT = endotracheal tube intubation. NC = Needle cricothyroidotomy. SC = Surgical cricothyroidotomy. CVA = Central venous access. IO = Intraosseous venous access. NP = Needle pericardiocentesis. ICD = Tube thoracostomy. VCD = Saphenous venous cut down. DPL = Diagnostic peritoneal lavage. Thorac = emergency thoracotomy.

Table 4.6 Participants having undertaken lifesaving medical procedures on the newly deceased without family permission in order to acquire or improve skills competency.

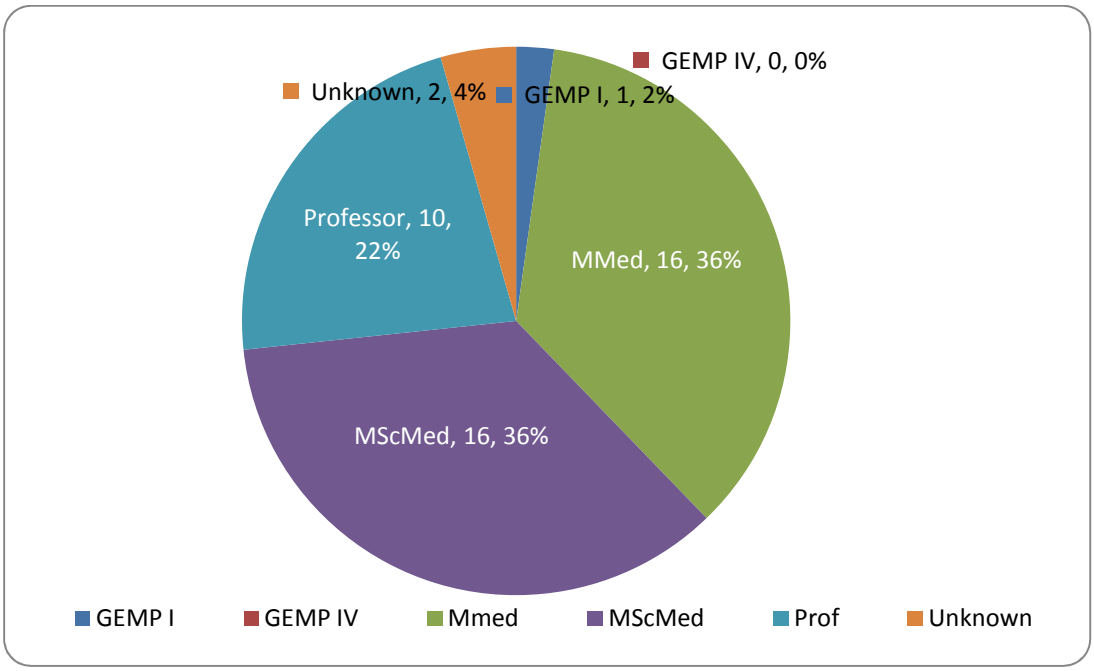


Figure 4.31 Breakdown of participant groups with participants having undertaken endotracheal intubation on the newly deceased without family permission, ALWAYS or SOMETIMES.

The last question, whether any of the participants have, in reality, undertaken any of the listed lifesaving medical procedures on the newly deceased, without family permission, indicates that 45 have undertaken non-invasive endotracheal intubation (45/137) and 4 who have undertaken antero-lateral thoracotomy (4/134). Figure 4.31illustrates that the main participants having undertaken endotracheal intubation without permission originate from the MMed (16/45; 35.6%), MScMed (16/45; 35.6%) and Professor (10/45; 22.2%) groups.

Additionally, the 4 “practice” antero-lateral thoracomoties that were performed were undertaken by two MMed and two MScMed participants. It therefore appears, in direct answer to the question, that a significant number of participants undertake at least non-invasive medical procedures on the newly deceased, while a few may even undertake maximally invasive procedures, all in order to either acquire or improve medical skills competency.

4.9 SUMMARY

This chapter described the results obtained from the participant groups, namely GEMP I and GEMP IV undergraduate medical students, MMed registrars in training, MScMed in emergency medicine postgraduate students and faculty professors who partook of the online internet-based study questionnaire. The demographic data relating to the participants were described, as were the results of the five main questions of the study questionnaire.

CHAPTER 5 Discussion

5.0 Introduction

This chapter will provide a detailed analysis and discussion of the results that were generated by completion of the various participant groups of the study questionnaire. The chapter will attempt to initially analyse the poor overall online questionnaire response rate, followed by an analysis of the demographic data of the participants and finally an analysis and discussion of the results to the five main questions contained in the study questionnaire.

5.1 Survey Response Rate

The number of invitation emails distributed to the participant group of undergraduate and postgraduate students, including all Faculty professors, was 1326, of which only 209 actively linked online to SurveyMonkey.com in order to participate in the study questionnaire. Of the two hundred and nine who linked into SurveyMonkey.com, only 135 participants completed the entire survey, with the remainder selectively leaving out questions of their choice. This poor 15.8% response rate from all members of the Faculty, particularly after great effort was sought to ensure that emails were not sent out during examination periods, vacation periods or any other period of activity that would have been inconvenient to either the undergraduate, postgraduate or Faculty professor groups. On an individual group basis, the MScMed participant group had the highest response of 55%, which is not surprising, as these students have, either

in the passed or present, been a student in the Division of Emergency Medicine whilst studying for the Master in Science in Medicine in Emergency Medicine degree and therefore have an academic relationship with the researcher. Additionally the MScMed postgraduate students are actively involved on a daily basis with the practice of emergency medicine and thus have an interest in the topic being researched. Likewise, one would have thought that the same interest, and thus response rate, would have applied to the MMed registrars in training group, particularly those specializing in the clinical disciplines of emergency medicine, anaesthesia, paediatrics, surgery and critical care medicine where lifesaving skills competency is mandatory to clinical efficiency. Therefore this extremely poor research study response rate of 7% amongst the entire MMed group is unfortunate. This poor response may relate somewhat to the traditionally inadequate MMed completion rate and hence poor related research output and interest amongst registrars, as the majority focus exclusively on successfully completing their clinical fellowship examinations of the specific Colleges of Medicine of South Africa. Once MMed registrars obtain their Fellowship, very little emphasis, if any, is directed towards completing their academic MMed degree.

The response to the survey questionnaire from the Faculty professor group of participants is worthy of further discussion. The response to the initial invitation email elicited a response from 15 participants. After a four week period, a second email was sent eliciting a further 10 participant responses. These senior members of Faculty are responsible for setting the various undergraduate and

postgraduate curricula, for active didactic and clinical training of the medical and nursing students, for reviewing and auditing outcomes, so as to ensure that the product of the Faculty is able to serve society as a competent, skilled professional. It is also the responsibility of these senior members to be actively involved in research, and it would have therefore been anticipated that an invitation to participate in the research of a fellow colleague, particularly concerning a topic which has important relevance to the ethical, practical training of all clinical undergraduate and postgraduate students of the Faculty, would have been accepted. The final 25.5% response from the professor participant group, the senior academic group of the Faculty, must be regarded as inadequate and unacceptable, if only for research sake.

5.2 Demography

5.2.1 Age

The age distribution of participants ranged from 18 years of age to over 60 years of age. The range of ages within each participant group appears consistent, with the GEMP I group ranging from <20 years to 31-40 years, the GEMP IV solely within the 31-40 year group, the MMed registrars ranging from 21 to 50 years, the MScMed ranging from 21 to 60 years and the Faculty professor group ranging from 41 to >60 years. As anticipated, the GEMP I and GEMP IV group, including the MMed registrar participant group, have ages ranging from <20 to 30 years of age, with only one exception in GEMP I whose age is between 31 to 40

year. Likewise, the Faculty professor participant group is found on the older age range from 41 to >60 years, as expected. Of interest is the MScMed participant group, whose ages range the entire spectrum from 21 to 60 years old, excluding the youngest (<20 years) and oldest categories (>60 years). This wide MScMed age range is reflective of the doctors who are on duty in the emergency departments in South Africa, varying from those doctors who are undertaking their compulsory, post-internship “community medical service”, the doctors who direct their proprietary, private emergency department medical practices and finally those who are employed full time or part time in the public hospital emergency departments. The majority of these doctors, particularly those in the older age range, will never have the opportunity of specializing formally in emergency medicine as registrars in training, and thus register for the MScMed in emergency medicine as a means to obtain a postgraduate emergency medicine degree. This wide range of maturity and experience in emergency medicine may have influenced the uniformity with which the MScMed participant group answered the study questions.

