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Assessing ‘patient safety culture’ in maternity obstetric units in the Umgungundlovu District, Kwazulu-Natal

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University of the Witwatersrand

School of Governance

ASSESSING 'PATIENT SAFETY CULTURE' IN MATERNITY OBSTETRIC UNITS IN THE UMGUNGUNDLOVU DISTRICT, KWAZULU-NATAL

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A research report submitted to the Faculty of Commerce, Law, and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management (in the field of Public Sector Monitoring and Evaluation)

ABSTRACT

This study set out to understand the perceptions of maternal healthcare providers (MHCPs) towards patient safety culture (PSC), in selected public hospital maternity obstetric units (MOUs) in the UMgungundlovu District in KwaZulu-Natal. The aim was to guide safety improvement initiatives and strengthen the clinical governance framework, by assessing the level of PSC. The assumption was that MOUs should be functioning theoretically like High Reliability Organisations (HROs) to prevent maternal deaths. However, this district had a high Maternal Mortality Ratio (MMR) of 208.3 maternal deaths per 100 000 live births in 2015, whilst the Millennium Development Goal5 was 38/100 000 live births. Donabedian's (1980) Model of Care conceptual framework was used made up of *structure*, *process* and *outcomes*, with the focus mainly on 'process,' *outcomes* and MHCP interpersonal skills.

The methodology involved distributing an expanded version of the validated 15 item short format PSCHO survey to MHCPs. The survey consisted of six topics key to a culture of patient safety, including demographic data. Data was collected over a 6 week period, from April to May 2018. A total of 245 MHCPs, comprising of all gynaecologists', obstetricians', doctors', clinical and nursing managers', together with a sample of midwives' and advanced midwives', were systematically selected. The total number of respondents was 197, however 5 surveys had missing data, hence (n=192). The overall response rate was 78.1%.

Results were interpreted by the frequency of *problematic* and *neutral* responses obtained, which either implied a lack (absence) or low level of *safety culture*. Responses per question were collated according to job designation, work experience and age. Overall, the Mean of *problematic* responses was 31.01% and 14.5% for *neutral* responses. The perceptions of MHCPs with respect to PSC varied slightly amongst doctors', midwives' and managers'. It can be concluded that PSC does not mimic HROs sufficiently in the uMgungundlovu District MOUs, with 63.5% (n = 122) MHCPs giving a *poor to adequate* score. However, a key Correlation finding was that both PSC and MMR are inextricably linked, i.e. as PSC improves, MMR *outcomes* also improves. Future research is required to verify the results and find ways that senior managers' can commit to patient safety change management.

DECLARATION

I declare that this research report titled: Assessing 'Patient Safety Culture' in Maternity Obstetric Units, in the uMgungundlovu District in KwaZulu-Natal, is my own work. I referenced and acknowledged all sources that were cited. I submit this report in partial fulfilment of the requirements of the degree of Master of Management (Public Sector Governance and Leadership) at the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.

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DEDICATION

This research report is dedicated to my late dad Mr D. Thakur who was my teacher and mentor for 17 years. He taught me that “education was a girl’s weapon”.

My widowed mum, who bore and reared me and my five sisters’.

My first son Akhil, whom I lost and my second son Pradhil who battled with a genetic disorder but survived. My sons’ taught me about the pain mothers’ undergo. My birthing experiences made me aware of the dangers of caesarean sections and the safety risks leading to maternal deaths or morbidity.

This work is dedicated to all mothers and maternal healthcare providers.

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- PALAMA: The in-house parliamentary training division and the Speakers' forum for investing in empowering members' of Parliament, through tertiary education,
- Mr Murray Cairns: my primary supervisor for his dedication in guiding me patiently to produce a meaningful research report,
- The KwaZulu-Natal Department of Health and uMgungundlovu District: for granting permission to carry out this study within its facilities,
- Mr Deepak Singh: the statistician who assisted me with the use of the SPSS programme;
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- God: for the divine strength to gain clarity and insight into this complex topic and
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List of Abbreviations

DoH	Department of Health
HRO	High Reliability Organization
KZN	KwaZulu - Natal
MHCPs	Maternal Health Care Providers
MMR	Maternal Mortality Ratio
MOU	Maternity Obstetric Unit
NPSA	National Patient Safety Agency
PSC	Patient Safety Culture
PSCHO	Patient Safety Climate in Healthcare Organisations
SDG	Sustainable Development Goal
WHO	World Health Organisation

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CHAPTER ONE: OVERVIEW OF THE STUDY

1.1 Introduction

Every year, almost 600,000 women die globally from pregnancy-related complications. Furthermore, 23 million or 15% of all pregnant women develop life threatening complications, especially in developing countries (Engenderhealth.org, 2003).

Maternal death is defined by the World Health Organisation (WHO) (2004) as:

> The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (p. 23).

The WHO (2016) further noted that maternal deaths remain unacceptably high, with roughly 303 000 women dying in 2015. Almost all of these mothers' died in low-resource settings where most deaths could have been prevented.

Maternal Mortality Ratio (MMR) is the number of maternal deaths per 100 000 live births and is a measure of the risk of death once a woman falls pregnant (Liljestrand, 2000, p. 3). MMR to a large degree, is recognised as a general indicator of the status of women in society and standard of the health system of a country (Measure Evaluation, 2006). Between 2016 and 2030, the Sustainable Development Goal (SDG) target was set to decrease global MMR to less than 70 maternal deaths per 100 000 live births (WHO, 2016).

The United Nations Children's Fund (2017) reported that global maternal deaths decreased by almost half, i.e. 385 to 216 deaths per 100 000 live births between 1990 and 2015. Most developing countries did not achieve the three quarter reduction in maternal deaths targeted for 2015 in Millennium Development Goal 5 of 38 maternal deaths per 100 000 live births. This was aimed to eliminating various forms of discrimination against women. The report noted that the Ending Preventable Maternal Mortality revised target for MMR, set to <70/100 000 live

births for the SDG 3 was the 2030 road map. This planned to achieve health rights to the highest possible standard for all women, children and adolescents. Therefore, new strategies by UNICEF now follow Durojaye (2010) in terms of a human rights approach to maternal healthcare, for eliminating weak access to quality and care outcomes (UNICEF, 2017).

Maternal deaths are not only a technical and medical challenge, requiring government's commitment to health systems' strengthening, but there should also be a strong desire for a *patient safety culture* (PSC), which permeates through all hospital levels (Singer, Meterko, Baker, Gaba, Falwell, & Rosen, 2007). High maternal mortality (death) and morbidity (disability linked directly to pregnancy and or childbirth) remain a global and public health challenge, prioritized on the United Nations development agenda.

Strategies for achieving a MMR of <70/100 000 live births by 2030, have now shifted to provision of care not prevention of pregnancies, with robust evidence required about what works best in delivering safe maternal care (Graham & Hussein, 2007). Furthermore, despite methodological challenges Holmes and Goldstein (2012), state that there is clear evidence that substandard maternal healthcare provider attitudes, adversely impact on patient health care outcomes.

Higher MMR verifies the presence of the higher obstetric risk of severe bleeding and other complications associated with each pregnancy (WHO, 2016). This has not gone unnoticed by the National Department of Health since South Africa's MMR is amongst the highest globally, almost four times the SDG 3 global average targeted for 2030 and much effort has gone into reducing it. Statistics South Africa (2015), noted that there were 289, 000 maternal deaths globally in 2013 and 60% of these occurred in sub-Saharan Africa. Van der Merwe (2015), stated that South Africa's maternal mortality ratio (MMR) stood at 269 deaths per 100 000 live births, having missed the 5th Millennium Development Goal 2015 target of 38/100 000.

Real change needs tackling root issues such as patients' basic human rights not understood amongst healthcare workers (Van der Merwe, 2015).

This researcher shares the opinion that having clinical knowledge is only half of the equation, what is actually needed is for MHCPs to have an interpersonal skills

set that can save mothers. The South African scenario of tackling the high MMR in public sector hospitals needs further examination, with respect to the direct and indirect barriers. Whilst the Department of Health allocates maternal healthcare resources such as skilled birth attendants, obstetric ambulances, equipment and medicines the rising medical litigation costs points to unsafe patient care practices. This is due to knowledge gaps important for the African region according to Kebede, Zielinski, Mbondji, Sanou, Asamoah-Odei, Soumbey-Alley and Lusamba-Dikassa (as cited in WHO 2010, p. 55) of how to improve peoples' health and the *know-do gap*. Alternatively, Fathalla *et al*. (as cited in Durojaye, 2010) argues that the world doesn't lack resources or technologies to prevent maternal deaths but lacks political will and commitment to take action. The United Nations Human Rights Council restated, that maternal death violates women's rights to life, health and non – discrimination, guaranteed in international instruments. Thus, the recommendations of the human rights report by Amnesty International (2014) must be implemented by the South African Department of Health. Hence, the extent to which patient safety culture is present in our public hospitals is questionable and requires measurement.

In this study I have focused on maternity obstetric units (MOUs), which comprise antenatal, labour, postnatal, high care and nursery wards, as well as administration offices. According to Ndaba (2013), South African maternity units are understaffed but also very busy making these more vulnerable to medico-legal claims. Similarly, Mhlongo (2016) stated that both the number of women delivering in South African public hospitals and the maternal death rates remain high, suggesting substandard nursing care during labour or post-delivery. This is confirmed by Moore and Slabbert (as cited in Mhlongo, 2016), that most substandard and unprofessional care rendered by midwives, leads to litigation. Therefore, improving patient safety culture in South African MOUs is imperative because of rising medical lawsuits mainly against public hospitals. Broughton (2016), emphasised that this threat can derail the KwaZulu-Natal health system because the Department had medical negligence claims close to R1 billion due to clinical governance failures. Clearly, medical litigation is a severe threat that can collapse the entire health system because the standard of maternal health can be seen as a *tracer condition* for the health system (Liljestrand, 2000, p. 3).

Overall, the Royal College of Obstetricians and Gynaecologists (2008), sums up maternal care appropriately where women deserve medical care based on their needs, which is safe, effective and meets their expectations. For sustainable improvements to maternal healthcare therefore, South African public hospitals require drastic safety reforms to avoid maternal deaths and ensure accountability.

1.2 Causes of maternal deaths

Given this background to maternal mortality, it is generally assumed when discussing maternal and child health that interventions for the new-born should be the same for the mother. However, not only are the causes of maternal deaths quite different from those of new-borns but so are the potential corrective actions (Rosenfeld & Maine, 1985, p. 83). Therefore, maternal and child health programmes have been given much attention in recent years.

Furthermore, earlier obstetricians worldwide were particularly neglectful of their duty to draw attention to the problems, to lobby for major programme priority changes and concentrating on sub-specialties, placing emphasis on high technology (Rosenfeld and Maine, 1985). This study remains relevant today in order to answer *why do mothers die?'* We must acknowledge that the organisation, MOUs and the interpersonal skills of maternal healthcare providers, in terms of major programme priority changes, have still not received the required attention from professionals, policy-makers and politicians, as stated by (Rosenfeld and Maine, 1985). Warren, Njuki, Abuya, Ndwiga, Maingi, Serwarnga, Mbehero, Muteti, Njeru, Karanja, Olenja, Gitonga, Rakoum and Bellows (2013) state that pregnancy and childbirth complications causes death and morbidity, among women of reproductive age in developing countries. It is hoped that this research will motivate all stakeholders to make maternal mortality reduction a key focus area.

Thaddeus and Maine's, *Three Delays Model* (as cited in Engenderhealth.org, 2003), outlines delays affecting women's chances of surviving obstetric emergencies. The first delay is in deciding to seek care and the second is in reaching a health facility. However, the third delay is not in the control of the

patient or their family but depends on the care received at the health facility. This study focuses on the *third delay* which is significant because the quality of care received is often under the control of maternal healthcare providers, who are blamed by others or blame themselves when things go wrong. This makes caring for pregnant women fundamentally demanding, whilst obstetric complications are disastrous even with short delays. Maternal healthcare providers (MHCPs) as described by Holmes and Goldstein (2012, p. 7), are often a team of workers, mostly female, of relatively low status in the health system hierarchy, poorly paid, often overworked, inadequately trained and supervised, with little autonomy, yet great responsibilities.

Furthermore, little is understood about the quality of care which is a vital element in facilities and the experience of women during childbirth in terms of the behaviour of MHCPs and how this affects their decision to seek care (Hulton, Matthews, & Stones, 2000, p. 6 and Warren *et al.,* 2013. p. 2).

Compounding this is the lack of research detailing safety practice and interventions, such as protocols, guidelines and training programmes. These interventions can reduce unsafe acts and improve facility quality of care. Facility-based deliveries, having decentralized maternal and new-born health services, do provide technical and systemic advantages for mothers' experiences of care (WHO, 2011). Such advantages however depends on the organisational culture of the facilities. *Organisational culture*, explained by Kitch, Ferris and Campbell (as cited in WHO, 2008), is made up of a set of shared beliefs among a group of individuals, whereas *safety culture* is a distinct notion of organisational culture. Hence, *patient safety culture* (PSC) in healthcare organisations, represents shared beliefs that support safe practices, amongst healthcare workers. Such beliefs include teamwork, acknowledged mutual dependency, open communication and safety prioritised at every level, to ensure good patient healthcare outcomes (WHO, 2008). Therefore, health facilities with improved high quality care are key to reducing MMR.

PSC has gained momentum in healthcare and the critical need to assess safety culture has led to surveys being developed to measure healthcare provider perceptions of safety culture or climate. Furthermore, health system redesign for maternal safety is the focus of this research because injury is caused by the

system. Therefore, trusting relationships between patients and healthcare providers must be restored (Institute of Medicine, 2001). Rebuilding patient trust means building a well-established framework for clinical governance, especially at district hospital level. This is a move towards strengthening structures and processes, for continuous quality outcomes and patient safety culture improvement (WHO, 2011).

In most developing countries like South Africa, the main challenge is to provide greater coverage of integrated maternal health packages. The challenges are poor planning and managing the implementation of operations, especially at the district level (Kerber, De Graft-Johnson, Bhutta, Okong, Starrs & Lawn, 2007).

New approaches are clearly required to prevent mothers' from dying. Furthermore, the causes of high maternal mortality point to sub-standard safety practices on the supply side, which leads to delays and death. Whilst no single protocol will prevent all cases, time is critical given the current knowledge about the magnitude of maternal healthcare safety problems. External pressure is compelling the health department to take actions to improve safety. However, these come at a litigation cost that could be better utilised overcoming barriers (Kohn, Corrigan, Donaldson, & Others, 2000). Hence, there is a need for an understanding of the relationship among variables, such as MHCPs interpersonal skills, patient safety culture and MMR. This will assist all MHCPs, mothers' and their new-borns.