5.2.2 Race

The majority of participants (115/187) that responded to the question on race marked “White” as their racial grouping. Those marking “Black” or “Indian” comprised 17.6% and 16% respectively. This is in contrast to the official population review of 2007 (Community Survey. 2007) relating to the Province of Gauteng, which is the official catchment area for students enrolling at the

University of the Witwatersrand, and which indicates an official racial distribution in Gauteng of 75.2% Black, 18.4% White, 3.7% Coloured and 2.7% Indian or Asian. This official census figure is used as a guide for student enrollment equity. No conclusions can be drawn from these racial participation figures, as the researcher had no access to information concerning undergraduate student email distribution, the racial makeup of the distribution list, nor information concerning which emails reached their intended recipients and which were returned as "undeliverable". The significance, however, of race in the use of the newly deceased in skills competency training is highlighted by studies undertaken in the USA (Benfield, Flaksman and Lin, et al. 1991; Alden, Ward and Moore, et al. 1999; Manifold, Storrow and Rogers, et al. 1999; Hergenroeder, Prator and Chow, et al. 2007) which note that there may be racial and cultural differences in attitudes towards these postmortem practices. In a study undertaken by Benfield et al regarding permission for the use of newly deceased infants for intubation skills training, proportionately more Whites than Black families (83% versus 33%) were likely to grant permission. Likewise Hergenroeder et al reported that Whites were 4.6 times more likely than non-Whites to permit post mortem skills training on themselves. These international studies may therefore shed possible light on the racial participant response, all other factors being equal, which demonstrates a ratio of White to Black and Indian participation of 3.4 and 3.8 respectively, with non participation in the survey possibly representing a form of

negative veto of use of the newly deceased for skills competency training irrespective of the nature of the skill.

5.2.3 Home Language

The University of the Witwatersrand is an English medium university with all official academic occurrences being undertaken in English. With the study participant primary home language being predominantly English (71.6%), it is assumed that the participants would have had no language barrier to understanding the email invitation to participate and the statement that linking to the survey online would be regarded as implying tacit informed consent. Likewise, fluency in English would have been significant for the GEMP I medical students who, only recently having been admitted to medical school, would have been unfamiliar with many, if not all, of the medical procedures listed in the study and due to the time restraints during study online completion, may have had to derive the nature of the medical procedure from the descriptive name in English, for example, intraosseous access or central venous cannulation.

5.2.4 Religion

The large number of religious denominations selected, and added in the comments, by participants, together with the small number of participants involved in each religious group, made it impractical, in this ethics research study, to attempt to ascertain if there existed a relationship between the participant's religious affiliation and the answers to the various questions

regarding use of the newly deceased for skills competency training, particularly then the ten listed lifesaving medical procedures were grouped into four groups relative to invasiveness, as defined earlier.

5.3 Question 1:

“Which of the following medical skills would you regard as lifesaving in nature, in the acutely ill or injured patient?”

The ten listed medical procedures contained in the study questionnaire were all selected for their lifesaving potential in acutely ill or injured patients in the emergency department. This question was based on the premise that it would be unrealistic to request study participants from the various Faculty groups to decide whether the newly deceased should be used for lifesaving competency skills, if the participant did not have adequate theoretical and practical knowledge of the listed medical procedures, their lifesaving potential and level of invasiveness.

It must be stated from the outset, that the question posed was worded in such a manner as to enquire whether a particular procedure would have the potential to be lifesaving if it were used for the correct medical indication in an acutely ill or injured patient. The question never meant to enquire what the realistic success rate of a particular procedure was when performed on a patient in need, because not ever procedure, when undertaken in the critically ill or injured will be successful in saving the patient’s life, either directly or indirectly, in combination with additional resuscitative measures. As a result, each of the medical

procedures listed in the study questionnaire was initially selected because each one is lifesaving in nature when performed in the appropriate life threatening situation. These indications should be known to all medical graduates, but not necessarily undergraduate medical students.

As an example, needle cricothyroidotomy, surgical cricothyroidotomy, needle pericardiocentesis and emergency antero-lateral thoracotomy are always undertaken in the emergency department as lifesaving emergency medical procedures, with the primary intent being to save the patient's life directly with the procedure. Alternatively, endotracheal intubation, central venous cannulation and intercostal tube insertion are frequently but not necessarily directly lifesaving in nature when performed in the acutely ill or injured. Peritoneal lavage can be undertaken as a lifesaving procedure in hypothermic patients, but this is very infrequent and its common use is for diagnostic purposes. Therefore, the most appropriate answers to the various invasive groups would have been SOMETIMES for the non-invasive group which contained only endotracheal intubation, ALWAYS for the maximally invasive group which contained emergency thoracotomy and a combination of ALWAYS and SOMETIMES for the minimally and moderately invasive groups. NEVER was certainly not a correct medical option for any of the listed procedures or invasive groups.

The GEMP I participants had an average 52% DO NOT KNOW for the minimally, moderately and maximally invasive groups for this question, displaying an anticipated lack of medical knowledge of these various medical procedures,

having only just been admitted to the medical programme. The low 4% and 5% NEVER selection for the moderate and maximal invasive groups respectively, indicated that almost half of the GEMP I participant group regarded the listed procedures as either ALWAYS or SOMETIMES lifesaving in nature, thereby displaying sufficient knowledge of the medical procedures to make an informed decision.

The results of the GEMP IV students, in their last year of undergraduate training and having already undergone emergency medicine, trauma and anaesthesia training in their third GEMP year, all sections of which were examinable, had an overwhelming ALWAYS or SOMETIMES response for all four categories of medical procedures.

The selections of the postgraduate MMed, MScMed and Faculty professor groups were predominantly ALWAYS and SOMETIMES, with a minor NEVER scattered selection. The 18% NEVER selection in the Faculty professor group for maximally invasive procedures may have been based on the success of this procedure to prevent mortality in the acutely ill or injured, instead of its lifesaving potential and indication. In clinical practice, emergency thoracotomy may be undertaken in severely shocked patients, when full resuscitative procedures have not proved successful, for access to the heart for internal cardiac massage or for cross clamping of the aorta to stem exanguinating bleeding. Success of emergency thoracotomy in these critical situations is not frequent and this may

have prompted the NEVER selections from individuals in the Faculty professor group. However, potentially, the procedure is always lifesaving in nature.

This possible misinterpretation of the nature of the lifesaving potential of the listed medical procedures may have accounted for the SOMETIMES selection by being chosen by various participants instead of ALWAYS, which if valid, may influence the actual percentages of ALWAYS and SOMETIMES relating to this question. However, as the ALWAYS and SOMETIMES selection groups have been combined, the overall result is not adversely affected in context.

In summary, the selections by survey participants indicate a fair medical knowledge of the listed medical procedures, besides those in the GEMP I group who substantially admitted that they “DO NOT KNOW”.

5.4 Question 2:

“Which of the following medical skills should any doctor on duty in the emergency department be able to undertake competently in an acutely ill or injured patient?”

This pivotal question, which forms the basis of emergency medicine, can only reasonably be answered by selecting ALWAYS for each listed procedure. If a medical doctor is on professional duty in an emergency department, with the responsibility of resuscitating and stabilising every acutely ill or injured patient that may present, incompetence in any lifesaving procedure may result directly or indirectly, not only in medical complications, but in the patient’s death. Iserson (1995) offers some notable examples of incompetent practice during

resuscitation when he states that such practice can lead to inadvertent lung collapse, puncture of arteries, introduction of air into the circulation and laceration of veins. Taking cognisance of the actual situation in many of South Africa's emergency departments, regarding the various levels of knowledge and skills in emergency medicine that many doctors on duty may have, the goal, as asked in Question 2, must be to have knowledgeable doctors on duty who are competent in lifesaving medical procedures, without compromise.

The GEMP I participants, similar to question 1, display a mean 40% and 48% for the DO NOT KNOW and ALWAYS selections respectively across all invasive groups, which indicates that the GEMP I participants are broadly divided into those that do not know and those who choose ALWAYS, with a few who selected SOMETIMES or NEVER. It is noteworthy that the ALWAYS selection percentage is 65 and that this figure diminishes with increased invasiveness down to 49, 45 and 34 for minimal, moderate and maximal invasive groups respectively. Similarly, as the ALWAYS selection diminishes, the DO NOT KNOW selection percentage increases from an initial 27 for non-invasive to 40, 45 and 48 for minimal, moderate and maximal invasive groups respectively. Therefore, for these newly admitted undergraduate medical students, competency in medical procedures had to be ALWAYS or DO NOT KNOW, but there was very little room for NEVER or SOMETIMES, which is logical in clinical medicine for any doctor undertaking medical procedures in his/her responsible specialty.

The GEMP IV participants indicated a 100 percent required competency for the non-invasive group, which represents endotracheal intubation, diminishing to a percentage of 30 for maximally invasive emergency thoracotomy. Similarly, as the ALWAYS selection diminishes, the SOMETIMES selection percentage increased from an initial 25 for minimal invasive to 39 and 40 for moderate and maximal invasive groups respectively. As stated above, it is not clear what a participant meant when SOMETIMES was selected with regard to a doctor on duty being competent for a particular medical procedure. Logically, it is difficult to equate SOMETIMES with a doctor being competent at one occasion and not competent on another. Without really knowing what the participant meant, one way to interpret SOMETIMES in this context is to propose that not all doctors on duty in an emergency department have to be competent in all lifesaving medical procedures, as long as at least one of them is, so that adequate management may be provided when required. This naturally would pose a problem if only one doctor were to be on duty, as occurs in South African private emergency departments, for financial reasons. The 17% GEMP IV NEVER selection for the maximally invasive, emergency thoracotomy, including the 13% DO NOT KNOW selection, may relate to teaching received from the Faculty trauma surgeons regarding who should be competent in emergency thoracotomy.

Similar to question 1, the selections of the postgraduate MMed, MScMed and Professor groups were predominantly ALWAYS and SOMETIMES. Similar to the undergraduate GEMP participants, the non-invasive, endotracheal intubation

group had the highest ALWAYS selection, with selections of 94, 100 and 94 for the MMed, MScMed and Professor groups respectively, but diminished down to 31, 56 and 30 respectively, as the degree of invasiveness increased. The diminished ALWAYS selection was replaced with an increasing SOMETIMES selection, similar to the GEMP IV participants. The 23% NEVER selection for maximally invasive, emergency thoracotomy by the MMed registrar participants is interesting as it is difficult to fathom out why these participants would “never” want a doctor on duty in the emergency department to be able to competently undertake an emergency thoracotomy if it was indicated as a lifesaving procedure, and why these participants chose NEVER rather than SOMETIMES. In fact, the SOMETIMES and NEVER selections are in conflict with the expert opinion derived from the Society for Academic Emergency Medicine in the USA (Wang, Quinones et al. 2008) which includes thoracotomy as a core skill for the practice of emergency medicine, and hence practiced by emergency medicine programmes (Fourre 2002) when possible.

In summary, the overall majority of participants from all groups selected ALWAYS for non-invasive, endotracheal intubation when considering medical skills competency by on duty doctors in the emergency department, with loss of majority ALWAYS selection in all groups, except the GEMP I, when considering maximally invasive, emergency thoracotomy competency. Similarly, as the ALWAYS selection decreased, there was increased selection for the SOMETIMES category, thus indicating that doctors on duty in a emergency

department are expected to be competent for non-invasive endotracheal intubation ALWAYS, but not necessarily so as the lifesaving procedures become more invasive and possibly technically challenging.

5.5 Question 3:

"Which of the following medical skills do you think should be taught using the newly deceased patient, with permission from the remaining family of the deceased?"

Having ascertained that the majority of participants agree that a doctor on duty in the emergency department, responsible for resuscitating and stabilising acutely ill or injured patients that may present, is expected to be ALWAYS or SOMETIMES competent, question 3 initiates the ethical aspect of the research study questionnaire, which is to ascertain the opinions of various groups within the Faculty regarding the use of the newly deceased in lifesaving medical skills competency training, specifically whether these listed skills should be only be taught if permission is obtained from the remaining family.

In view of the fact that a direct question was not asked regarding whether use can be made of the newly deceased for skills competency training under any or all circumstances, those participants selecting NEVER for all invasive groups in questions 3 and 4, would be regarded as being negatively disposed towards such use at all. Only 9 participants were found with 5 or more NEVER selections, with only 2 candidates selecting NEVER for all listed medical procedures.

The rest of the participants, except those who consistently selected DO NOT KNOW, and those who always selected NEVER, selected other options for various medical procedures. This indicates that the overwhelming majority of study participants are not averse to the use of the newly deceased for skills competency training, as long as it is undertaken within certain parameters and limitations.

A mean 55% of GEMP I, 51% of GEMP IV, 68% of MMed, 63% of MScMed and 41% of Faculty professors selected ALWAYS across all invasive groups, which if supplemented by the SOMETIMES selection, indicates a consistent large majority who approve of the use of the newly deceased for skills competency training with permission of the remaining family. It is interesting to note, that although the ALWAYS selection regarding competency by an on duty doctor in the emergency department decreased with skill invasiveness, selection of ALWAYS for use of the newly deceased for skills competency training, once permission had been obtained, was consistent irrespective of the degree of invasiveness. This indicates that as long as the remaining family of the deceased permitted the requested training, irrespective of its nature and level of invasiveness, there is majority agreement that such training may ALWAYS be undertaken.

The mean SOMETIMES selection across all invasive groups for all participants is 22%. This significant selection requires analysis regarding its meaning. One would expect that if the remaining family permitted use of the newly deceased for

skills training, particularly if one had gone to the trouble of requesting permission, that skills training would ALWAYS be undertaken as requested, and not only SOMETIMES. The answer may relate, not necessarily to issues with the family, but to the willingness or ability of the trainee to perform the permitted medical procedures on the newly deceased, particularly if the trainee has been involved in the prior resuscitation of the newly deceased patient. This may be more relevant if the trainee has had previous interaction with the patient, before death.

The largest NEVER selection originated from the GEMP IV participants with a NEVER mean selection of 34% across all invasive groups. This was followed by the Faculty professor group with a mean 29% NEVER selection and the single highest 42% NEVER selection for the maximally invasive, emergency thoracotomy group. The large mean 34% NEVER selection across all invasive groups by the GEMP IV participants is noteworthy as it conflicted with the mean 51% and 14% ALWAYS and SOMETIMES selection respectively. Why this particular group of participants had such a high NEVER selection is not known, as no GEMP IV participant was amongst those who chose NEVER on five or more occasions. Further research is definitely required.

In summary, if permission was obtained by the newly deceased's surviving family, the overall majority of participants would ALWAYS condone use of the newly deceased for skills competency training, irrespective of the degree of invasiveness involved.

5.6 Question 4:

“Which of the following medical skills do you think should be taught using the newly deceased patient, without permission, from the remaining family of the deceased?”

Use of the newly deceased for skills competency training without obtaining permission from the surviving family presents the main arguments in the literature, with, on the one hand, those who insist that without obtaining family permission, use of the newly deceased for any purposes, including skills competency training, is unethical and possibly illegal and those who contended that there is no ethical requirement that mandates family permission.

The GEMP I participants recorded the highest mean DO NOT KNOW selection across all invasive groups. The mean values were 44%, 40%, 18% and 30% for the four study questions respectively. Therefore, although 44% did not know whether a listed medical procedure was lifesaving in nature, 40% equally did not know whether a doctor on duty in the emergency department should be competent for the same “unknown” listed medical procedures. However, only 18% could not decide whether one could use the newly deceased for skills competency training with remaining family permission, indicating that no matter what the nature of the medical procedure was or whether a doctor need to be competent whilst on duty or not, once the family had given permission for training on their newly deceased family member, it was easier to make a commitment,

hence the diminished GEMP I, DO NOT KNOW figure. When use of the newly deceased, without family permission is presented in question 4, the level of indecision rises from 18% to 30%. This indecision is a dilemma not only for the GEMP I participants, but may likewise be a dilemma for other groups of medical trainees, such as nursing and EMS students, who may not know whether it is ethical or not to practice on the newly deceased, without family consent, because they have never been appropriately informed during their training. This may lead to hierarchal pressure from senior staff to practice on the newly deceased and possibly leave them with feelings of having undertaking something fundamentally disrespectful and unethical, yet for a worthy cause. The GEMP I, DO NOT KNOW selection of indecision is therefore a vital piece of research that must be appropriately considered within the teaching curriculum goals.