Human Rights Watch (2011), stated that a lack of oversight and accountability with abusive MHCPs, added to substandard maternity care and high maternal death rates. Given these common explanations for the poor health outcomes, experiences of patients also matter with regard to provision of quality and safe care e.g. stigmatisation of HIV positive mothers. This resulted in mothers' dying, because of poor and negligent nursing practice (Amnesty International, 2014). A parallel concern is the burgeoning medical litigation that threatens the planned National Health Insurance (Green, 2014). Furthermore, as noted by Oosthuizen and Carstens (2015), South Africa has recently seen significant increases in medical malpractice due to various factors and healthcare providers have been profoundly affected by these. The public health sector has systemic challenges making it very susceptible to malpractice litigation. Added to this is the cost of

indemnity insurance for obstetricians being amongst the most expensive, i.e. R1 million annually from 2017, hence obstetricians are apparently leaving the profession (Medical Brief, 2016). This adversely affects the professional care needed by pregnant women, especially with complications. This is aggravated by the fact that the KwaZulu - Natal (KZN) health department has wasted millions of rands, as a result of staff lacking skills and bad record keeping (Peters, 2016b). Hence, skills weaknesses has led to substandard care of pregnant women, negatively impacting on the Department of Health's budget.

The question arises, *Are MOUs conducive work environments?* Ndaba (2013) described maternity units as high-risk, where normal uncomplicated deliveries were a rare occurrence. The findings on midwives' attitudes in this study were described as resistant behaviour and showed that midwives endured hardships and elevated stress levels. Hence, midwives developed negative attitudes and ill–treated pregnant women. This resulted in poor midwifery practice and consequently led to complications (Ndaba, 2013). The qualitative study carried out by Mhlongo (2016), observed that most midwives suffered, almost daily practice breakdown, in KZN public hospital maternity units; yet they were expected to practice their duties within certain parameters.

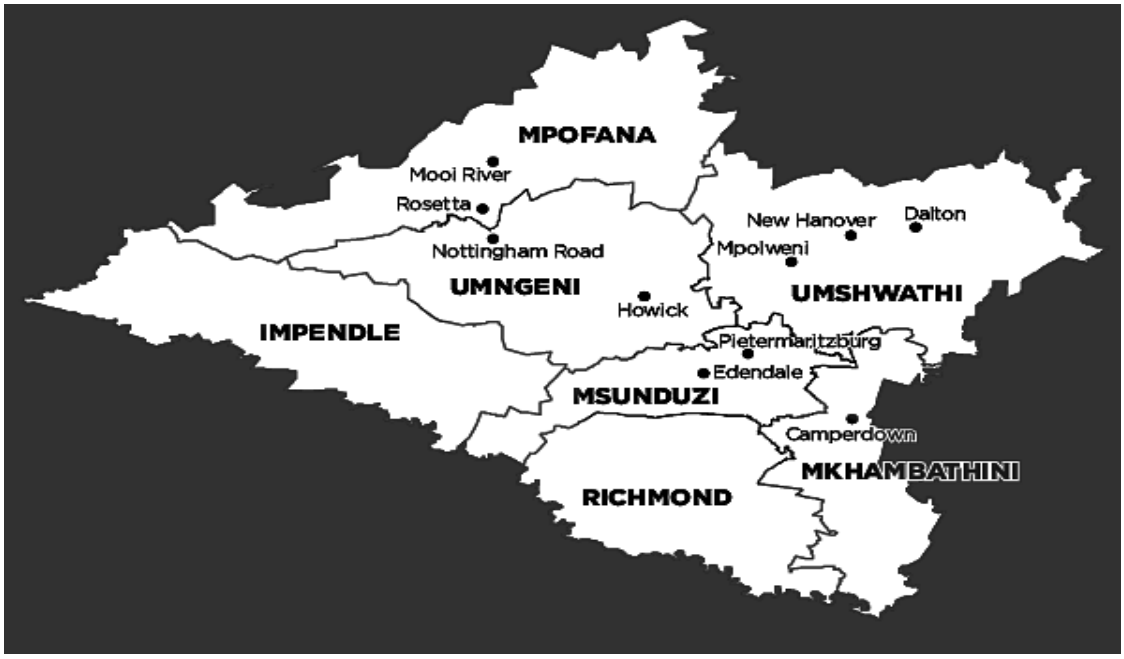
This study's approach consequently accepts the views of Oosthuizen and Carstens (2015), that error management should not hurt individual MHCPs and administrators. Rather programmes should be utilised which improve the healthcare system as a whole, made up of MHCPs working as well functioning teams.

Currently, the draft National Patient Safety Incident Policy by the Department of Health (DoH) (2015b), focuses more on facility improvements and less on clinical governance or interpersonal factors. Bradshaw (as cited in Mhlongo, 2016), stated that caring is both innate and a learned quality or virtue, which differs due to influence by variables such as, environment, culture and motivation. Therefore, a safety steps guideline to give patients good quality of care as illustrated by the National Patient Safety Agency (NPSA) (2004), becomes a necessity.

1.3 uMgungundlovu District Municipality

The uMgungundlovu District is the second largest district in the KZN Province, comprising seven local municipalities (Health District KZN, 2015-2016, p.13). UMsunduzi is the largest sub-district.

Figure 1: Map of the uMgungundlovu Health District



Source: Health District KwaZulu-Natal, 2015-2016, p.13

The uMgungundlovu district, having three hospitals with fully fledged MOUs and being a National Health Insurance (NHI) pilot site, was selected for this study. As such, the district receives an additional budget to institutionalise best practice in key health priorities, such as maternal healthcare. This also has wide implications for service delivery targets and health planning due to urban and rural migration patterns that push referrals to higher levels of care.

These selected hospitals are: (A) District, (B) Regional and (C) Tertiary, illustrating the referral system.

The 2015 district MMR was 208.3/100 000 live births, as per the planning report (DoH, 2015). This figure is five and a half times more than the missed Millennium Development Goal 5 target.

Therefore, the perception exists that MOUs are unsafe and have become a huge concern.

1.4 Problem Statement

Pregnancy is a normal healthy state according to Bullough *et al*., (as cited in WHO, 2004), which most women eagerly await. However, pregnancy carries serious risks of mortality and morbidity, which could be avoided.

In South Africa maternity care is part of primary healthcare and is offered as a free service. Maternal deaths from 2006 have been blamed on negligent hospital staff, midwives and doctors training, lack of antenatal care information and non-use of management protocols (Adams, 2006). The reasons for maternal deaths according to the South African Confidential Enquiries into Maternal Deaths report (2010 to 2013), points to amongst other reasons, incompetence, inefficient services and sub-standard care linked to poor knowledge and skill of MHCPs (DoH, 2015a). Furthermore, substandard care puts patients at risk due to a lack of intern or trainee supervision, according to a newspaper article by Cronje, Bega and Mokati (2015), citing a new study in the South African Medical Journal. The study noted that 26% of interns experienced an *adverse event*, where senior help was not available and recommended e.g. suitable intern supervision in the labour ward.

The MMR modelled estimate for South Africa by the WHO (2016) is 138/100 000 live births, whilst raw data for KZN and the selected uMgungundlovu District is 274 and 208.3, respectively (KZN DoH, 2015). The 2015 Millennium Development Goal 5 target was not achieved, i.e. to decrease MMR to 38 maternal deaths per 100 000 live births. Therefore much has to be done differently to achieve the SDG3 (2030) MMR target of <70/100 000 live births.

Furthermore, the National Committee on Confidential Enquiries into Maternal Deaths Report (2015) noted that 60.4% of all South African maternal deaths between 2011 and 2013, could have been avoided. Service delivery challenges loom due to poor quality of maternal care with growing challenges of rising litigation.

Most previous studies have focussed on clinical skills and behavioural issues amongst maternal healthcare workers but not on patient safety perceptions of MHCPs. The lack of empirical findings indicates the need to clearly grasp the

patient safety culture relationship of MHCPs in MOUs (Casida and Pinto-Zipp, 2008).

Mayeng and Wolvaard (2015) recommended that key to ensuring patient safety is ensuring organisational PSC. In this regard Benzer, Meterko, Singer (2017); Singer, Gaba, Geppert, Sinaiko, Howard, & Park, 2003 & Singer *et al.,* (2007), developed a survey tool for assessing workforce perceptions of hospital safety culture. This tool measured key components such as commitment by senior managers to safety, adequate resources, overall level of patient safety improving, open communication, organisational learning; unit and interpersonal factors, such as policy, training, teamwork, shame, blame and discipline. In this way, the effect of safety climate on patient safety outcomes could be better understood (Stone, Harrison, Feldman, Linzer, Peng, Roblin, & Willams, 2005).

The gap identified makes this study significant because it assesses the actual awareness of MHCPs of the potential for things to go wrong, whilst caring for pregnant women, as well as the level of PSC that currently exists in these selected MOUs. The research questions therefore address this gap, and provide the basis for this study.

1.5 Purpose Statement

The purpose of this research is to understand MHCPs' perceptions and measure the level of patient safety culture, in selected maternity obstetric units. This was done using Patient Safety Climate in Healthcare Organisations (PSCHO) survey by the Benzer *et al.,* (2017), in the uMgungundlovu district in KZN. The aim was to guide safety improvement initiatives and strengthen the clinical governance framework.

1.6 RESEARCH QUESTIONS

1.6.1. Main Research Question

To what extent is patient safety culture present in selected maternity obstetric units, in the uMgungundlovu District Municipality?

1.6.2. Sub –Questions:

a) What are the perceptions of 'organisational' patient safety culture?
b) What are the perceptions of *unit* patient safety culture?
c) What are the perceptions of *interpersonal* patient safety culture?
d) Do perceptions of patient safety culture in maternity obstetric units vary amongst hospitals surveyed?
e) Are effective clinical governance structures in place to ensure patient safety?
f) Do perceptions of patient safety practices vary across maternal healthcare providers with respect to job designation; work area; age and work experience?

1.7 Delimitations

The cost and respondent burden may limit the use of safety climate surveys according to (Benzer *et al*., 2017). Due to budgetary and time constraints, as well as the focussed area of study involving selected MOUs, MHCPs, MMR and patient safety culture, in one of the 11 health districts in KwaZulu-Natal, these results cannot be generalised. Furthermore, this was not a hospital-wide study because the focus was MHCPs and MOUs. Also, measuring MMR level itself is largely recognised as a general indicator of the standard of the health system (Measure Evaluation, 2006).

1.8 Justification for the research

The Institute of Medicine (IOM) focused on *safety culture* as a major area for healthcare organisations to intervene and decrease medical care risks to patients (IOM, 2001). This is sufficient justification, for the critical need to assess patient safety culture level, by measuring healthcare workers *safety culture* perceptions (Singer *et al*., 2007).

According to Polit and Beck (2012), the need of a study lies in its ability to add to the existing body of knowledge in a given discipline. Therefore, this study will bring positive changes, such as structured safety guidelines for MHCPs, legal

reforms to counter malpractice claims, revised safety-based curriculum approach, interpersonal skills development and achieving the SDG3 (2030) MMR target of <70 /100000 live births.

1.9 Outline of the study

Chapter 1 gave an introduction and context for the study with respect to the causes of maternal deaths. The research problem and the selection of the uMgungundlovu Health District study location was explained. The study purpose, research questions, delimitations, justification and conclusion, followed.

The literature review in Chapter 2 focuses on previous studies related to this research topic. Chapter 3, provided a detailed description of the quantitative research strategy, while Chapter 4 describes the data analysis techniques and details the study's findings and trends. Chapter 5 discusses in detail the interpretation of the study results and utilises identified trends to confirm or reject the results of the studies reviewed. Some key results were strengthened by other studies to resolve this study's assumptions and gap. In the final chapter, Chapter 6, the study results are developed into practical recommendations for legislative and budgetary improvement. This will enhance MHCPs interpersonal skills through training, so that improved PSC improves MMR reduction.

1.10 Conclusion

This chapter gave an in-depth discussion on the background to the study on PSC. It highlighted the current challenges patient safety presents in public institutions and the gaps identified with respect to maternal care received in facilities and the role of MHCPs. The next chapter reviews literature available on similar studies for more insight into this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The purpose of this section is to discuss relevant academic literature on the subject of patient safety culture in MOUs. The literature was reviewed in a systematic way by identifying key words from the topic and definitions, such as: *midwifery malpractice; patient safety and maternal care studies; high reliability organisation characteristics; quality of care health models; nursing and safety practice studies; patient safety culture or climate definition and clinical governance*.

In total, two hundred pieces of literature were reviewed. Literature that supported the objectives of the study and the problem statement was comprehensively examined. Primarily, these were retrieved from online databases. Publications over the last fifteen years and older were reviewed due to the nature of this study, as health safety issues are still evolving, making it difficult to obtain relevant data locally. However, peer-reviewed articles, Department of Health reports, text books and a few student papers were cited.

This chapter discusses the *high reliability organisation theoretical framework* and *Donabedian's quality of care conceptual framework or model*.

Overall, this chapter examines the linkages between MOUs functioning as high reliability units and patient safety culture practices of MHCPs.

2.2 Safety in Maternal Health Care: A Human Rights Approach

The literature reviewed asked a broader critical question that needs answering, *Where is the safety in safe motherhood?* To answer this, only specific units e.g. MOUs were selected and not entire hospitals. My study looks at the culture of patient safety practised by MHCPs, who work in MOUs which are supposed to mimic high reliability units. Such units should reflect the patient safety level in the whole hospital. This study therefore focuses on the safety aspect of quality of care, wherein a safety culture requires research into the technical, clinical and interpersonal skills of MHCPs, as studies have shown (Singer, *et al., 2003* & Stone *et al*., 2005).

Bullough, Colin & Graham (as cited in WHO, 2008) posed four thought provoking questions; i.e. whether mothers' die because they're unaware of the need for medical care or problematic danger signs, or services either don't exist or are not accessible or there are socio-cultural barriers, or facilities give inadequate or harmful care. I agree with these authors' view that taking action was more critical than actually measuring the exact level of MMR. However, maternal deaths do offer a litmus test on the status of women, their healthcare access and the capability of the health system in taking care of their needs. The experiences of pregnant women matter because giving birth is a life and death moment for both mother and child. Undoubtedly, it is a mothers' bad experience that leads to malpractice claims against hospitals. South African public hospitals are currently showing health system deficiencies, worsened by lawyers who have found gaps for huge malpractice claims (Peters, 2016). Consequently, the budgetary and service delivery implications based on the findings of my research would be powerful. The role of the department of health, its leadership, staff, governance and training structures also become important.