Likewise, it is of note that a mean 30% of the GEMP I participants selected either ALWAYS or SOMETIMES for use of the newly deceased without surviving family permission, with the remaining 40% selecting NEVER, the latter being the lowest mean NEVER selection amongst all the participant groups. The GEMP I participant group was thus divided into three distinct groups, the 30% who were indecisive concerning what selection was correct, the 30% who were ALWAYS or SOMETIMES prepared to use the newly deceased for skills competency training and the final 40% who judged practice on the newly deceased, without family permission, as primarily wrong and selected NEVER.

The GEMP IV participant group had an overwhelming NEVER response for use of the newly deceased without family permission. What is noteworthy is the increased NEVER selection with increasing invasiveness from 63% to 90%, indicating that 27% of participants favour use of the newly deceased, without family permission, for non-invasive procedures, 22% for minimally invasive procedures, diminishing to 10% for maximally invasive procedures. This implies that there is not a firm principle against use of the newly deceased for skills competency training if family permission is not obtained ipsi facto, but that use of the deceased without family permission seems to depend on the degree of invasiveness. This divides the NEVER selection participants into two groups, namely those that are firmly against use of the newly deceased for any skills competency training if remaining family permission is not obtained, and those whose objection for use of the newly deceased without family permission is related to the level of invasiveness of the intended training procedure. This is evident as the ALWAYS and SOMETIMES selection diminishes from a selection of 37% for non-invasive procedures down to 10% for maximal invasive procedures.

The GEMP IV participants who fall within the initial 63% NEVER selection and are thus principally against use of the newly deceased without family permission, may concur with those who moralize that this is the only ethical course to follow, if one is going to make use of the newly deceased for skills competency training purposes. Individuals such as Sperling (2004) believe that it is an "*ethical*

imperative to enable the next-of-kin to make these decisions on behalf of the recently deceased" whilst Goldblatt (1995) states that "*medical techniques on the newly deceased without a valid consent is unlawful and unethical".* Additionally, institutions and organisations such as the American Medical Association, American Heart Association and the Society for Academic Emergency Medicine, all USA based, strongly promote prior family permission before use is made of the newly deceased for any form of skills competency training.

Alternatively, those 27% of GEMP IV participants whose objection to use of the newly deceased without family permission is related to the level of invasiveness of the intended training procedure, may have a number of reasons for their NEVER selection and one can only speculate as to the reasons. Alden et al, (1999) comments that there is a possibility that the visible remnant of any invasive procedure at the funeral may influence the family consenting process, and if this was so, it could likewise also be relevant to this group of GEMP IV participants, who may be comfortable in undertaking minimal and non-invasive procedures in the newly deceased without family consent, but may feel uneasy doing so with moderately or maximally invasive procedures. It is interesting to note, that in many of the publications promoting obligatory family permission prior for use of the newly deceased, no comment is made regarding the degree of invasiveness of the training procedure, as one would imagine that all procedures would require family permission, irrespective. However, in those publications where the necessity for family permission is counter argued, most of the intended

skills competency training procedures are either minimally or non-invasive in nature. It is therefore quite plausible that this group of GEMP IV participants, are in line with those who belief that it is not necessary to obtain obligatory family permission for use of the newly deceased, if the skills competency training involves minimally or non-invasive procedures. Additionally, their promotion of family permission prior to use of the newly deceased, with increasing invasiveness, namely moderately and maximally invasiveness, may in fact be similar to those of the "*non family permission*" proponents, such as Iserson (1993) who states " *there is neither a legal nor a moral basis for requiring relatives' consent for minimally invasive or non-invasive post-mortem procedures*", implying that this may not be so for moderately or maximally invasive procedures and Ashby (1996) who, regarding emergency thoracotomy training on the newly deceased declares; "[*this] procedure is outside the terms of this debate*". Lastly, the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioural Research (1981) stated that every reasonable effort should be sought to obtain consent from the next-of-kin when physicians go "beyond the normal scope of teaching". Therefore, if minimally and non-invasive skills competency training, namely endotracheal intubation, is classified as "normal training", whilst moderately and maximally invasive skills competency training, namely antero-lateral thoracotomy, is classified as "beyond normal training", then it would promote different

requirements regarding the need to obtain family permission, based on the degree of invasiveness.

An additional explanation for the GEMP IV participants' selection of NEVER for skills competency training without family permission, relative to the degree of invasiveness, could be related to the premise of "Don't Ask, Don't Tell" (Goldblatt 1995). The "Don't Ask, Don't Tell" philosophy is the practice, by its proponents, of not asking permission of the newly deceased's surviving family regarding skills competency training, and once completed, not to inform the family, as it was believed that there was nothing to be positively gained by providing such post mortem information to a family that is usually grieving the loss of a beloved family member. This form of "concealed" skills competency training is routinely practised internationally in many emergency medicine training programmes (Ginifer and Kelly 1996). Therefore, the smallest amount of external evidence remaining on the newly deceased, post skills competency training, the easier it is to conceal that training was ever undertaken. This is one reason why the debate is centred on the practice of non and minimally invasive medical procedures, because they are the most frequently and regularly practised.

Therefore, this group of GEMP IV participants, who are in their final year of undergraduate medical training, may have chosen the need for family permission, based on the degree of invasiveness, on how easy it was to conceal the skill from the family and others, with non-invasive procedures requiring no family permission but with maximally invasive procedures demanding obligatory

family permission. This form of practice, and the ideology behind it, is condemned by many authors as secretive, dishonest and shameful and likely to cause public mistrust of the medical profession (Goldblatt 1995; Rakatansky, et al. 2002; Sperling 2004; American College of Emergency Physicians 2011) and may possibly be one of the reasons why endotrachal intubation in the newly deceased is prohibited by the British Medical Association, (Denny and Kollek 1999), except in cases of severe craniofacial injuries, and similarly why the practice is discouraged by the Norwegian Medical Association Ethics Committee (Sperling 2004).

The results of the postgraduate MMed, MScMed and Faculty professor groups follow the same trend of the abovementioned GEMP IV participant group. Each of the participant groups have a NEVER selection for the non-invasive (endotracheal intubation) group of 29%, 32% and 31% for the MMed, MScMed and Professor participants respectively, increasing with the degree of invasiveness to a NEVER selection of 65%, 96% and 88% respectively for the maximally invasive (emergency thoracotomy) group. Conversely, the ALWAYS and SOMETIMES selection start at a high 71%, 68% and 57% for the MMed, MScMed and Professor groups, diminishing down to 32%, 4% and 6% respectively. The presumed reasons for this changing percentage of NEVER selection with invasiveness, regarding use of the newly deceased for skills competency training without family consent, is most likely to be similar to that discussed previously with the GEMP IV participants group.

There is a vast difference between the undergraduate GEMP I and IV groups, who have an ALWAYS plus SOMETIMES selection total of 31% and 37% for the non-invasive (endotracheal intubation) group respectively, without family consent and the postgraduate MMed, MScMed and Faculty professor groups who have an ALWAYS plus SOMETIMES selection total of 71%, 68% and 57% respectively, the postgraduate latter almost double the undergraduate former.

This postgraduate majority decision, with ALWAYS consistently being greater that SOMETIMES, indicates that these participants regard it as ethical and acceptable to undertake endotracheal intubation skills competency training, without the necessity of obtaining obligatory family permission.

Lastly, the meaning of ALWAYS is self explanatory, but the meaning of SOMETIMES needs elucidation. It is possible that SOMETIMES refers to the ease of obtaining family permission, either logistically or emotionally, such as the presence or absence of family members or the confidence with which the attendant medical or nursing staff have in obtaining such permission. The SOMETIMES selection would conform with the “Don’t Ask, Don’t Tell” manner of skills competency training, leaving it to the medical professional to decide if obtaining permission from the family was warranted. Likewise SOMETIMES would comfortably conform with the President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioural Research (1981) that every reasonable effort be sought to obtain consent from the next-of-kin when physicians go “beyond the normal scope of teaching”, with endotracheal

intubation being reasonably classified as being within the normal scope of emergency medicine teaching.

5.7 Question 5:

“Have you ever undertaken any of the following lifesaving medical skills on a newly deceased patient, without family permission, in order to acquire or improve your practical competency?”

The results of question 5 regarding admission by study participants of having undertaken skills competency training on the newly deceased without family permission indicates a postive response for every listed medical procedure, with non-invasive, endotracheal intuabtion having been performed by 32.8% of participants who answered the question, with all, but three, representing postgraduate MMed, MScMed or Faculty professor participants. It appears, therefore, that for at least 45 participants of the survey, participation was more than a theoretical questionnaire, but one that related to previous practical experience, using the newly deceased for skills competency training, without family permission, and realistically their knowledge.

With 42 of these participants being represented by the postgraduate groups, it is evident that the GEMP IV participants have not made use of the newly deceased for endotracheal intubation training, relying either on artificial manikins or anaesthetised elective surgery patients to acquire this lifesaving medical skill. Having already described the inadequacies of standard plastic manikins, and

their unrealistic anatomic features for emergency lifesaving competency training, the only other practical alternative, which in fact is standard undergraduate curriculum protocol, is to make use of the anaesthetised living. This may present an additional ethical problem if informed consent from the patient, for the student to practice endotracheal intubation, is not an obligatory requirement.

5.8 Summary

This chapter discussed the results obtained from participants' selections regarding the lifesaving nature of listed medical procedures, the expectation of competency by doctors on duty in the emergency department regarding these listed medical procedures and the use of the newly deceased for competency skills training, with or without surviving family permission, regarding these listed medical procedures. The results of these discussions indicate that very few participants are totally against the use of the newly deceased for skills competency training as a matter of principle. An overwhelming majority approve of the use of the newly deceased with surviving family permission. However, there appears large support for use of the newly deceased for the non-invasive endotracheal intubation skill, even if no surviving family permission is obtained. This has raised the possibility that the need for obtaining surviving family permission is not an absolute ethical requirement, but is based on the degree of skill invasiveness and thus external evidence of skill competency training that may be evident to the family or at the funeral. Lastly, the results of the question regarding which participants had previously made use of the newly deceased,

without surviving family permission, was discussed, indicating a large number of postgraduate participants who had undertaken endotracheal intubation, although all listed skills were represented.

CHAPTER 6 Conclusion

6.0 Introduction

This chapter will conclude this research report by reaching various conclusions based on the results and discussions presented in the previous chapters, taking into consideration various limitations and biases that may have influenced results and finally by offering a number of recommendations for future research.

6.1 Limitations and Biases

This results, discussion and resultant final conclusions have been influenced by a number of internal and external biases and limitations that require clarification and discussion in their own right.

6.1.1 Internal Bias

A internal bias of this study is the view initially held by the researcher that the use of the newly deceased for skills competency training is not only justifiable, but mandatory, regarding specifically lifesaving skills, in order to successfully achieve the primary goal of emergency medicine, which is to safely, effectively, efficiently, competently and professionally resuscitate any acutely ill or injured patient, irrespective of gender, morbid anatomy, age, aetiology or clinical condition. As a result of this medical educational philosophy, the researcher has regularly made use of the newly deceased for competency training of postgraduate students regarding many of the listed medical procedures in the study questionnaire.

Although this bias is acknowledged, and although it has had no influence on the methodology or results of this research study, it may have influenced aspects of the subsequent discussion that was presented in chapter 5.

6.1.2 External Bias

The low number of participants who took the time and effort to complete the study questionnaire, compared with the large number of potential invitees who did not bother, may have introduced a bias into the study, such that those who felt positive about use of the newly deceased for skills competency training, particularly those who have made use of the newly deceased beforehand, may have wished to air their views. Although this was unlikely with the first year GEMP students who had only just entered medical school, it may have occurred with the other groups to a greater or lesser extent.

Likewise, it is possible that a number of invitees who did not participate in the study questionnaire, were so negatively disposed towards use of the newly deceased for any purposes whatsoever, that they did not wish to partake in what they may have considered to have been a “distasteful” and, possibly in their views, an unethical research study.

.1.3 Limitations

A research study of this nature, using an internet-based anonymous study questionnaire is fraught with a number of limitations that may have influenced which participants partook and completed of the study. These include:

- Technical limitations may have prevented an unknown number of recipients receiving the invitation email, thereby excluding them from the study for pure technical reasons.
- Technical limitations may have prevented an unknown number of recipients from connecting via the email link to the online study questionnaire, thereby excluding them from the study for pure technical reasons.
- Technical limitations may have prematurely terminated an unknown number of participants during completion of the study questionnaire and similarly, an unknown number of participants could have completed the study questionnaire more than once from using different email addresses.
- The classification of the listed medical procedures into four main categories, based on the degree of invasiveness, was devised by the researcher and is not an internationally accepted classification. Additionally, there was an unequal distribution within the various categories, such that maximally and non-invasive categories only had one medical procedure, namely emergency thoracotomy and endotracheal intubation respectively. The minimal and moderately invasive categories, on the other hand, each had three medical procedures in each group. This uneven distribution could have influenced the ultimate quantitative results, although the consistent trends amongst the various groups regarding the invasive categories, seems to indicate otherwise.

- The low overall number of participants, compared to the potential total number of invitees within the Faculty, must limit any conclusions from this study to the participants only, and cannot be regarded as an overall representation, and hence true reflection of, the various Faculty groups as a whole.
- The approval letter from the Deputy Registrar: Academic, stating that it was the invitee's right to withdraw from participating in the process if the participant found the contents intrusive, too time-consuming or inappropriate, may have had a negative impact on the GEMP students from participating in the first instance, and may have been one of the reasons why only approximately sixty-five percent of those who initiated the online study, actually completed it.

6.2 Conclusions

This research report set out to determine the opinions of various groups, namely the first and fourth (final) year Graduate Entry Medical Programme (GEMP) medical students, Master in Medicine registrar in training and Master of Science in Medicine in Emergency Medicine postgraduate group and Faculty professor, regarding use of the newly deceased in medical skills competency training, within the context of medical education within the Faculty of Health Sciences within the University of the Witwatersrand. Having taken into account the possible biases

and limitations mentioned above, the following conclusion could be drawn from this research study:

- The overwhelming majority of study participants condoned the use of the newly deceased for skills competency training, albeit within certain limitations.

- The overwhelming majority of study participants condoned the undertaking of all listed medical procedures for skills competency training on the newly deceased, if permission was obtained from the surviving family. Practically, this implied that any medical training procedure could be undertaken on any patient, as long as a member of the surviving family agreed, making the main issue one of family permission, not of use of the deceased primarily.

- The majority of study participants condoned the use of the newly deceased for non-invasive endotracheal intubation training, without surviving family permission, some or all of the time. This positive majority percentage decreased with increased invasiveness. This lead the researcher to doubt, whether the need for family permission prior to use of the newly deceased for skills competency training, was ever due to ethical concerns, but to how evident the training may have been.

- A fairly large percentage of participants had made use of the newly deceased for skills competency training, particularly endotracheal intubation, without surviving family permission, indicating that the practice of “don’t ask, don’t tell, is not uncommon within the Faculty.

6.3 Recommendations

Use of the newly deceased for lifesaving skills competency training is being undertaken unofficially within the Faculty by postgraduates, students and professors alike. From the results of the study questionnaire, undergraduate GEMP students have not been subject to this form of practical skills training, although they support its use under various conditions. This unacceptable situation required official resolution and the following recommendations are proposed:

- The ethical considerations regulating medical skills competency training, on the living patient and the newly deceased, needs to be based on the same set of ethical principles. This will provide transparency, consistency and regulation for the trainee, the trainer and those trained upon.

- Clear indication was required throughout all teaching hospitals, to adequately inform the visiting public and hospital patients that all patients, and newly deceased, may be used for medical training by undergraduate and postgraduate students, and that this was part of the University’s

mandate to produce qualified, competent doctors for the South African public. Additionally, it should be clearly stated that any person, whether patient, student or educator, had the right to withdraw from such training practices, without prejudice in any form.

- Medical personnel who so desire may seek to obtain family permission, for use of the newly deceased, as an optional obligation.

- Further research is required concerning how the use of the newly deceased for skills competency training is viewed by South African patients and their related families, so that the Faculty's skills competency training programme is in accord with the views and beliefs of South African society and its Constitution.