Internationally, a major study by Singer *et al*., (2003), was designed to understand the fundamental attitudes towards PSC in fifteen Californian hospitals. The study showed that respondents attitudes varied by hospital, job designation and clinical status. The findings were suggestive of a safety culture level, lower than required of a high reliability organisation. A High Reliability Organisation (HRO) is defined as a conventional organisation of personnel, technology and *processes* that can manage difficult and risk activities at acceptable performance levels because accidents can never be totally eliminated (Gaba, 2008, p. 86)

Earlier research carried out by (Kohn *et al.,* 2000; Singer *et al*., 2003 & Stone, Hughes & Dailey, 2008) in the United States and (Flin, Yule, McKenzie, Paterson-Brown & Maran, 2006) in the United Kingdom covered patient safety dimensions and determined safety as the central element of quality of care. These laid the foundation for PSC studies.

According to Merialdi (as cited in WHO, 2008) more than 500 000 women die annually during pregnancy or childbirth, mainly from developing countries. Although the number of deaths is decreasing, maternal healthcare remains a

priority for policy-makers globally. Based on the evidence reviewed, it is critical to regularly assess how dangerous our healthcare system is. Hospitals and MOUs in particular, deal with obstetric emergencies where errors, deviations or accidents can occur and mothers' die. In terms of the quality of emergency obstetric care, Engenderhealth.org (2003, p. 3) defines this as, "a state of readiness that will enable you and the team to respond appropriately to obstetric emergencies in a way that fulfils the needs and rights of your clients." The first goal therefore is to avoid hurting patients through the care that should be helping them by redesigning 'system' safety (IOM, 2001).

Systems strengthening means preparing MHCPs with the knowledge to prevent or reduce patient injuries arising during the *process* of care (Gaba, 2000, p. 83). Therefore, providing more opportunities for interdisciplinary training, will assist in making MHCPs confident and competent to handle emergencies. It is satisfied patients who develop trusting relationships with healthcare providers. This creates a stable work environment which is critical to manage illness and to heal, hence a strong workforce has to become the centre of the healthcare system (IOM, 2001).

To strengthen the MHCP workforce, more research needs to be conducted on poor-quality and unsafe care with an *adverse outcomes index* developed, as described by Isaac (as cited in WHO, 2008). The WHO (2008) further defines *adverse events* as injuries from medical care. Hence, patient safety is equivalent to *operational safety* (Gaba, 2000, p. 83). *Operational safety* means no lack of access to healthcare facilities or substandard care. Both these are inextricably linked because when local MHCPs give substandard care then people refrain from seeking that care (Hulton *et al*., 2000). To prevent this nexus, regular facility assessments are important for quality of care improvement. This will also strengthen patient activity and coordination, positively.

It must be remembered that an organisation's culture in terms of patient safety is the single most important feature affecting entire system processes, either positively or negatively. More substantial is that culture is an *outcome* of the organisation's attitudes, beliefs and practices (WHO, 2008).

Hulton, *et al.,* (2000) stated that due to the quality of care received from a health facility, its use is influence in various ways. However, not much is known about how this relationship works. Evidence-based studies suggest that disrespectful and abusive treatment by MHCPs is a major factor stopping pregnant woman from delivering in maternity facilities, (Warren *et al*., 2013). Abusive MHCP behaviour leads to unsafe medical care Ndaba (2013) and is a major cause for concern in pregnancy.

The exercising of optimal care to save mothers' lives in emergencies, as revealed in many studies, indicates that patient safety is easily compromised due to systemic issues relating to staffing, skills levels or administrative failures (Amnesty International Report, 2014; Farooqi, 2009 and Pillay, 2009).

Administrative strengthening led authors' Gerada and Cullan (2004) to draft a knowledge and skills framework to empower clinical governance champions or leads. According to Gerada & Cullen (2004, p. 13), the aim of clinical governance is to increase patient satisfaction; improve cooperative relationships and efficiency amongst clinical teams; increase professionals job satisfaction; improve clinical outcomes and reduce major events. Fentianah (2012) also recommended a well-structured nursing competency programme to sustain nursing creditability. Clinical governance in quality healthcare is described as a framework for accountability, continuous improvement of quality services and ensuring high standards of patient care (Quality Healthcare Medical Services, 2017). All hospitals in South Africa must have a functioning Hospital Board, Maternal Death Review Committee, Adverse Events Committee and Patient Safety Committee.

In this study both the awareness by MHCPs of the existence of these clinical governance structures and level of effectiveness will be measured. A current baseline needs to be established on the level of effectiveness, to improve on with future measurements. Well-functioning structures with skilled members augur well for patient safety outcomes, improving various indicators, such as MMR.

PSC survey tools differ and in South Africa two studies were done in the Free State Province (Mayeng & Wolvaardt, 2015; Wageng, 2014), using different PSC instruments to measure and describe PSC in district hospitals. These were

hospital wide studies, differing from this study, which focused on a specific unit across three hospitals.

Both studies identified perceived inadequacies with PSC and called for changes to be implemented to improve PSC and quality patient care. A major concern for respondents in the Mayeng and Wolvaardt (2015) study was that unsafe patient incidents were not investigated due to management's lack of commitment, despite the required reporting by the DoH.

This study adds the benefit of adapting the NPSA (2004) safety guide for local use. The guide is a safety checklist to meet an institutions clinical governance and risk management targets.

Work culture differs from country context, so of added benefit are reviews of critical studies from other countries, to draw insights and parallels. In this regard a recent meta-analysis systematic review was carried out by Okuyama, Galvao and Silva (2018). The authors' assessed the culture of patient safety based on healthcare professionals' perceptions, using the popular Hospital Survey on Patient Safety Culture. The assessment covered 59 quantitative studies; with 755,415 practitioners between 2008 and 2015; with 11 prior to 2011. The countries were, Asian (29), European (18), American (14), Turkish (2) and African (1). The results revealed the lowest score for *non-punitive response to errors* and *teamwork among the units* scored highest. The weakest dimensions were communication and staffing problems. The Hospital Survey on Patient Safety Culture results will be compared to my results using the PSCHO survey in Chapter 5, because these survey instruments are almost similar.

Xu, Deng, Gu, Ng, Cai, Zhang, Ke, Yu and Chan (2018) also used the Hospital Survey on Patient Safety Culture to study an experimental hospital with mixed culture, situated in Mainland China with Hong Kong hospital management culture. The case study hospital was compared to general Chinese hospitals after using the Manchester Patient Safety Framework. The scores were better in management expectation, actions and support for patient safety, incident reporting, communication and teamwork within units. Its weaknesses were related to non-punitive responses to errors, teamwork across units and human resources.

Adopting best practice in workplace culture from leading healthcare organisations in other countries, adds valuable lessons locally. For this reason, local studies have also focussed on an enabling environment. This is crucial in terms of senior management support and continuing professional development. Thus nursing unit managers' can provide consistent and high-quality patient care, according to (Armstrong, Rispel & Penn-Kekana, 2015). Four factors that influence time management are: workforce issues; weak communication; limited resources; unplanned activities and interruptions as identified by (Armstrong *et al*., 2015). Similarly, workforce shortages and weak performances were two elements crucial to PSC according to Ndaba (2013). These are perceived risks associated with working in maternity units, making midwifery unattractive, leading to further staff shortages. My study asked an alternate question to MHCPs with respect to, whether they intended changing their career, considering critical staff retention challenges.

Therefore, validated short form PSC surveys should be popularised to assist healthcare institutions to measure units or the entire hospital level of PSC and use appropriate interventions, as needed for improvement.

Another intervention is accreditation, which is preferred as a method to drive patient safety but government regulations are still required to establish standards, which healthcare providers must adhere to WHO (2008).

The accreditation system in South Africa however is inadequate to address quality of care, although this is a starting point for a more standardized approach (WHO, 2014). The NCCEMD report (2015) made key recommendations to improve quality of care in maternal obstetric emergencies, such as accreditation of caesarean section sites.

Being an NHI pilot site the uMgungundlovu District requires special attention regarding attainment of strategic goals and performance targets based on various indicators, such as MMR. Smith (2013) stated that South Africa is an upper middle-income country but is under-achieving like a low-income country in terms of maternal health. We must be realistic and ask ourselves if we are ready to implement the NHI. For example, although some recommendations given in

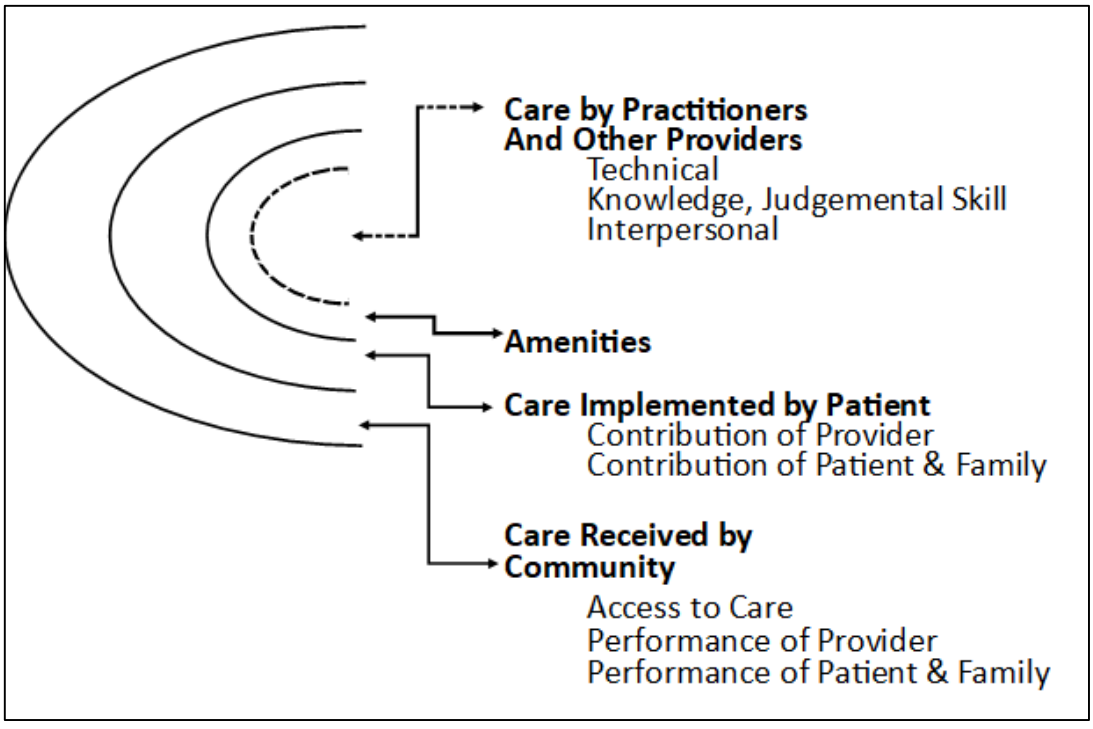
the Amnesty International Report (2014) were implemented, more effort was required to give safe quality of care to expectant mothers'.

My PSC research is critical because the major challenge in the KZN NHI pilot districts is to achieve a mindset change in health workers, according to the NHI provincial coordinator (Cullinan, 2015).

Another key document is the hospital's strategic plan as explained by Casida and Pinto-Zipp (2008). If this is aligned with the MOUs patient safety culture in mind, then mind-set changes can occur, especially if MHCPs interpersonal skills are further developed. The KZN DoH can in this way achieve one of its overall goals i.e. to reduce MMR.

Of critical relevance to this study, is Donabedian's (1969) argument that there is a need for assumption of responsibility for and commitment to the quality of care, when a pregnant patient reaches a health facility. In 1988 Donabedian further argued that before an assessment of quality of care is made, the definition needs to be based on in-depth information on causal linkages among structure, processes and outcomes (p. 1743).

Figure 2: Levels at which quality may be assessed.



Source: (Donabedian. 1988, p.1744)

The WHO (2008), encouraged research on organisational and provider aspects of training and the effect on patient safety. Donabedian (1988) detailed two elements in the performance of practitioners: firstly, the technical or clinical knowledge; and secondly, the judgement skills based on interpersonal relationships, e.g. patient communication, as shown in Figure 2 above.

On specifying quality before assessment, Donabedian (1988) stated that depending where healthcare providers are located systemically and given their responsibilities, power and vulnerability, their performance becomes the beginning of the focal point for the family of concentric circles.

Clearly, two elements in the performance of practitioners are paramount for outcomes, i.e. technical and interpersonal skills. Appropriate clinical care depends on technical or clinical knowledge. Such knowledge uses appropriate science and technology to achieve effective patient outcomes and cannot go beyond this limit. On the contrary, interpersonal relationship management according to Donabedian (1988), is the practitioners' ability to communicate necessary information. This used to make a diagnosis and select preferred appropriate care.

The *interpersonal process* according to Donabedian (1988), is the medium by which technical care is enacted and on which treatment outcomes depends. The behaviour of the healthcare provider must meet individual social expectations and standards. This conduct can assist or hinder technical performance, such as informed choice, empathy, tact, sensitivity, privacy and confidentiality (Donabedian, 1988, p. 1744).

This PSC study acknowledges that conduct during this *process* needs assessment for quality of care, which is made up of attributes of maternal resources, clinician and patient activities and their effects on the healthcare status of patients. Therefore, one infers that good *structure* promotes good *process*, rendering good *outcomes*.

This relationship of the *interpersonal process* and *outcome of care*, stems from the behavioural sciences, showing that quality assessments are neither clinical nor technological assessments. Quality assessments are an administrative tool to monitor performance targets and by use of indicators can show association

but not causation between *process* and *outcome*. This is done by quantifying the attributes of both *process* and *outcomes* to determine in what manner these affect patients' health, welfare and safety (Donabedian, 1988).

The bigger picture though is that patient safety is a *clinical* as much as it is an *operational* problem, therefore the need for PSC surveys and guidelines. The patient safety climate or PSCHO survey used in this study, therefore includes the measurement of the MHCPs interpersonal perceptions of quality of care. Furthermore, it does not assign blame when the measured organisational safety culture is *adequate or inadequate*. This was critical in my methodology, as the main objective was to guide safety improvement initiatives in selected MOUs, to mimic high reliability organizations, based on the theoretical framework below.

2.3 The Theoretical Framework

2.3.1 High Reliability Organisation (HRO) Theory

Organisational safety in high hazard industries involves two theories, namely: Normal Accidents Theory and High Reliability Organisation Theory (Gaba, 2000). The latter describes that conventional organisation of personnel, technology and *processes* can handle difficult and risky activities at acceptable performance levels because accidents can never be totally eliminated (Gaba, 2000, p. 86). Therefore, High Reliability Organisations (HROs) are seen as models to which health care should aspire because their environmental challenges are common. In the HRO model, patient safety refers to preventing and improving adverse outcomes or injuries, resulting from healthcare processes. Adverse events are made up of patient safety errors, equivalent to *operational safety* in the workplace (Gaba, 2000, p. 83).

The identified and commonly accepted components of a culture of safety as applied to many domains, are shown in Figure 3, below.

Figure 3: Components of a culture of safety

	Components of a Culture of Safety
1.	Commitment to safety articulated at the highest levels of the organization and translated into shared values, beliefs, and behavioural norms at all levels
2.	Necessary resources, incentives, and rewards provided by the organization to allow this commitment to occur
3.	Safety is valued as the primary priority, even at the expense of "production" or "efficiency"; personnel are rewarded for erring on the side of safety even if they turn out to be wrong
4.	Communication between workers and across organizational levels is frequent and candid
5.	Unsafe acts are rare despite high levels of production
6.	There is an openness about errors and problems; they are reported when they do occur
7.	Organizational learning is valued; the response to a problem focuses on improving system performance rather than on individual blame

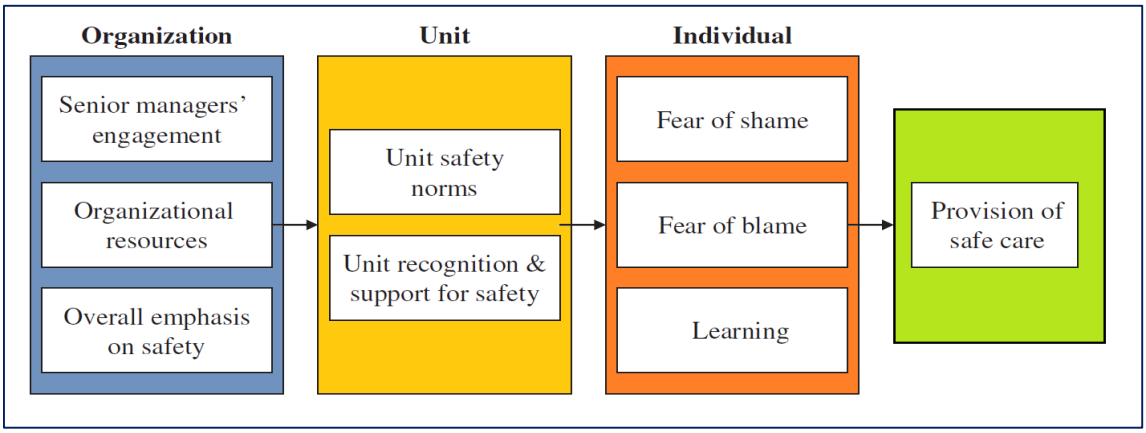
Source: (Singer et al., 2003, p.113)

The theory guiding the design of the Patient Safety Climate in Healthcare Organizations (PSCHO) survey, was based on HRO Theory applied to healthcare by (Gaba, Howard and Jump, 1994; Kaafarani, Itani, Rosen, Zhao, Hartman & Gaba, 2009).

Two concepts require clarification at the outset. Firstly, *organisational climate* refers to member perceptions of organisational features like: leadership, norms and decision-making. *Organisational culture* on the other hand is a broader reference to norms including values, beliefs and assumptions shared in the workplace (Stone *et al.,* 2005, p. 468). Researchers have sometimes used the terms *culture* and *climate* interchangeably, but considerable research suggests that an important ingredient in operating excellent organisations is their cultures. These HROs avoid catastrophic outcomes by engaging in various strategies such as training, leadership, control functions, rewards and punishments (Roberts, 1993).

The support for a model of hospital safety culture with nine dimensions embracing the safety components shown in Figure 4 below, was supported by the empirical findings of various studies (Benzer, *et al.,* 2017; Meterko *et al.,* 2011; Singer *et al.,* 2003; Singer *et al.,* 2007).

Figure 4: Theoretical model for hospital safety components



Source: (Benzer *et al.*, 2017, p. 20)

Figure 4 illustrates three workplace domains. The first domain is *organisation*, wherein the senior managers' engagement dimension includes supportive action in assisting front-line workers as a safety component. This includes resources for patient safety, such as, adequate personnel, budget, equipment and time to provide patient care safety.

Similarly, the second domain consists of *unit* norms for patient safety in the immediate work environment and genuine concern for socially acceptable behaviour. The dimension on unit recognition and support focuses on formal ways to guide staff behaviour on patient safety.

The third *individual* or *interpersonal* domain is made up of, fear of shame and blame, as well as learning. This entails admitting mistakes and receiving help or respondents' perceptions on revealing mistakes, which results in discipline and punishment. The ability to learn from colleagues to decrease future errors is vital to prevent adverse advents. The provision of safe care has ramifications on MHCPs choices e.g. personal career change decisions due to the potential impact of patient safety in MOUs.

In terms of measurement reliability, Cronbach's Alpha or internal scale reliabilities were 0.84, 0.83 and 0.74 respectively, for the new organisational, work unit and interpersonal scale (Benzer *et al.,* 2017). If Cronbach's Alpha >.7 it means good reliability which is an important, though not adequate condition for validity (Werbeloff, 2015, p. 20)

The initial Singer *et al*., (2003) study found major communication gap concerns amongst front-line, middle and senior managers', in reporting patient care

problems. This made it difficult for administrators' to understand or assess the actual state of the organisation and identify interventions to maintain or improve the culture of patient safety. This study showed the need to form better linkages between these management levels to favour patient safety. Further studies by the authors' together with others, placed the overall emphasis on facility PSC, measuring provision of safe care to establish a PSC baseline (Benzer *et al.,* 2017; Meterko *et al.,* 2011; Singer *et al.,* 2007).

The empirical support for this model is strong based on validation of the PSCHO survey (Benzer *et al.,* 2017). The model focusses on understanding fundamental perceptions of healthcare providers, with respect to underlying structure and care processes that may lead to "adverse events" or undesirable outcomes, as outlined by (Singer *et al*., 2007). These three domains, 'structure,' *process* and *outcomes* will be described in 2.4 below.

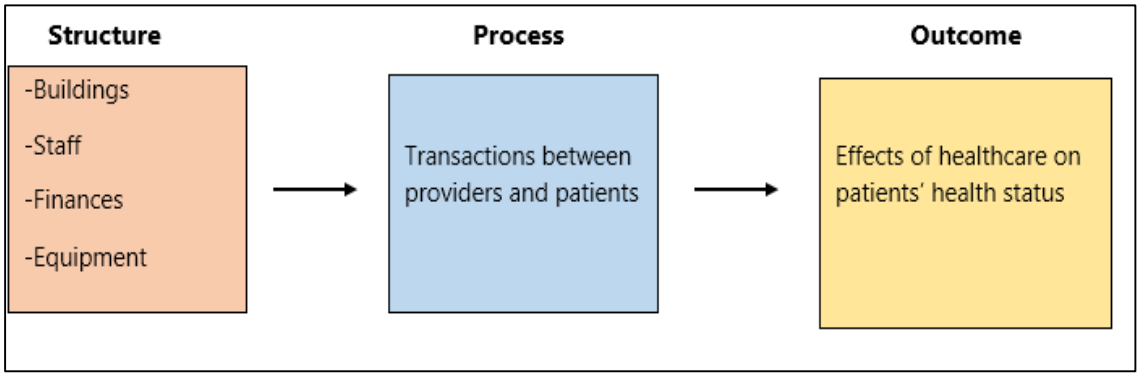
2.4 Description of the Conceptual Framework

2.4.1 Towards Quality of Care in Safe Motherhood: Donabedian's (1980)

There's no universal definition for *quality of care*. Hulton *et al*.; (2000, p.9) define maternal healthcare quality as, "the extent to which maternal health services cares for patients', increasing the likelihood of timely and appropriate treatment to achieve desired outcomes, both consistent with current professional knowledge and upholding basic reproductive rights." This definition describes patient safety as the key element of quality of care, reiterated as "freedom from accidental injury" according to (Kohn, *et al.,* 2000, p.18).

The conceptual framework used in this study is Donabedian's (1980) Health Model, wherein a series of *processes* leads to measurable *outcomes* because researchers, policy-makers and healthcare providers are interested in understanding organisational systems and changing these in relation to patient safety (Stone, Hughes & Daily, 2016). Therefore, the Donabedian (1980) Model dominates amongst quality of care frameworks and is made up of *structure*, *process* and *outcomes*, as shown in Figure 5 below.

Figure 5: Donabedian's Model of Care (1980)



Source: Adapted from (Donabedian, 1980)

The model above includes firstly, resource inputs and organisational features that influence delivery of care and represent *structure*.

Secondly, activities or processes undertaken by healthcare providers to deliver care. Thirdly, results of clinical or technical activities and interpersonal behaviour by healthcare providers constitutes *outcomes* according to Donabedian (as cited in WHO, 2008, p.1). This quality of care framework explains factors that contribute to unsafe care. However, its applicability to developing countries is not well known and major knowledge gaps, such as *structural* and *process* factors that underlie *outcomes*, need to be filled before complete solutions can be found (WHO, 2008). My study intends to fill a gap in the *process* dimension.

In terms of my study, to understand patient safety level perceptions of MHCPs in obstetric units means that the *quality of care* should be in keeping with the *structure*, *process* and *outcomes*, due to the influence of all three dimensions.

The maternity unit's structure consists of staff or MHCPs, e.g. midwives', doctors', obstetricians', clinical managers' and physical resources, such as: equipment and budget. Therefore, *structure* measures average quality of care within a facility. In contrast, *process* entails all actions making up healthcare (Donabedian, 1969). Additionally, *processes* are either technical or interpersonal, illustrating the way in which care is given (Donabedian, 1980). *Process* standards include: clinical knowledge of MHCPs, teamwork, training and implementation of PSC in maternity units. Mostly, according to Donabedian (1969) the measurement of *process* is nearly equivalent to the measurement of quality of care because these contain all acts of healthcare delivery. My study focusses less on *structure* and more on *processes and outcomes* because

process is good then PSC levels and results or *outcomes* is good. However, it is important to identify organisational factors in *structure* that are less clear but affect patient safety.

The research questions and the questionnaire addresses *structure*, *process* and *outcomes* in detail by looking at organisational, unit and interpersonal factors. This is illustrated by e.g. eliciting whether *disregarding policy and procedures* or *inadequate training* may result in patient harm. The focus remains on how best to optimise patient safety through quality of care for better *outcomes*. This framework has therefore become the paradigm for quality of care measurement, using the *structure-process-outcomes* triad (Donabedian, 1980).

Progressively, South Africa needs to implement effective and affordable preventative strategies to reduce maternal deaths. Thus far, most maternal health research has focussed on preventative biomedical, clinical, epidemiological and operational dimensions. Consequently, health systems' obstacles need to be identified for the removal of harmful behaviours.

Figures 3, 4 and 5 show that "quality of care" assessments can modify structures and processes within any healthcare unit, making these ideal to assess MOUs. Donabedian's (1980) model initially earned criticism for not incorporating environmental factors related to patients' and the health profession itself. By utilising this PSC survey based on the HRO theoretical framework, will address this criticism.

Furthermore, my research builds on various studies (Makinga, Moodley & Titus, 2012; Mayeng & Wolwaard, 2015; Mhlongo, 2016; Ndaba, 2013; Okuyama *et al*., 2018; Pillay, 2009; Singh, 2013; Wageng, 2014; Xu *et al*., 2018) by endeavouring to assess PSC in a HRO environment, such as MOUs.

According to WHO (2006) safety is one of six dimensions in the health system. Minimising risk and harm to patients e.g. pregnant women, means that for quality midwifery services, all dimensions need to be improved.

Reising and Allen (2007) stated that *standard* means an accepted behaviour in line with policies and acts. Failure to follow available guidelines, protocols and procedures, leads to substandard care and malpractice due to patient negligence. This results in patient injury. Therefore, *process* standards are

required. Donabedian (1980) describes *process* standards as skills used to provide preventative, diagnostic, therapeutic and rehabilitative healthcare. Skilled and effective healthcare managers' use suitable management tools required in a situation, according to Donabedian's (1980) Model (as cited in Fentianah, 2012). The model therefore integrates *structure* and *process* in management activities to achieve best outcomes and improve healthcare providers' performance. The ease to identify organisational risks and recognise strengths of different disciplines, strengthens the organisation.

My study uses this model because it has two important functions. Firstly, although Pilane & Malan (2018) reported that South Africa had slashed its MMR in public hospitals by almost a third 29% within seven years between 2009 and 2016 to 134 / 100 000 live births, the challenge remained whether South Africa will be able to achieve the SDG5 target in 2030.

My study is designed to guide safety improvement initiatives and strengthen the clinical governance framework, to achieve this MMR target. More importantly, the WHO uses MMR as a strong measure to explain how well or badly a country's public health system is doing.

Secondly, I agree with the champions of patient safety, that the high costs of unsafe acts creates economic opportunities, for hospitals to invest in safety improvements (Mello, Studdertt, Thomas, Yoon & Brennan, 2007). This argument is supported because in public hospitals the bulk of these avoidable costs are internally borne. Although the authors' state that a business case for safety investment is an ongoing process, the South African public health sector must pursue investing in clinical and management interventions, that prevents patient injuries.

The literature reviewed, combined with more than thirty years of my own medical professional experience, suggests that continuous investment in infrastructure needs to be reduced. Bigger budgets for interpersonal skills development should now be pursued. This view on healthcare safety management is strengthened by Casida and Pinto–Zipp (2008), who asks nurse managers' to be leaders when health care delivery systems are turbulent and constantly changing. Such an organisational climate is characterised by cost, time constraints and challenges

in achieving desired patient *outcomes*. With competing resources the call by WHO (as cited in McCarthy, 1997), for the use of emergency obstetric care indicators means changes in availability, accessibility, quality and use of services.

My study acknowledges the value of specific maternal care indicators to assist programme planners to identify priorities and use data for relevant interventions. Such data can easily be collected from MOUs and used to measure quality of care given in the healthcare system. Data collection on incidents reported requires investigating violations and giving meaning to human rights. This depends on the monitoring and evaluation directorate efficiency in the DoH, and requires strong clinical governance structures in hospitals. These structures enable remedies to be sought through different accountability mechanisms which resolves patient conflicts and should reduce litigation costs.

Finally, this quantitative research strategy yields policy and practice interventions that are not just based on the question of *what works* but aim to understand how these interventions *will work and why* (Hussein, Kanguru, Astin & Munjanja, 2011). Such diverse information can be used for designing effective patient safety policy, training programmes and reference guidelines, either as tools or strategies for advocacy, accountability and implementation, towards reducing maternal mortality (Fauveau & Donnay, 2006).

This study is guided by the framework in Figure 6 below.