6.4 Summary

This final chapter has described various biases and limitations, before providing a number of conclusions as a result of this research study. Finally, a number of recommendations have been put forward that may resolve some of the ethical issues which have become evident during this study, regarding the opinion of various groups within the Faculty of Health Sciences at the University of the Witwatersrand regarding the use of the newly deceased for lifesaving skills competency training.

REFERENCES

Abramson, N., deVos, R. and Fallat, M.E., 2001. Ethics in emergency cardiac care. *Annals of Emergency Medicine*, 37 (Suppl.), pp S196–S200.

Ahasverius, F., 1684. Medicus peccans. In: A.R. Jonsen. ed., 1990. *The new medicine and the old ethics.* Cambridge,Mass: Harvard University Press.

Alden, A. W., Ward, K.L.M. and Moore, G.P., 1999. Should Postmortem Procedures be Practiced on Recently Deceased Patients? A Survey of relatives' attitudes. *Academic Emergency Medicine*, 6, pp 749-752.

American College of Emergency Physicians, 2011. Code of ethics for emergency physicians. [online] Available at: <http://www.acep.org/1,1118,0.html> [Accessed 27th April 2011].

Ardagh, M., 1997. May we practise endotracheal intubation on the newly dead? *Journal of Medical Ethics*, 23(5), pp 289-294.

Ashby, R., 1996. Teaching resuscitation on the newly deceased: do we want to know? *Medical Journal of Australia*, 165(8), pp 412-413.

Beauchamp, T.L. and Childress, J.F., 1994. *Principles of Biomedical Ethics*, 4th ed. New York: Oxford University Press.

Benfield, D.G., Flacksman, R.J., Lin,T.H., et al., (1991). Teaching intubation skills using newly deceased infants. JAMA 265(18): 2360-2363.

Berger, J. T., Rosner, F. and Cassell, E.J., 2002. Ethics of practicing medical procedures on newly dead and nearly dead patients. *Journal of General Internal Medicine*, 17(10), pp 774-778.

Boedeker, B. H. Bernhagen, M., Nicholas, T.A., et al., 2011. Combined Intubation Training (Simulated and Human) for 4th Year Medical Students: The Centre for Advanced Technology and Telemedicine Airway Training Program. *Studies in Health Technology and Informatics*, 163, pp 71-73.

Brattebø, G. and Wisborg,T.,1995. Consent for invasive procedures in the newly deceased. *Journal of the American Medical Association*, 274(2), pp 128-129.

Brattebø, G. and Wisborg, T., 1995. Teaching procedures on the newly dead. *Annals of Emergency Medicine*, 26(2), pp 242.

Brattebø, G., Wisborg, T., Solheim, K., et al., 1993. Public opinion on different approaches to teaching intubation techniques. *British Medical Journal*, 307, pp 1256-1257.

Burns, J. P., Reardon, R.E. and Truog, R.D., 1994. Using Newly Deceased Patients to Teach Resuscitation Procdures. *New England Journal of Medicine*, 331, pp 1652-1655.

Chapman, D. M., 1999. Definitively Defining the Specialty of Emergency Medicine: Issues of Procedural Competency. *Academic Emergency Medicine*, 6(7), pp 678-681.

Clayton, M. ed., 1992. *Leonardo Da Vinci: the anatomy of man*. Boston: Little,Brown.

Community Servey 2007. [online] Available at: <http://www.statssa.gov.za/community_new/content.asp> [Accessed 31 st October 2011].

Constitution of the Republic of South Africa Act 108 of 1996. [online] Available at: <http://www.info.gov.za/documents/acts/1996.htm> [Accessed on 31st July 2011].

Denny, C. J. and Kollek, D., 1999. Practicing Procedures on the Recently Dead. *The Journal of Emergency Medicine*, 17(6), pp 949-952.

DeVita, M. A., Wicclair, M., Swanson, D., et al., 2003. Research involving the newly dead: an institutional response. *Critical Care Medicine*, 31(5 Suppl), pp S385-390.

Elliot, J.M. (2003). Brain death. Trauma 5: 23-42.

Feinberg, J., 1985. The Mistreatment of Dead Bodies. *The Hastings Center Report,* 15(1), pp 31-37.

Fernandes, C. M. B., 1995. Practice of Procedures on the Newly Dead. *Annals of Emergency Medicine*, 26(1), pp 106-107.

Fourre, M. W., 2002. The Perfromance of Procedures on the Recently Deceased. *Academic Emergency Medicine*, 9(6), pp 595-598.

Ginifer, C. and Kelly, A.M., 1996. Teaching resuscitation skills using the newly deceased. *The Medical Journal of Australia*, 165(8), pp 445-447.

Goldblatt, A. D., 1995. Don't ask, don't tell: practicing minimally invasive resuscitation techniques on the newly dead. *Annals of Emergency Medicine*, 25(1), pp 86-90.

Gomes, A. P., Rega, S., Palacios, M., et al., 2010. Bioethical Analysis of the Use of the Newly Deceased in Medical Training. *Revista da Associação Médica Brasileira*, 56(1), pp 11-16.

Government Gazette 2004. *Regulation Gazette* No.8119, Vol.474. [online] Available at: <http://www.info.gov.za/view/DownloadFileAction?id=63296> [Accessed on 16th August 2011].

Hauswald, M., 1992. Adequate training for Endotrcheal Intubation. *Annals of Emergency Medicine*, 21(9), pp 184.

Hayes, G. J., 1994. Issues of Consent. The use of the recently deceased for endotracheal intubation training. *The Journal of Clinical Ethics*, 5(3), pp 211-216.

Hergenroeder, G. W., Prator, B.C., Chow, A.F., et al., 2007. Postmortem intubation training: Patient and family opinion. *Medical Education,* 41, pp 1210-1216.

Hinchley, G., 1992. Practising intubation on cadavers. *British Medical Journal*, 305(3 October), pp 831.

Hudson, T. S., 2000. Is it ethical to Practice Intubation on the Deceased? *JONA's Healthcare Law, Ethics and Regulations*, 2(1), pp 22-28.

Iserson, K. V., 1991. Requiring consent to practice and teach using the newly dead. *The Journal of Emergency Medicine*, 9, pp 509-510.

Iserson, K. V., 1993. Postmortem procedures in the emergency department: using the recently dead to practise and teach. *The Journal of Medical Ethics*, 19(2), pp 92-98.

Iserson, K. V., 1994. Life versus Death: Exposing a Misapplication of Ethical Reasoning. *The Journal of Clinical Ethics*, 5, pp 261-266.

Iserson, K. V., 1995a. Case: Practising Procedures on the newly dead. In: KV. Iserson, AB. Sanders and D. Mathieu, ed. 1995. Ethics in Emergency Medicine. Tuscon, 2nd edition, AZ, Galen Press Ltd. Ch 7.

Iserson, K. V., 1995b. Law versus life: the ethical imperative to practice and teach using the newly dead emergency department patient. *Annals of Emergency Medicine*, 25(1), pp 91-94.

Iserson, K. V., 2005. Teaching without harming the living: performing minimally invasive procedures on the newly dead. *Journal of Health Care Law and Policy*, 8(2), pp 216-231.

Iserson, K. V. and Culver, C.M., 1986. Using a cadaver to practice and teach. *The Hastings Center Report June*, 16 (3), pp 28-29.

Johnston, B. D., Seitz, S.R. and Wang, H.E., 2006. Limited Opportunities for Paramedic Student Endotracheal Intubation Training in the Operating Room. *Academic Emergency Medicine*, 13, pp 1051-1055.

Jones, D. G., 2011. The centrality of the dead human body for teaching and research - social, cultural and ethical issues. *South African Journal of Bioethics and Law*, 4(1), pp 18-23.

Jones, J. W., McCullough, L.B. and Richman, B.W., 2004. Training on newly deceased patients. *Surgery*, 135(1), pp 108-109.

Jonsen, A. R., ed., 1990. Asklepios as intensivist. *The new medicine and old ethics*. Cambridge, Mass: Harvard University Press.

Kass, L. R., 1985. Thinking about the body. *The Hastings Center Report,* 15(1), pp 20-30.

Kerns, A. F., 1997. Better to lay it out on the table rather than do it behind the curtain: hospitals need to obtain consent before using newly deceased patients to teach resuscitation procedures. *Journal of Contemporary Health Law and Policy,* 13(2) pp 581-612.

Kramer, E. B., 2008. No one may be refused emergency medical treatment – ethical dilemmas in South African emergency medicine. *South African Journal of Bioethics and Law*, 1(1), pp 1-4.

Landwirth, J., Allen, A.C., Driscoll, J.M., et al., 1993. Ethical Issues in Pediatric and Neonatal Resuscitation. *Annals of Emergency Medicine*, 22(2), pp 502-507.

Manifold, C. A., Storrow, A. and Rogers, K., 1999. Patient and family attitudes regarding the practice of procedures on the newly deceased. *Academic Emergency Medicine*, 6(2), pp 110-115.

Marco, C. A., 2005. Ethical issues of resuscitation: an American perspective. *Postgraduate Medicine Journal*, 81(959), pp 608-612.

Martyn, S. R., 1986. Using the Brain Dead for Medical Research. *Utah Law Review* 1986(1), pp 1-28.

May, W. F., 1985. Religious Justifications for Donating Body Parts. *The Hastings Center Report* ,15(1), pp 38-42.

McNamara, R. M., Monti, S. and Kelly, J.J., 1995. Requesting consent for an invasive procedure in newly deceased adults. *Journal of the American Medical Association*, 273(4), pp 310-312.

McPherson, J. R., Imani, E.R., Komer, K.A., et al., 1993. Instruction of Emergency Invasive Procedures Utilizing Human Cadavers. *Annals of Emergency Medicine*, 22(5), pp 908.

Medical Schemes Act 131 of 1998. [online] Available at: <http://www.info.gov.za/gazette/acts/1998/a131-98.pdf> [Accessed on 1st May 2011].

Moore, G. P., 2001. Ethics seminars: the practice of medical procedures on newly dead patients--is consent warranted? *Academic Emergency Medicine*, 8(4), pp 389-392.

Moore. D, L., 2008. Never let your sense of morals keep you from doing what's right: using newly dead bodies as educational resources. *Journal of Law-Medicine*, 18, pp 107-127.

Morag, R. M., DeSouza, S., Steen, P.A., et al., 2005. Performing Procedures on the Newly Deceased for Teaching Purposes. *Archives of Internal Medicine*, 165(Jan 10), pp 92-96.

Morhaim, D. K. and Heller, M.B., 1991. The practice of teaching endotracheal intubation on recently deceased patients. *Journal of Emergency Medicine*, 9, pp 515-518.

Mullins vs Parkview Hospital, Inc. [2007]. Case No.02S04-0608-CV-292. (Indiana Supreme Court). [online] Available at: http://www.in.gov/judiary/ opinions/pdf/05020701 fsi.pdf> [Accessed 31st July 2011].

National Health Act 61 of 2003. [online] Available at: <http://www.info.gov.za/view/ DownloadFileAction?id=68039> [Accessed 31st July 2011].

Noeller, T. P., Smith, M.D., Homes, R., et al., 2008. A Theme-based Hybrid Simulation Model to Train and Evaluate Emergency Medicine Residents. *Academic Emergency Medicine*, 15, pp 1199-1206.

Oberman, M., 2005. American Association of Law School Panels: Panel on the use of patients for teaching purposes without their knowledge or consent. *Journal of Health Care Law and Policy*, 8(2), pp 210-215.

Olsen, J., Spilger, S. and Windisch, T., 1995. Feasibility of Obtaining Family Consent for Teachinf Cricothyrotomy on the Newly Dead in the Emergency Department. *Annals of Emergency Medicine*, 25(5), pp 660-665.

Oman, K. S., Armstrong, J.D. and Stoner, M., 2002. Perspectives on Practicing Procedures on the Newly Dead. *Academic Emergency Medicine*, 9, pp 786-790.

Orlowski, J. P., Kanoti, G.A. and Mehlman, M.J., 1988. The ethics of using newly dead patients for teaching and practicing intubation techniques. *New England Journal of Medicine*, 319(7), pp 439-441.

Perkins, H. S. and Gordon, A.M., 1994. Should hospital policy require consent for practicing invasive procedures on cadavers? The arguments, conclusions, and lessons from one ethics committee's deliberations. Journal of Clinical Ethics, 5(3), pp 204-210.

PETA Victories, 2001. Michigan Medical Centre stops paediatric intubation training on cats. [online] Available at: <www.peta.org/about/victories/Michigan-Medical-Centre-Stops-Intubation-Training-on-Cats.aspx> [Accessed on 2nd May 2011].

President's Commission for the Study of Ethical Problems in Medicine and Bioethical Research., U S Code Annotated U S. 1982; Title 42 Sect. 300v as added 1978: Unknown. [online] Available at: < http://www.ncbi.nlm.nih.gov/ pubmed /12041401> [Accessed on 21nd August 2011].

Rakatansky, H., Riddick, F.A., Morse, L.G., et al., 2002. Performing Procedures on the Newly Dead: The Council on Ethical and Judicial Affairs of the American Medical Association. *Academic Medicine*, 77(12), pp 1212-1216.

Santen, S. A., Hemphill, R.R., Spanier, C.M., et al., 2005. “Sorry, it's my first time”! Will patients consent to medical students learning procedures? *Medical Education*, 39, pp 365-369.

Schmidt, T. A., Abott, J.T., Geiderman, J.M., et al., 2004. Ethics seminars: the ethical debate on practicing procedures on the newly dead. *Academic Emergency Medicine*, 11(9), pp 962-966.

Schniederjan, S. and Donovan, G.K., 2005. Ethics versus education: pelvic exams on anesthetized women. *Journal of the Oklahoma State Medical Association*, 98(8), pp 386-388.

Schold, C., DeVita, M.A., Swanson, D., et al., 2003. Policy for research involving the dead. *Critical Care Medicine*, 31(5 Suppl), pp S391-S393.

Smith, T. S., 1824. Use of the dead to the living. *Westminster Review*, 2, pp 59-97.

Sperling, D., 2004. Breaking through the silence: illegality of performing resuscitation procedures on the "newly-dead". *Annals of Health Law,* 13(2), pp 393-426.

Steinberg, A., 1996. Ethical issues in nephrology - Jewish perspectives. *Nephrology Dialysis Transplant,* 11, pp 961-963.

Stratton, S. J., Kane, G., Gunter, C.S., et al., 1991. Prospective Study of Manikin-only versus Manikin and Human Subject Endotracheal Intubation Training of Paramedics. *Annals of Emergency Medicine*, 20, pp 1314-1318.

Tachakra, S., Ho, S., Lynch,M., et al., 1998. Should doctors practice resuscitation skills on newly deceased patients? A survey of public opinion. *Journal of the Royal Society of Medicine*, 91, pp 576-578.

Tomasini, F., 2008. Research on the recently dead: an historical and ethical perspective. *British Medical Bulletin*, 85, pp 7-16.

Tonks, A., 1992. Intubation practice on cadavers should stop. *British Medical Journal*, 305 (8 August), pp 332.

Wang, E. E., Quinones, J., Fitch, M.T., et al. 2008. Developing Technical Expertise in Emergency Medicine-The Role of SImulation in Procedural Skill Acquisition. *Academic Emergency Medicine*, 15, pp 1046-1057.

Warner, K. J., Carlbom, D., Cooke, C.R., et al., 2010. Paramedic Training for Proficient Prehospital Endotracheal Intubation. *Prehospital Emergency Care*, 14, pp 103-108.

Wicclair, M. R., 2002. Informed consent and research involving the newly dead. *Kennedy Institute of Ethics Journal*, 12(4), pp 351-372.

Wijdicks, E. F., Varelas, P.N., Gronseth, G.S., et al., 2010. Evidence-based guidelines update: determining brain death in adults: report of the Quality Standards Subcommittee of the American *Academy of Neurology. Neurology*, 74(23), pp 1911-1918.

Wilson, R. F., 2008. "Unauthorized Practice":Regulating the use of anesthetized, recently deceased, and conscious patients in medical teaching. *Idaho Law Review*, 44, pp 423-454.

Wilson, R. F., 2005. Autonomy suspended: using female patients to teach intimate exams without their knowledge or consent. *Journal of Health Care Law and Policy,* 8(2), pp 240-263.