Figure 6: Framework for guiding the research process

FRAMEWORK FOR GUIDING THE RESEARCH PROCESS			
Frameworks	Concept Unpacked	Authors/ Institutions	Relevance to Topic
Theoretical Framework/ model: High Reliability Organisation (HRO) Theory	Field related to high hazard industries management of incidents; Organisational, Unit & Individual categories and linkages in health organisations	Gaba (2000) Meterko et al. (2011) Singer et al. (2003) Vincent, Benn, & Hanna (2010)	Maternal Mortality is dependent on country level development & economic classification requiring customisation of cost effective strategies. HRO theory depicts causal relationships between resources and activities. Maternal obstetrics units are complex units and should mimic HRO's, therefore, measures of healthcare providers' patient safety attitudes can show problematic areas, so that, interventions can be designed.
Conceptual Framework: Donabedian's Model	This framework consists of improving the quality of care in three fundamental parts of the healthcare system: structure; process and outcomes. This is used as a situational management tool.	Adegoke et al. (2011) Donabedian (1969; 1980; 1988; 2005) Hulton et al (2000)	Can be used as a situational analysis tool to improve quality of care. This focuses on patient safety intervention mechanisms, soft skills training and patient safety guidelines implementation because clinical and technical training alone would not change maternal healthcare provider behaviour.

2.5. Conclusion

This chapter reviewed literature on PSC. Many researchers' conclude that maternal deaths can be prevented but are exacerbated by lapses in safety once a woman reaches a health facility. Delays and substandard care by MHCPs are weak areas, which need to be addressed in a manner where there is accountability for the deaths of mothers'. This report is a first step towards patient safety improvement initiatives, by collecting baseline information on specific health care *processes* in MOUs. The validated PSCHO Survey eliciting the patient safety perceptions of MHCPs and its distribution will be covered in the next chapter, as a quantitative methodology had been committed to.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction to the Research Strategy

The Institute of Medicine (IOM) (2001) identified 'safety culture' as a major concern to healthcare organisations. Organisations must have the ability to intervene and decrease medical care risks to patients (IOM, 2001). To assess safety culture is critical and therefore justified by measuring healthcare worker perceptions of *safety culture* or *safety climate* (Singer *et al*., 2007).

Thus the researcher utilised a quantitative methodology, which best illustrated the supplier side provision of quality of care and the level of patient safety practises, by measuring perceptions of MHCPs.

The researcher has applied the following assumptions, based on the Singer *et al*., (2007) study strengthened by the Stone *et al*.,(2005 & 2008) studies throughout this methodology.

Firstly, patient *outcome* depend on the type of care given by various healthcare workers across work areas. According to Singer *et al.,* (2007) individual values, beliefs and behaviours also become acculturated, given time, by daily interactions within specific work units e.g. MOUs. Within such units there are work areas which perform specialised clinical activities within certain norms. Singer *et al.,* (2007) state that these norms are influenced by organisational policies, procedures and decisions. Hence, the safety culture survey in this study divided safety components into three levels: organisation, unit and individual or interpersonal.

The assumption is that there is some level of PSC failure at institutional and more especially, MOU level. The main research question, "To what extent is patient safety culture present in selected maternity obstetric units, in the uMgungundlovu District Municipality?" is critical. This begs another question of whether the *structure* and *processes* are adequate or not, given the poor outcomes on MMR.

The PSCHO survey extended format was distributed, data collected and analysed to answer the research questions and make recommendations.

3.2 Research Design

Cresswell (2014), describes quantitative research as a process to test objective theories by examining the relationship amongst variables. This makes a quantitative approach suitable for patient safety research. This field is fairly new and does not have the advantage of conventional approaches used by other medical fields. It can be deemed as too intrusive and sensitive on people, hence impacting on response rates according to (WHO, 2008). Hence, a quantitative strategy was adopted.

A quantitative descriptive baseline study was conducted, utilising a peer reviewed short format PSCHO survey. This was adapted for local use. The extended survey version gave a greater understanding of MHCPs perceptions of patient safety practices in their work environment and how these affect maternal healthcare *outcomes*.

Furthermore, quantitative data analysis could be used to identify and compare any patterns or trends on a variety of factors or variables affecting PSC in MOUs at an organisational, unit and interpersonal work level.

My study was replicated based on the quantitative methodology used in the Singer *et al*., *(*2003) organisation-wide safety culture survey. The theory tested was HRO theory to assess fundamental perceptions to safety culture amongst all healthcare workers. The aim was to suggest practical recommendations to improve patient safety, as the level of PSC was found to be inadequate or lacking.

Like the Singer *et al.,* (2003) research, my intention was to establish a PSC baseline for the selected MOUs. This approach is valuable for identification of safety gaps and risks associated with maternal care, so that unsafe acts by other MHCPs can be prevented in the future (WHO, 2008). In this way there can be continuous quality of care improvement, with MMR reduction and progressive baseline shifts. On an administrative level, healthcare suppliers or providers can focus on reviewing management, strengthening clinical governance structures and implementing health system interventions as a whole, thereby reducing ‘individual blame,’ taking a ‘systems’ approach.

3.3 Sampling Strategy

In this study it was not possible to include the entire uMgungundlovu District population, therefore a targeted sample was used. This had limitations to describe or estimate population parameters (Wagner *et al*., 2012). The sampling strategy was directed at selected maternity obstetric units in the uMgungundlovu District and the target population of MHCPs, responsible for maternal healthcare. The total population size was 316 staff from the three selected hospitals (as at April 2018), seen in Table 1 below.

Table 1: Sample of all respondents

Hospital	Advanced Midwife	Midwife	Obstetricians			Doctors			Total Population	Required Sample
	Total	Total	Full	Part Time	On Training	Full Time	Comm-Serve	Part-Time		
A	9	45	0	0	0	5	13	2	74	63
B	31	78	0	0	9	23	15	6	162	115
C	29	24	5	0	14	8	0	0	80	67
Total	69	147	5	0	23	36	28	8	316	245

3.3.1 Sampling Method: Hospitals

According to Kumar (2014, p. 360), purposive sampling when used in quantitative research allows the researcher to select a predetermined number of people who in the researcher's judgement, are best positioned to provide the study information needed. This type of sampling according to Kumar (2014) is extremely useful to describe or develop something about which only a little is known.

Polit and Beck (2012), clarify further that this may be stratified purposive sampling, since the approach is typically done along a single domain. The purpose was to capture big variations rather than to identify a common core,

although this emerged in the analysis. Each strata therefore constituted a fairly homogeneous sample.

Three out of four hospitals were purposively selected in the uMgungundlovu District, which have fully fledged MOUs. This was done after careful consideration that in studies of quality of medical care the concern is in respect of actual care provided, by a specific category of professionals and their capacity (Donabedian, 1969). The sampling of target respondents and the selection of significant dimensions of care, provided are key. Together these can reveal more of the latent capacities or weaknesses in MHCP performance.

3.3.2 Sampling Method: Respondents

3.3.2.1 Maternal Healthcare Providers

Respondents were selected based on qualification and experience in maternal care. This aimed at identifying areas for improvement in PSC. A lower response from physicians was predicted, therefore it was decided to sample nearly 100% of the target population: i.e. obstetricians, gynaecologists, doctors and unit clinical managers' since these are busy professionals and smaller in number. This saved time (six weeks) and was also necessary due to the financial and human resources constraints of the researcher. By delimiting the study sites to 3 MOUs with MHCPs in one district the study was achievable, however not generalisable.

The confidence interval was set at an alpha level of .95. This means that the researcher and others can be 95% sure that if it was possible to survey the entire population, people would pick an answer that lies within this confidence interval. Hence, confidence intervals are intrinsically connected to confidence levels.

Furthermore, to influence the confidence levels of results the largest sample size of 100% from all categories of the most qualified MHCPs (except midwives) would mean lesser variation in the study population, therefore less uncertainty. However, doctors and maternal specialists made up 29.2% of the total respondents (n=192) but 44% (n=100) of this category. Almost half of these professionals responded, therefore when compared to the survey response of the Singer *et al.,* (2003, p. 114), out of 2989 surveys, over six months, the overall

response rate was 47.4%. The response rate for physicians was 33%. If only the sample of midwives were surveyed in my study, the overall response rate would have been 93.8%. Hence, the confidence level within this segment is more than satisfactory based on the response rate overall of the Singer *et al.,* (2003) study.

3.3.2.2 Midwives

Wagner, Kawulich and Garner (2012), stated that if the population is small and homogeneous, then a basic sampling technique used is simple random sampling. The researcher used the Statistical Package for the Social Sciences (SPSS) version 25 IBM Corp (2017) to perform simple random sampling having a margin of error of 0.05 and alpha level of 0.95. The required sample size was a minimum of (n=245) out of a population of (N=316), as shown in Table 3.1 above. Midwives are MHCPs who interact the most with pregnant women. A required sample or subgroup of (145) out of the midwife population of 216 was selected, as midwives and advance midwives were higher in number compared to the doctors and specialists with a population of 100.

Table 3.2 below, shows the breakdown of the total population of midwives across the hospitals, as well as the required sample of midwives. According to Kumar (2014) for practicality, the study budget determines the sample size. I had to skilfully select this sample within budgetary and time constraints based on the domains and dimensions in the PSC survey used. These effectively and adequately represented the population sample.

Table 2: Sample of Midwives

HOSPITAL	MIDWIVES	
	POPULATION	SAMPLE
A	54	43
B	109	62
C	53	40
TOTAL	216	145

The midwives total required sample size was 145 and this makes up the major portion of participants.

3.3.2.3 Doctors

The distribution of surveys was carried out separately at each hospital on a weekly basis, targeting 100% of all doctors', obstetricians' and gynaecologists', as seen below in Table 3.

Table 3: Sample of Doctors

HOSPITAL	DOCTORS	
	POPULATION	SAMPLE
A	20	20
B	53	53
C	27	27
TOTAL	100	100

3.4 Demographics

3.4.1 Job Designation

In Table 4 below, the distribution of the total MHCPs respondents (n=192) is shown within the selected MOUs. Midwives made up 70.8% (n=136); whilst doctors, obstetricians, gynecologists, clinical and nursing managers, as well as others made up 29.2% (n=56). Trainee midwives and doctors, who are mainly youth, were also included.

Table 4: Job Designation: Frequency Distribution

Job Designation		Frequency	Valid Percent
Valid	Obstetrician/Gynecologist	12	6.3
	Clinical Manager	2	1.0
	Doctor	14	7.3
	Trainee Doctor	15	7.8
	Nursing Manager	5	2.6
	Advanced Midwife	36	18.8
	Midwife	93	48.4
	Other	3	1.6
	Midwife – Trainee	5	2.6
	Registrar – Doctor	1	0.5
	Obstetrician/Gynaecologist and Midwife	1	0.5
	Matron	2	1.0
	Advanced Midwife and Matron	1	0.5
	Midwife and Matron	1	0.5
	Obstetrician/Gynaecologist and Clinical Manager	1	0.5
	Total	192	100.0

3.4.2 Age

In Table 5 below, the distribution of participants is displayed according to age categories. A total of (n=28) 14.7% of the participants were between 18 – 24 years of age and (n=71) 37.2% participants were between 25 and 35 years old. Hence >50% of the MHCP workforce are youth. Youth are those between 18 – 35 years of age and in this case are generally trainees or interns requiring supervision by senior MHCPs, to ensure patient safety.

Table 5: Age distribution by category

Valid	**Age**	**Frequency**	**Valid Percent**
	18 - 24	**28**	**14.7**
	25 - 35	**71**	**37.2**
	36 - 45	**57**	**29.8**
	46 - 55	**23**	**12.0**
	56 - 65	**12**	**6.3**
	Total	**191**	**99.5**
Missing	**System**	**1**	**0.5**
Total		**192**	**100.0**

3.5 Data Collection: Survey Distribution

3.5.1 The Research Instrument

The validated fifteen item short format PSCHO survey, used in similar settings by Singer *et al*., (2007); Meterko *et al*., (2011) and Benzer *et al.,* (2017) was expanded consisting of 47 items in my research, with a measurement level at both nominal or ordinal levels. The decision to expand this questionnaire was based on the need to assess selected MOUs as HRO's within hospitals because MMR is a primary indicator for the overall state of the healthcare system. The questionnaire had three sections, measuring various domains as illustrated below in Table 6:

Table 6: The research instrument

Section	Domain	Dimensions
1	Patient Safety Climate	Organisational; unit; interpersonal
2	Provision of Safe Patient Care	Clinical governance structures; MMR; PSC
3	Demographics	Job description, work area, age, work experience

Section One of the questionnaire consisted of 21 closed-ended questions on patient safety components (independent variables), spread over three domains characteristic of HROs i.e. organisational, unit and interpersonal. A 5-point Likert Scale, measuring perceptions of MHCPs from strongly disagree to strongly agree was used to assess the level of PSC. Both dependent and independent variables were measured.

Section Two comprised questions 22 to 24 on the provision of safe patient care. These rank clinical governance structures presence with *Yes*, *No* and *Don't Know* and their level of effectiveness ranging from poor (1) to excellent (5). Both MMR and PSC are outcome indicators and dependent variables. These were also ranked from poor (1) to excellent (5). A simple, *Yes* or *No* was required for

MHCPs who needed a step by step safety reference guide (independent variable).

Section Three comprised four questions (25 – 28), featuring demographic data of independent variables, such as job designation, work area, age and work experience in the MOUs (See Annexure 12).

In addition, the PSCHO survey allowed for examination of frequency of *neutral responses to patients* safety perceptions, which are deemed also *problematic* since a lack of safety culture may also be implied. *Problematic* responses as defined by Singer *et al,* (2003, p. 113) are those that represent attitudes and experiences showing the absence of the elements of a culture of safety, as expressed by HRO theory.

It must be noted that the term *problematic* does not imply causation or passing judgement, instead researchers studying HROs, Ciavarelli and Roberts (as cited in Singer *et al*., 2003), state that concerns are raised if *problematic* attitudes are above 10% of a cohort. As per HRO theory < 10% for safety items is allowable.

To allow for comparison amongst MHCPs responses, in terms of job designation, work area, age and work experience; the *problematic responses* to each question were analysed using frequency distribution. The matrix below verifies that all research questions were answered as shown in Table 7.

Table 7: Variables, research questions & items on the PSCHO questionnaire

Variable Name	Research Questions	Item on PSCHO Questionnaire (Q)
Independent Variables: Perceptions towards patient safety Main Question	1.5 To what extent is patient safety culture present in selected maternity obstetric units, in Umgungundlovu District Municipality?	All Questions
Section 1 Sub Questions Dependent Variable	1.5.2 (a) What are the perceptions of 'organisational' patient safety culture?	Question 1-7
	1.5.2 (b) What are the perceptions of 'unit' patient safety culture?	Q8-16
	1.5.2 (c) What are the perceptions of 'interpersonal' patient safety culture?	Q17-22
	1.5.2 (d) Do perceptions of patient safety culture in maternity obstetric units vary between hospitals surveyed?	Post Analysis
Section 2 Sub Question Independent Variable	1.5.2 (e) Are effective clinical governance structures in place to ensure patient safety culture?	Questions 22(a) & (b) - 24
	1.5.2 (f) Do perceptions of patient safety practices vary across maternal healthcare providers with respect to job designation, work area, age and work experience in maternal obstetric units?	Questions 25-28
Source: Adapted from (Creswell, 2014:228)		

Three questionnaires were field tested with midwives, to establish content validity and time-test, so that the survey statements could be improved if ambiguity or any error existed. Their comments were positive, in terms of time and clarity of the questions. No changes were made to the survey. These midwives were excluded from the survey. In total, administration and fieldwork took 6 weeks.