APPENDIX 1

ETHICS CLEARANCE CERTIFICATE: M10M101122

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Prof Efraim B Kramer

CLEARANCE CERTIFICATE	**M10M101122**
PROJECT	The Opinion of Various Groups within the Faculty of Health Sciences at the University of the
Witwatersrand	regarding the Use of the Living and Newly Dead
Patient for	Life Saving Skills Competency Training
INVESTIGATORS	Prof Efraim B Kramer.
DEPARTMENT	Steve Biko Centre for Bioethics
DATE CONSIDERED	26/11/2010
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 14/01/2011 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Prof D Kapp von Bogaert

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

APPENDIX 2

ELECTRONIC MAIL INVITATION SENT TO ALL GEMP STUDENTS

“Invitation to Participate” Electronic mail (email) Letter

addressed to the GEMP I and IV students

Dear Student,

My name is Professor Efraim B. Kramer, Head of the Division of Emergency Medicine in the Faculty of Health Sciences at the University of the Witwatersrand. As part fulfillment for the degree of Master of Science in Medicine (Bioethics and Health Law), I am undertaking a research project on the ethics of using the living and newly dead patient for practical life-saving skills competency training in teaching hospitals on the Wits Medical School circuit. Although it is expected that all doctors on duty in the emergency department should be completely competent in lifesaving skills when confronted with a medical emergency, developing and maintaining competency requires practical training using a variety of methods including simulated scenario teaching, plastic manikins, conscious and anaesthetised patients and use of the newly dead patient. Methods involving patients, both alive and newly dead are described as being the most appropriate for certain lifesaving skills practical training , but have ethical and legal considerations which have not been researched in this faculty.

Please, would you complete the attached questionnaire, which will take less than 5 minutes of your time, by marking the relevant boxes at SurveyMonkey.com and if and when necessary, completing any comments you may have. Your answers are completely confidential with only the results of the survey being revealed to me. Please note that due to consent concerns, only students 18 years old and older may participate in this study. Ethics approval, namely Clearance Certificate M10M101122, for this project has been obtained from the University of the Witwatersrand, Faculty of Health Sciences Human Ethics Research Committee.

http://www.surveymonkey.com/s/H2RPRCH

If there are any queries that you wish answered, please do not hesitate to contact me at: efraim.kramer@wits.ac.za for clarification.

Thank you kindly,

Prof Efraim B Kramer

Student No: 7347034

B"H

APPENDIX 3

ELECTRONIC MAIL INVITATION SENT TO POSTGRADUATE MASTER IN MEDICINE REGISTRARS IN TRAINING, MASTER OF SCIENCE IN MEDICINE IN EMERGENCY MEDICINE STUDENTS AND FACULTY PROFESSORS.

“Invitation to Participate” Electronic (email) Letter

addressed to MMed registrars, MScMed students and Faculty Professors

Dear Colleague,

My name is Professor Efraim B. Kramer, Head of the Division of Emergency Medicine in the Faculty of Health Sciences at the University of the Witwatersrand. As part fulfillment for the degree of Master of Science in Medicine (Bioethics and Health Law), I am undertaking a research project on the ethics of using the living and newly dead patient for practical life-saving skills competency training in teaching hospitals on the Wits Medical School circuit. Although it is expected that all doctors on duty in the emergency department should be completely competent in lifesaving skills when confronted with a medical emergency, developing and maintaining competency requires practical training using a variety of methods including simulated scenario teaching, plastic manikins, conscious and anaesthetised patients and use of the newly dead patient. Methods involving patients, both alive and newly dead are described as being the most appropriate for certain lifesaving skills practical training , but have ethical and legal considerations which have not been researched in this faculty.

Please would you complete the attached questionnaire, which will take less than 10 minutes of your time, by marking the relevant boxes at SurveyMonkey.com and if and when necessary, completing any comments you may have. Your answers are completely confidential with only the results of the survey being revealed to me. Ethics approval, namely Clearance Certificate M10M101122, for this project has been obtained from the University of the Witwatersrand, Faculty of Health Sciences Human Ethics Research Committee.

http://www.surveymonkey.com/s/H2RPRCH

If there are any queries that you wish answered, please do not hesitate to contact me at: efraim.kramer@wits.ac.za for clarification.

Thank you kindly,

Efraim B Kramer

Wits student No: 7347034
B"H

APPENDIX 4

APPROVAL LETTER FROM THE DEPUTY REGISTRAR: ACADEMIC OF THE UNIVERSITY OF THE WITWATERSRAND.

Deputy Registrar: Academic

Private Bag 3, Wits 2050, South Africa • Tel: +27 (0) 11 717-1204 • Fax: +27 (0) 86 553 3695 • E-mail: nita.lawton-misra@wits.ac.za

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

E-mail nita.lawton-misra@wits.ac.za
Fax 086 553 3695
Tel +27 (0)11 717-1204

28 February 2011

TO WHOM IT MAY CONCERN

"The Opinion of Various Groups within the Faculty of Health Sciences at the University of the Witwatersrand regarding the Use of the Living and Newly Dead Patient for Life Saving Skills Competency Training"

It is hereby confirmed that the enclosed research material has been distributed in accordance with the University's approval procedures for such a project. Please be advised that it is your right to withdraw from participating in the process if you find the contents intrusive, too time-consuming, or inappropriate. The necessary ethical clearance has been obtained.

Should the University's internal mailing system be the mechanism whereby this questionnaire has been distributed, this notice serves as proof that permission to use it has been granted.

Students conducting surveys must seek permission in advance from Heads of Schools or individual academics concerned should surveys be conducted during teaching time.

Nita Lawton-Misra
Deputy Registrar: Academic

APPENDIX 5

FATWA NUMBER 19348

Assalāmu `alaikum Warahmatullāhi Wabrakatuh,

The Shar'ee ruling pertaining to specializing in the field of forensic medicine: -

Choosing such a field that will involve a person in acts contrary to the commands of Allah Ta'ala is not permissible. Since seeing that carrying out of post-mortems is not allowed in Shari'ah (Islam), choosing a career which will involve a person in doing so, is not permissible.

The Shar'ee perspective regarding post mortems is as follows: -

Allah Ta'ala has categorically stated in the Qur'aan that:

"We have honoured and revered the children of Adam".[Surah Bani Israel-Ayah 70]

The demands of this honour and reverence is that man at all times be sanctified and accorded the true recognition of his position in the eyes of Allah Ta'ala whereby just as his honour and dignity is binding to preserve, similarly the well being of his personal self and the limbs of his body also be accorded the same reverence.

Allah Ta'ala has also decreed that the body of man has not been merely given to him but it has been entrusted to him, due to which he is compelled to uphold this trust at all times.

Given that these two concepts of reverence and upholding of trust with regard to the body of a person are binding upon every individual, any form of misappropriation or disregard to the same will ***not be permissible.***

Furthermore, just as these laws apply while a person is alive, similarly it applies and remains binding after the demise of a person.

This has been clearly alluded to in the Ahaadith that Rasulullah (Sallallaahu 'alayhi wassallam) is reported to have said:

"To cause any harm to a believer after his death is tantamount to harming him whilst he is alive; i.e. the sin in both cases is as heinous and offensive." *(**Recorded in Ibn Abi Shaibah**)*

Similarly another hadeeth states:

"Mutilating the body of a deceased person by breaking his limbs is tantamount to doing the same in his life time; i.e. just as in his life time it is not permissible, similarly will be the case after his death." **(*Sunan Abu Dawud, Sunan Ibn Majah & Musnad Ahmad*)**

A human whether he is a believer or disbeliever is honoured by the Shari'ah, therefore mutilating of the body, organs and breaking of the bones is impermissible. (***Raddur Mukhtaar***)

Hence, in the light of these citations we learn that post mortems for medical training purposes is not permissible.

The law of Allah Ta'ala is supreme and it cannot be superseded by any man-made declaration which is always subject to change.

However, living in a non-Muslim country and being subject to the laws of the country, if one is faced with such a situation where one is forced and compelled to have a post mortem carried out and there is no other alternative to avoid a post mortem, then one will *Insha-Allah* not be held liable in the court of Allah.

Nevertheless all out efforts should be made to evade such a practice at all costs.

And Allah Ta'āla Knows Best

Mufti Mohammad bin Saeed

Student Darul Iftaa

Checked and Approved by,
Mufti Ebrahim Desai.

www.daruliftaa.net