The self-funded research placed constraints on the design and logistical commitments. Kumar (2014), stated that questionnaires are less expensive to administer and offer great anonymity. Since MHCPs are busy professionals, this survey tool was user-friendly, cost effective and time efficient because of the questionnaire layout. The main disadvantage of a questionnaire is limitation to a population who can read and write. Also, closed-ended questionnaires offer less freedom, to respondents to give their input. Therefore, some respondents felt frustrated and chose to write in open spaces below a section, further explaining their choice. These statements reinforced the literature reviewed on qualitative studies cited and were helpful for chapter five on discussions.

This study did not adopt a mixed method. However, if e.g. the focus groups strategy in qualitative research was included and MCHPs perceptions towards

PSC explored, through open discussion amongst group members and the researcher, then richer data would have been provided. Such useful data could be compared with quantitative data results, to draw conclusions and inferences.

The survey language choice was English. This was after agreement with all MHCPs at the hospital management meetings. Challenges still remain with questionnaires e.g. low response rate, which affects sample size. Also, there is a little opportunity to clarify issues but close-ended questions still remain very useful to draw out factual information, with the answers reflecting the extent of agreement or disagreement. The questionnaire structure ensured that information gathered is easier to analyse, e.g. a higher score would indicate greater patient safety practices. This represents an advance in safety climate measurement of respondent's perceptions with three actionable targets for safety improvement, as articulated in HRO Theory.

Before questionnaire distribution, the researcher met twice with the hospital CEOs, senior medical and nursing managers' to explain the research and assistance required. Subsequently two routine meetings were held to brief MHCPs about the study purpose, voluntary participation, anonymity, benefits of participating, confidentiality aspects, time-frames, and procedure and results feedback. All queries were answered.

The questionnaire, together with the attached participant information letter and consent form (see Annexures 10 & 11), was distributed by the unit manager to the qualifying participants. Instructions were given to participants by nursing managers', as discussed with me to complete the surveys and place in the separate drop boxes, marked *survey collection box* and *consent forms*, respectively. These boxes were located in an identified room, where the fieldworker supervised collection and safe storage of completed questionnaires.

The survey was conducted over a six-week period, with two weeks for prior arrangements. Thereafter, one week each was allocated for two hospitals and two weeks for the regional hospital, where initially the number of completed surveys was low. To increase the response rate, an extra week was allocated, in consultation with the unit manager. The researcher collected the sealed survey boxes coded A, B, C to denote each hospital twice a day, in keeping with MHCP

shift changes. The fieldworker captured the collected survey numbers on registers daily. He checked if they were completely filled, made notes on the register and filed for administrative use. A well-kept register is critical for troubleshooting during the data collection process.

3.6 Data Analysis and Interpretation

3.6.1 Data Analysis: Descriptive Statistics

Using SPSS Version 25 IBM Corp (2017), descriptive statistics was carried out to explain the data set from the sample with respect to the research questions posed, theory and conceptual model used. The results were presented both graphically and numerically. According to Wagner *et al*., (2012) types of descriptive statistics used include, measures of central tendency, variability, reliability, factor analysis and correlations.

The results of this study were presented in the form of frequency and correlation tables, bar charts and graphs, for easier analysis and assessment of the level of PSC in MOUs. The Mean was used as the most representative score of the data gathered, to describe one variable at a time, whilst Correlations described two variables, interpreted using r and p-values. The results identified trends in terms of the extent to which PSC was present in MOUs.

The 47 items measured described patient safety, or the lack thereof, in MOUs based on statistical findings, linked to both the HRO theory and Donabedian's (1980) conceptual model. These items were spread over three domains and sections, hence quality of care was measured with respect to 'structure, process and outcomes.'

3.6.2 The Sample Response Rate

As per the sample requirements, 245 surveys were dispatched. A total of 192 were returned, equating to a 78.1% response rate.

Table 8: Sample response rate

Hospital	Total Population	Required Sample	Number of Completed Surveys		Sample Response Rate
			Total	Valid	
A	74	63	50	50	79.4%
B	162	115	92	87	75.7%
C	80	67	55	55	82.1%
Total	316	245	197	192	78.1%

As shown in Table 8 above, only 192 completed surveys were valid. The actual sample size is 192. Hospital B returned 92 surveys but on cleaning or verifying the data five had missing information or the responses were not clearly marked. Therefore, only 87 valid surveys were included, as using incorrect data would affect the rigour of the process and validity of the results. Also, a 50% response distribution was set on the SPSS programme to give the largest sample size, which was adequate to compare results across the 3 MOUs, given the high response rate of 78.1%.

Due to the homogeneity of the sample in a unit, combined hospital results were used, although Table 9 below indicates the spread of participants across the three hospitals. These are also reflective of the hospital referral levels, wherein out of the total of (n=192), Hospital A had 26.0% (n= 50) participants, whilst Hospital B had the largest distribution of midwives and others 45.3% (n=87) and Hospital C had 28.6% (n=55) participants.

Table 9: Combined hospitals: Frequency distribution

Hospitals		**Frequency**	**Valid Percent**
Valid	A	50	26,0
	B	87	45,3
	C	55	28,6
	Total	192	100,0

3.7 Data Storage

The hard copies of the analysed questionnaires will be kept with the researcher, in a secure place to protect the data. A copy can be given to the University of Witwatersrand for retention, if required. The researcher has password-protected the complete electronic file of responses. This is important because of ethical considerations e.g. confidentiality of respondents.

3.8 Reliability and Validity Measures

Gravetter and Forzano (as cited in Wagner *et al*., 2012) stated that validity relates to the extent to which the instrument measures what it is supposed to. The peer reviewed, 15 item short format PSCHO survey by Benzer *et al.* (2017), is a validated measure of safety climate wherein all nine dimensions illustrated substantial convergent and discriminant validity. Both these validities are main types of construct validity according to Netermeyer *et al.,* (2003) (as cited in Weberloff, 2015, p. 18). Construct validity concerns whether scales measure the hypothetical construct and I believe that if safety components can be correlated as seen in Chapter 4, then these components are not vague, therefore internal consistency or reliability is achieved.

The concept of reliability requires the questionnaire to be consistent and predictable. The greater the internal consistency, the greater the reliability (Tavakol & Dennick, 2011). This is affected by the wording of questions. In terms of reliability of a psychometric test, the lower band estimate is denoted by Cronbach's Alpha (α). The theoretical value of alpha varies between 0 to 1. An acceptable range is of 0.75 to 0.83 but above 0.9 is excellent. In theory Cronbach's Alpha is an unbiased estimate of the generalisability of the findings. It gives a measure of internal consistency of a scale and this should be first determined before an instrument is used to ensure validity of the outcomes of the study (Tavakol & Dennick, 2011).

The predictor variables are the individual items for the scale. Cronbach's Alpha or internal consistency reliabilities were 0.84; 0.83 and 0.74 for the new organisational; work unit interpersonal scale. Items measured related to the organisation overall, conditions of work unit and reflected interpersonal

perceptions about co-workers' reactions to their mistakes, errors or questions, respectively.

The three domain levels measured, reflect the important contribution of safety factors in each. Shared aspects of the organisation as a whole are covered. These include influence of peers' and managers' within a work unit, values and beliefs internalised by individuals, based on their interactions with others. The instrument was invariant between hospitals that varied in terms of governance structures, budgets and strategy. The general use of the PSCHO short format or an extended version in various healthcare settings will be supported based on these results (Benzer *et al.,* 2017).

The pioneer Singer *et al.,* (2003) study met its objectives to measure the *problematic* responses of perceptions towards PSC, so that a PSC baseline could be established. Baselines are used to benchmark and target quality of care improvements in hospitals. Similarly, in this study an extended validated PSCHO survey is used to ensure internal reliability and therefore validity.

3.9 Research Limitations

The limitations thus far, are the most common concern of generalizability of findings to the larger population of healthcare providers, as only MHCPs were surveyed. Another limitation according to Benzer *et al.,* (2017) is the level of assessment because the questionnaire is generally used hospital wide, differentiating between institutions and not designed to distinguish units within facilities. However, this research was conducted in MOUs in 3 different facilities hence, the emphasis is on replicating the Singer *et al.,* (2003) study.

A systematic sampling method was used in a *mixed* design, having properties of both probability and non-probability. Purposive or judgemental sampling was a primary consideration to choose the district, MOUs and MHCPs, narrowed down by my specific concern about MMR targets and PSC. However, simple random sampling was utilised to determine the sample required from the sample frame using the SPSS program, version 25.0 (IBM Corp 2017). This method ensures that each sample unit has an equal and independent chance of selection. In addition the selection of midwives followed a proportionate stratified sampling.

3.10 Potential Ethical Issues

Wagner *et al*., (2012, p.62), stated that “ethics is an issue that must be considered at every step of the research design and implementation process”. Ethical approval was obtained from the University of Witwatersrand ethics committee (Annexure 1). Permission was obtained from the KwaZulu-Natal Department of Health, the District manager and Hospital CEO’s to carry out the study (Annexures 2 to 7). Permission to use the peer reviewed PSCHO survey from Professor Singer was obtained via email (Annexure 8).

This research did not seek sensitive information and there was no foreseen possibility of causing harm. The researcher signed the Wits University ethics declaration form in this regard. When collecting information, to avoid ethical challenges, appropriate steps were taken for: anonymity, confidentiality, informed consent and non-harm.

3.10.1 Provision of Debriefing, Counselling and Additional Information

A potential challenge was the risk of opposition from hospital managers’, for rendering an unfavourable opinion of PSC. Two meetings with senior hospital management were undertaken to resolve queries and explain the anonymous and voluntary nature of the participation. Furthermore, a commitment was given to do a power-point presentation of the key findings of this research to relevant officials from the DoH. The researcher undertook to give feedback by way of a friendly letter to the respondents’ and thank them for their participation, post completion of this study.

3.11 Conclusion

This chapter, in summary explained the research strategy, design, sample size, data collection process and its rigour for analysis. The validated, pilot tested PSCHO survey was fully explained. All ethical considerations applied were highlighted, as every attempt was made to ensure that no harm or breach of confidentiality was borne by the respondents. The results shall be presented in Chapter 4.

CHAPTER FOUR: PRESENTATION OF DATA & FINDINGS

4.1 Introduction

Overall, the purpose of quantitative analysis is to identify and compare any patterns or trends among the perceptions of MHCPs, based on factors affecting PSC in MOUs at an organisational, unit and interpersonal level. This chapter presents the results from the returned surveys. An extended version of the validated PSCHO survey was the primary tool distributed to MHCPs, at three selected hospitals in the uMgungundlovu District. The collected data from MHCPs responses to 21 safety components, clinical governance structures rankings, PSC and MMR level rankings and the 'need for a Step By Step Full Reference Guideline,' NPSA (2004), was analysed. The SPSS program, version 25.0 was used (IBM Corp 2017).

4.2. Patient Safety Domains In MOUs

4.2.1 Section 1: Organisational Safety Culture

In table 10 below, the validated percentages of the participants are displayed in parenthesis after the numbers and are calculated without the answers that were missing, according to the system.

Table 10: Personnel, budget & equipment frequency distribution

Viewpoint	Adequate personnel	Adequate budget	Adequate equipment	Adequate Time
Strongly disagree	49 (26.3%)	53 (27.6%)	42 (21.9%)	40 (21.2%)
Disagree	40 (21.5%)	54 (28.1%)	51 (26.6%)	53 (28.0%)
Neither agree nor disagree	27 (14.5%)	35 (18.2%)	27 (14.1%)	28 (14.8%)
Agree	51 (27.4%)	42 (21.9%)	59 (30.7%)	49 (25.9%)
Strongly agree	17 (9.1%)	7 (3.6%)	13 (6.8%)	18 (9.5%)
N/A	2 (1.1%)	1 (0.5%)	-	1 (0.5%)
Total	186 (100 %)	192 (100%)	192 (100%)	189 (100%)
Missing (system)	*6*	-	-	*3*
Chi – Square	< 0.001	< 0.001	< 0.001	<0.001

Table 10 further shows that the number of participants out of 192 who either disagreed or strongly disagreed that their organisation, *provides adequate personnel, budget, equipment or time to provide safe patient care* as follows: 47.8% (n=89); 55.7% (n =107); 48.5% (n =93) and 49% (n=93). Similarly, 14.5% (n=27); 18.2% (n=35); 14.1% (n=27) and 14.8% (n=28) respondents were neutral, respectively. These, as well as the frequency of 'neutral' positions are *problematic*. Neutral responses might also denote a lack of safety culture according to Singer *et al.,* (2003), hence these are included with the key results.

Table 11: Senior management role in patient safety frequency distribution

Viewpoint	Patient Safety Health Improving	senior management provided a climate that promotes patient safety
Strongly disagree	20 (10.5%)	25 (13.3%0
Disagree	28 (14.7%)	36 (19.1%)
Neither agree nor disagree	36 (18.9%)	26 (13.8%)
Agree	81 (42.6%)	80 (42.6%)
Strongly agree	24 (12.6%)	20 (10.6%)
N/A	1 (0.5%)	1 (0.5%)
Total	190 (100 %)	188 (100%)
Missing (system)	*2*	*4*
Chi – Square	< 0.001	< 0.001

Table 11 above, describes responses of the 192 participants who agreed, remained neutral or disagreed on: whether *patient safety health at their facility was improving* and if the *senior management provided a climate that promotes patient safety*. Table 11 also illustrates that slightly >50% of participants were positive. The validated percentages are displayed in parenthesis after the numbers and are calculated without the answers that were missing, according to the system.

4.2.2 Section: Unit Safety Culture

The Chi-square test in table 12 below, indicated that PSC was present to the extent of being *adequate* in the selected MOUs. All participants (n=192) responded with a confidence level of $p<0.001$ or 99.99%, with respect to the main

research question, ‘To what extent is patient safety culture present in selected maternity obstetric units, in the uMgungundlovu District Municipality?’

Table 12: Unit safety culture frequency distribution

Unit	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N/A	Total	Missing (System)	Chi Square p-value
In my unit, management puts safety at the same level of importance as meeting the schedule and productivity	15 (7.9%)	25 (13.2%)	29 (15.3%)	93 (48.9%)	27 (14.2%)	1 (0.5%)	190 (100%)	2	< 0.001
My unit takes the time to identify and assess risks to ensure patient safety	16 (8.4%)	14 (7.3%)	24 (12.6%)	100 (52.4%)	34 (17.8%)	3 (1.6%)	191 (100%)	1	<0.001
I am rewarded for taking quick action to identify a serious mistake	53 (27.7%)	50 (26.2%)	31 (16.2%)	34 (17.8%)	16 (8.4%)	7 (3.7%)	191 (100%)	1	< 0.001
In my unit, patient safety problems and errors are communicated to right people so problem can be corrected	13 (7.0%)	16 (8.6%)	23 (12.3%)	85 (45.5%)	46 (24.6%)	4 (2.1%)	187 (100%)	5	<0.001
Staff freely speak up if they see something that may negatively affect patient care	10 (5.4%)	22 (11.9%)	16 (8.6%)	93 (50.3%)	41 (22.2%)	3 (1.6%)	185 (100%)	7	< 0.001
When I take time to communicate about patient safety problems there is appropriate follow up	15 (8.0%)	22 (11.7%)	28 (14.9%)	89 (47.3%)	32 (17.0%)	2 (1.1%)	188 (100%)	4	<0.001
In my unit, disregarding policy and procedure is rare	16 (8.8%)	21 (11.5%)	29 (15.9%)	82 (45.1%)	30 (16.5%)	4 (2.2%)	182 (100%)	10	< 0.001
My unit follows a specific process to review performance against defined training goals	13 (7.0%)	13 (7.0%)	26 (14.0%)	96 (51.6%)	37 (19.9%)	1 (0.5%)	186 (100%)	6	<0.001
My unit provides training on teamwork in order to improve patient care performance and safety	17 (9.3%)	20 (10.9%)	23 (12.6%)	84 (45.9%)	33 (18.0%)	6 (3.3%)	183 (100%)	9	< 0.001
Total	**192**						100%	0	<0.001

The responses demonstrate significantly that with respect to being *rewarded for taking quick action to identify a serious mistake*, 73.3% (n=141) strongly disagreed, disagreed or were neutral.

In terms of *disregarding policy and procedure in the unit is rare*, whilst 58.3% (n=112) agree and strongly agree, 36.5% (n=70) strongly disagree, disagree or neither agree nor disagree or state *not applicable* (N/A). Ten responses were missing according to the system. The latter is of concern. Either respondents did not feel certain questions applied to them or the current individual liability system

is deterring a few respondents from responding. These will be discussed in Chapter 5.

This pattern of missing responses was seen in terms of *unit* management of risk, i.e. *error communication and follow up*, *performance review and training goals*, as well as, *training on teamwork to improve patient care performance and safety*.

4.2.3 Section: Interpersonal Safety Culture

In Table 13 below, in terms of *doubting the abilities of MHCPs* and *losing respect for them if a mistake occurred,* there was almost a 50% split both sides of disagreeing and agreeing.

Table 13: Interpersonal safety culture frequency distribution

Viewpoint	People will doubt my abilities	My co – workers will lose respect for me if I make mistakes	I will be disciplined for mistakes	I will be blamed for errors	I feel like changing my career
Strongly disagree	48 (25.3%)	44 (23.7%)	24 (12.8%)	29 (15.3%)	61 (32.1%)
Disagree	64 (33.7%)	61 (32.8%)	33 (17.6%)	40 (21.1%)	39 (20.5%)
Neither agree nor disagree	26 (13.7%)	30 (16.1%)	28 (14.9%)	33 (17.4%)	16 (8.4%)
Agree	29 (15.3%)	29 (15.6%)	78 (41.5%)	57 (30.0%)	32 (16.8%)
Strongly agree	13 (6.8%)	17 (9.1%)	17 (9.0%)	22 (11.6%)	33 (17.4%)
N/A	10 (5.3%)	5 (2.7%)	8 (4.3%)	9 (4.7%)	9 (4.7%)
Total	190 (100 %)	186 (100%)	188 (100%)	190 (100 %)	190 (100%)
Missing (system)	*2*	*6*	*4*	*2*	*2*
Chi – Square	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Strongly evident was 65.4% (n =123) of MHCPs who were either neutral or agreed and strongly agreed that they will be *disciplined if people found out that a mistake was made*. Similarly 59% (n=112) stated that they will be *blamed*. Furthermore, 42.6% (n=81) *feel like changing their career*. This is >40% of the MHCP participants. Of concern are the neutral, not applicable (N/A) and missing answers for all interpersonal factors, discussed in 4.2.4 below.

4.2.4 Overall *Problematic* Responses by Factor

The problematic responses by factor in the expanded PSCHO survey are illustrated in Table 14. Table 14 presents all twenty-one factors of the questionnaire simultaneously.

Table 14: Responses by factor: Adapted from PSCHO Survey 2018

Statements	% Problematic	Neutral	N/A	Chi – Square
1) Organisational				
Senior management has a clear picture of the risks associated with patient care	25.3%	8.6%	1,6%	<0.001
Senior management considers patient safety when programme changes are discussed	22.5%	13.7%	2,2%	<0.001
Patient safety decisions are made by the most qualified people, regardless of rank or hierarchy	21.9%	18.0%	1,6%	<0.001
I am provided with the adequate resources below to provide safe patient care: Personnel	48.4%	14.7%	1,1%	<0.001
Budget	56.0%	18.3%	0,5%	<0.001
Equipment	48.4%	14.1%	0,0%	<0.001
Senior management provides a climate that promotes patient safety	32.6%	13.9%	0,5%	<0.001
I have enough time to complete patient care tasks safely	49.5%	14.9%	0,5%	<0.001
Overall, the level of patient safety at this facility is improving	25.4%	19.0%	0,5%	<0.001
2) Unit				
In my unit, management puts safety at the same level of importance as meeting the schedule and productivity	21.2%	15.3%	0,5%	<0.001
My unit takes the time to identify and assess risks to ensure patient safety	16.0%	12.8%	1,6%	<0.001
I am rewarded for taking quick action to identify a serious mistake	56.0%	16.8%	3,7%	<0.001
In my unit, patient safety problems and errors are communicated to right people so problem can be corrected	15.8%	12.6%	2,1%	<0.001
Staff freely speak up if they see something that may negatively affect patient care	17.6%	8.8%	1,6%	<0.001
When I take time to communicate about patient safety problems there is appropriate follow up	19.9%	15.1%	1,1%	<0.001
In my unit, disregarding policy and procedure is rare	20.8%	16.3%	2,2%	<0.001
My unit follows a specific process to review performance against defined training goals	14.1%	14.1%	0,5%	<0.001
My unit provides training on teamwork in order to improve patient care performance and safety	20.9%	13.0%	3,3%	<0.001
3) Interpersonal				
People will doubt my abilities if I ask a question	23.3%	14.4%	5,3%	<0.001
My co-workers will lose respect for me if they know I've made a mistake	25.4%	16.6%	2,7%	<0.001
If people find out that I made a mistake, I will be disciplined	52.8%	15.6%	4,3%	<0.001
I will be blamed if I make an error	43.6%	18.2%	4,7%	<0.001
I feel like changing my career	35.9%	8.8%	4,7%	<0.001
Overall Average	31,01%	14,5%	2,23	

Data analysis saw the aggregation of different survey questions across hospitals and job types. This made it possible to compare the *problematic* responses to each question based on frequency distribution calculations.

This research followed the Singer et al., (2003) study and focussed on perceptions indicative of the absence of the components of safety culture, where *problematic* attitudes are above 10% of a cohort, as is described in HRO Theory. Similarly, *neutral* responses are also *problematic*, implying a lack or absence of safety culture. *Problematic* responses varied depending on the question type and choice, similar to the Singer *et al.,* (2003) study results e.g. *I am rewarded for taking a quick action to identify a serious mistake*, meant that to disagree or strongly disagree was viewed as *problematic* by the authors. In contrast, in response to *If people find out that I made a mistake, I will be disciplined*, meant that to agree or strongly agree was viewed as *problematic* (Singer *et al.,* 2003).

In terms of *problematic* responses, each domain had one item >50%; i.e. Organisational (budget); unit (rewards) and interpersonal (disciplining). Problematic responses above 40% were from items made up of organisational resources (personnel; equipment and time) and interpersonal (blame). Problematic responses above 30% were two, namely: organisational (senior management providing a climate that promotes patient safety) and interpersonal (career change). More significantly the problematic responses across all three domains, comprising twenty-one items was 31.01%, overall. When combined with problematic or neutral responses 14.5% and not applicable (N/A) responses 2.33%, a clearer picture emerges of the total overall average problematic responses to be at 47.74%. Problematic responses above 20% and 10% include nine and five items, respectively. Overall, all problematic and neutral responses are well above 10%.

Key findings of *problematic* factors in terms of the organisational, unit and interpersonal domains therefore included: lack of resources e.g. personnel, budget, equipment and time. In terms of unit, the lack of being rewarded, teamwork, training and a notable incidence of unsafe acts. In terms of quality of care the *interpersonal* domain received more *neutral* responses than those with respect to co-workers.

Approximately 70% of participants agreed that the unit PSC was *adequate to good*. Notably, the expectation for being *rewarded* for acting fast to identify a serious mistake was the most problematic response, with 76.5% overall indicating either the absence or by implication a lack of safety culture. Others include *safety vs productivity* 37%, *communication and follow up* 36.1%, *disregarding policy* 39.3%, *performance and training* 28.3% and *training on teamwork* 37.2%, to ensure safety.

Scores for co-worker responses were: 23.3% for *people will doubt my abilities* and 25.4% for *my co-workers will lose respect for me*. These fared better than scores for individual respondents, suggesting the following trend *If people find out that I made a mistake, I will be disciplined*,52.8%, *I will be blamed if I make an error*, 43.6% and *I feel like changing my career*, 35.9%.

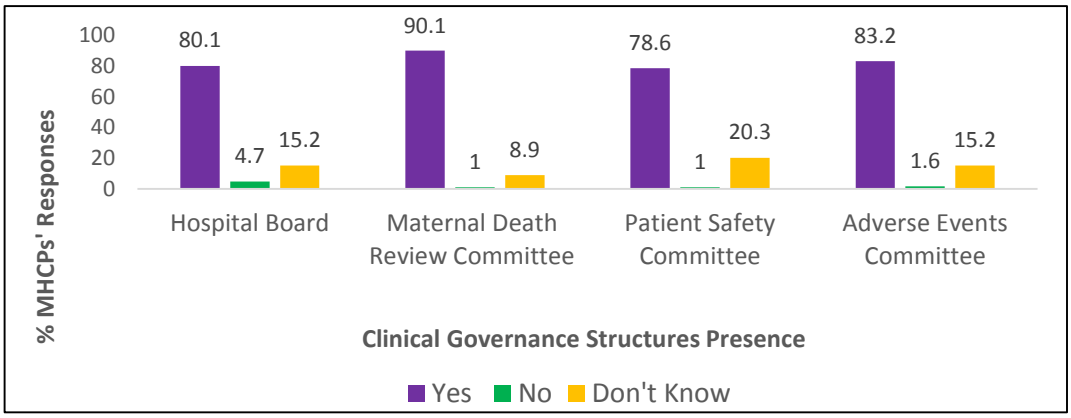
Table 14 therefore shows highly divergent, *interpersonal* co-worker and individual responses; hence closer attention is required on these interpersonal factors.

4.2.5 Section 2: Provision of Safe Patient Care

4.2.5.1 Knowledge of Presence of Clinical Governance Structures and Efficiency

The graph in Figure 7 below shows responses with respect to *MHCPs awareness of institutional clinical governance structures*. Figure 7 below shows the valid sample sizes on the x – axis e.g. Hospital Board and Adverse Events Committee (n=191) 80.1%; 83.2% (YES), 4.7%; 1.6% (NO) and 15.2%; 5% (Don't know), respectively. The valid percentages are given with the total sample size (n = 192).

Figure 7: Presence of clinical governance structures



The majority of the respondents 90.1% (n=173) and 78.6% (n=151) acknowledged the presence of the Maternal Death Review and Patient Safety Committees.

A neutral response equated to *Don't Know* on questions offering YES, NO or Don't Know. The key clinical governance structures to monitor maternal deaths or injury, safety practices and overall facility management are in place.

Table 15 below reflects the level of *effectiveness* of each of these governance structures and respondents have ranked their *effectiveness* from *adequate to excellent*.

Table 15: Effectiveness of clinical governance structures

Effectiveness (1 = least effective, 5 = Most effective)	Hospital Board	Maternal death review committee	Patient safety committee	Adverse Events Committee
1 - Poor	18 (12.3%)	3 (1.8%)	21 (14.5%)	9 (5.9%)
2 - Bad	25 (17.1%)	9 (5.4%)	19 (13.1%)	14 (9.2%)
3 - Adequate	53 (36.3%)	46 (27.5%)	40 (27.6%)	42 (27.5%)
4 - Good	23 (15.8%)	48 (28.7%)	42 (29.0%)	42 (27.5%)
5 - Excellent	27 (18.5%)	61 (36.5%)	23 (15.9%)	46 (30.1%)
Total	146 (100%)	167 (100%)	145 (100%)	153 (100%)
Missing	46	25	47	39
Mean	3.1096	3.9281	3.1862	3.6667
Std Deviation (SD)	1.24913	1.00941	1.26922	1.1698

The mean value of all four clinical governance structures is *adequate*. The effectiveness of the Maternal Death Review Committee and the Adverse Events Committee is *good*, where means are 3.9 and 3.7, respectively. These also show a smaller Standard Deviation (SD), hence the views vary less amongst respondents and hospitals, compared to the Hospital Board and the Patient Safety Committee.

Overall, amongst MHCP respondents, their awareness in descending order of the presence of clinical governance structures and effectiveness, ranking from *adequate to excellent* are recorded in Table 16 below.

Table 16: Provision of safe patient care: clinical governance structure analysis

Clinical Governance Structures	YES	EFFECTIVENESS		
		Bad to Poor	Adequate	Good to Excellent
Maternal Death Review Committee	90.1%	7.2%	27.5%	65.2%
Adverse Events Committee	83.2%	15%	27.5%	57.6%
Hospital Board	80.1%	29.5%	36.3%	34.3%
Patient Safety Committee	78.6%	27.6%	27.6%	44.9%

The Patient Safety Committee and Hospital Board are weaker in terms of being *adequate to excellent*, compared to the Maternal Death Review Committee and Adverse Events Committee.

4.2.6 Section 2: Provision of Safe Patient Care: Outcomes Indicators

4.2.6.1 Hospital MMR and PSC Level

The main research question set out to assess the *extent to which PSC is present in selected MOUs, in the uMgungundlovu District Municipality*. The MMR and PSC mean level for hospitals A, B and C are illustrated in Figure 8 below.

Figure 8: MMR & PSC: Mean scores for UMgungundlovu Hospitals A, B & C

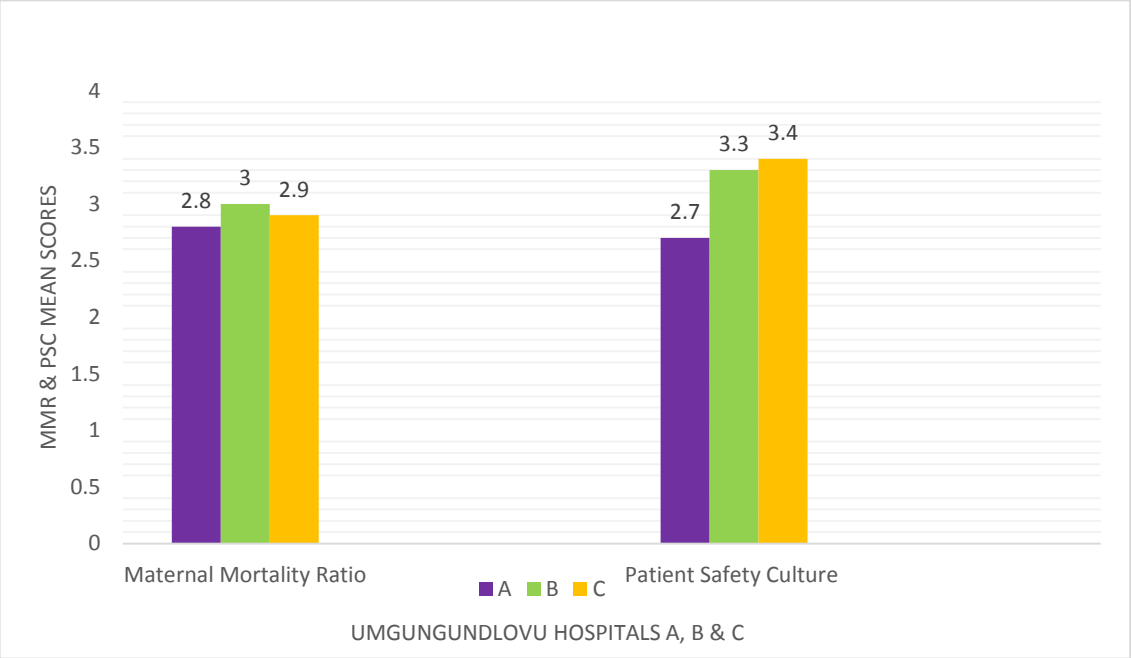


Figure 8 above and Table 17 below clearly show that all three selected hospitals in the uMgungundlovu District, average a score of three (M=3) for both maternal patient safety outcomes indicators. Therefore, both average MMR (M=2.9) and PSC (M=3.2) are *adequate* currently. However, PSC fared slightly above the Mean for the higher referral level hospitals whilst at District level both MMR and PSC are slightly below the Mean and it is at this district hospital level where most maternal deaths occur.

Table 17: Outcomes indicators & reference guide frequency distribution

Baseline(1=Poor & 5=Excellent)	MMR		PSC		Reference Guide	
					YES	NO
1 - Poor	34	(17.8%)	17	(8.9%)	169(88.9%)	21(11.1%)
2 - Bad	29	(15.2%)	27	(14.1%)		
3 - Adequate	68	(35.6%)	78	(40.6%)		
4 - Good	41	(21.5%)	46	(24.0%)		
5 - Excellent	19	(9.9%)	24	(12.5%)		
Total	191	(100%)	192	(100%)	190(100%)	
Missing	1				2	
Means: Hospitals						
A	2.8		2.7			
B	3		3.3			
C	2.9		3.4			
Chi Square p - Value	< 0.001 (100%)		< 0.001 (100%)		< 0.001 (100%)	

Table 17 above illustrates the frequency distributions for both ranking of MMR and PSC, as well as, the need for a *step by step reference guide* required by MCHPs. The table also shows 68.6% (n=131) participants responded that an MMR of 208, 3/100000 live births was *adequate to poor*. In Chapter 5 this will be discussed, based on the given ideal of 14 and the missed MDG5 2015 target of 38/100000 live births. The PSC level scores shows that 63.5% (n= 122) of MCHPs gave a *poor to adequate* score.

A significant majority of the participants, 88.9% (n= 169) responded positively to question 24, which asked if *a step by step patient safety reference guide would assist them* to provide safe patient care.

4.2.7 Section: Demographics

Demographic data is made up of independent variables e.g. job designations, work area, age and work experiences. Responses were analysed utilising descriptive statistics. Types include, measure of central tendency e.g. Means. Also, measures of variability that use a single value score to describe how a group of scores are distributed and differ or are similar but representative of the whole is used. Various scores are also compared to the Mean. The Range

indicates the greatest distance between any two scores. It is limited by outliers, therefore is not used in this study. More precise measures of Standard Deviation and Variance(s) are calculated (Wagner *et al*., 2012). The Standard Deviation (SD) is the square root of the variance, hence the greater the Standard Deviation, the greater the difference between scores and vice versa. Furthermore, interpretation of SD is easier as it is expressed in the same unit as the Mean and individual scores (Wagner *et al*., 2012). The tables below illustrate the use of these descriptive statistics.

4.2.7.1 Combined Job Designations Frequency Distribution

In Table 18 below, gynaecologists, obstetricians and doctors were separated from midwives and managers and made up 22.9% (n=44); 71.9% (n=138) and 5.2% (n=10) respectively. Midwives make up the most of the sample respondents. The goal was to target 100% of these professionals.

Table 18: Combined job designations frequency distribution

Job Designation		**Frequency**	**Valid Percent**
Valid	Gynae / Obstetricians + Doctors + Trainees	44	22.9
	Adv. Midwives + Midwives + Trainees	138	71.9
	Managers + Others	10	5.2
	Total	192	100.0

Due to the low response rate, the Mean and Standard Deviation (SD) were calculated. These assessed variance in perceptions of combined professionals, based on job designations, work area and work experience in MOUs, with respect to the *overall facility level patient safety improving*; the *effectiveness of clinical governance structures* and the levels of MMR and PSC. These measures will assist in answering key research questions.

4.2.7.2 Responses by Job Designation: Mean and Standard Deviation

For Mean values only; the original questionnaire order was YES, NO, Don't Know. This had been recorded to read; NO, Don't know and YES. This ensures that the higher the Mean is, it will correspond to YES in question 22 (a). In terms of question 22 (b) and 23 (a) and (b) the mean values of the rankings were calculated, as shown in Table 19 below. In Table 19 a few clinicians' and managers' *did not know* or responded *No* to awareness of the existence of the Hospital Board, Maternal Death Review Committee, Patient Safety Committee and Adverse Events Committee.

Statistically significant Mean values were obtained for job designations and Hospital Boards and their effectiveness, as well as, for the Patient Safety Committees'. Similarly, the Mean ranking of MMR and PSC from 'bad to adequate' was associated strongly with job designation of MHCPs.

The coefficient of variance (CV) was calculated for easier analysis of perception variances as follows: $CV = \frac{SD}{MEAN}$

In terms of CV: all items are (<1) hence variance is low and consistency in perceptions is therefore strong, as per job designation.

Effectiveness Mean ranking of clinical governance structures, as per job designations showed that the doctors' and managers' grouping who were aware of these, ranked the Maternal Death Review Committee and Adverse Events Committee as *good* and the Hospital Board and Patient Safety Committee as *adequate*. The same trend, with better scores, was obtained for midwives. In terms of *overall patient safety in the facility improving*, doctors (M=3.34) then midwives (M=3.33) and managers (M=3.30) scored Means in descending order, as per (Table 19). In terms of SD scores, all categories of job designations showed greater differences within and amongst groups, with respect to, scores for the existence and effectiveness of all clinical governance structures. This was greater for the Hospital Board and Patient Safety Committee and their effectiveness, as well as the MMR and PSC outcomes where the p-values obtained were (<0.05), as shown in (Table 19). This means that there is a real association between MMR and PSC variables and not a chance association.

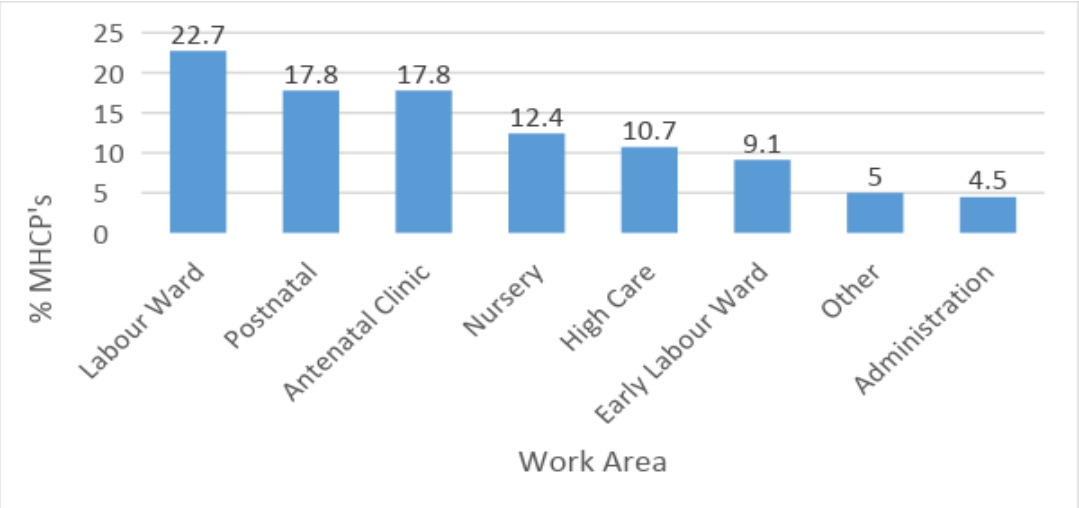
Table 19: Job designation: MHCPs perception variances of patient safety practices

Job Designation		Overall, the level of patient safety at this facility is improving	Hospital Board	Effectiveness Ranking	Maternal death review committee	Effectiveness Ranking	Patient safety committee	Effectiveness Ranking	Adverse events committee	Effectiveness Ranking	Maternal Mortality Ratio	Patient safety Culture
Gynae/ Obs + Doctors + Trainees	N	44	43	28	44	41	44	24	43	30	44	44
	Mean	3.3409	1.6279	2.8571	1.0909	3.8537	1.8864	3.1250	1.5349	3.6333	2.1591	2.7273
	Std. Deviation	1.03302	0.92642	1.04401	0.42141	0.85326	0.99337	0.99181	0.88234	1.09807	1.05529	1.06452
Adv. M/W + Midwife + Trainees	N	136	138	110	138	118	138	113	138	115	138	138
	Mean	3.3382	1.2609	3.2545	1.2029	3.9831	1.2754	3.2301	1.2464	3.6783	3.1377	3.3333
	Std. Deviation	1.26620	0.63135	1.26662	0.59388	1.07801	0.69164	1.32294	0.64854	1.21791	1.18502	1.09633
Managers + Others	N	10	10	8	10	8	10	8	10	8	9	10
	Mean	3.3000	1.4000	2.0000	1.4000	3.5000	1.3000	2.7500	1.4000	3.6250	3.0000	2.9000
	Std. Deviation	1.05935	0.84327	1.06904	0.84327	0.53452	0.67495	1.28174	0.84327	0.74402	1.00000	0.73786
Total	N	190	191	146	192	167	192	145	191	153	191	192
	Mean	3.3368	1.3508	3.1096	1.1875	3.9281	1.4167	3.1862	1.3194	3.6667	2.9058	3.1719
	Std. Deviation	1.20062	0.73089	1.24913	0.57546	1.00941	0.80790	1.26922	0.72373	1.16980	1.21461	1.10052
Coeff. of Variance (CV)		0,4	0,5	0,4	0,5	0,3	0,6	0,4	0,5	0,3	0,4	0,3
Sig. (P-value)		0,995	0,015	0,011	0,260	0,368	0,000	0,570	0,069	0,978	0,000	0,004

4.2.7.3 Responses by Work Area Frequency Distribution

The distribution of MHCPs as per work area shows a mixed spread within maternity obstetric units based on the concentration of daily bed use and activity in Figure 9 below.

Figure 9: Overall distribution of MHCPs in MOUs



Most MHCPs i.e. 22.7% are in the labour ward. The high care ward has only 10.7% MHCPs, given the high MMR outcomes currently.

4.2.7.4 Age

In Figure 10 below, more than 50% of the MHCPs are youth who are between (18- 35) years, with only 18.3% older than 45 years. This demonstrates a lack of seniority within the MOUs.

Figure 10: Age distribution of respondents

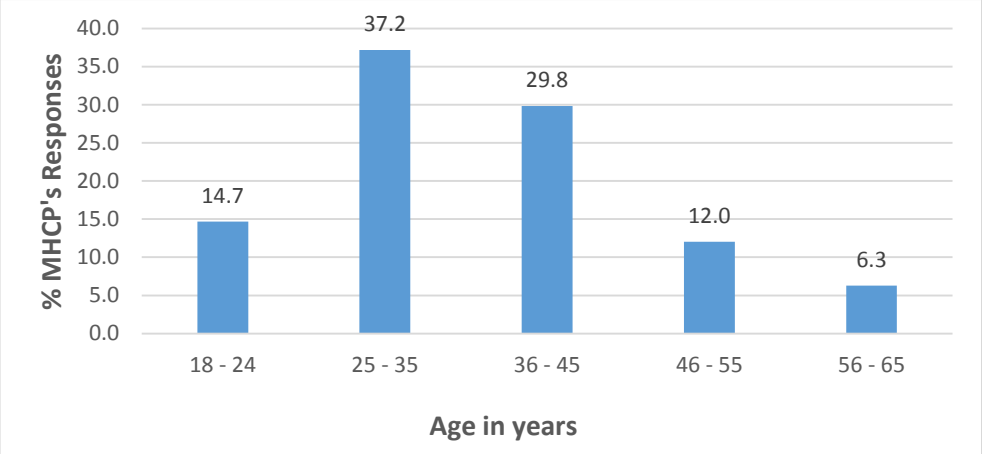


Table 20 below, shows the age of MHCPs split into < 36 years (n=100), who are youth and adults were > 36 years (n=92). The MHCP age split is approximately 50%, youth and adults.

Table 20: Age distribution: youth and adults

Age		Frequency	Valid Percent
Valid	< 36	100	52.1
	≥ 36	92	47.9
	Total	192	100.0

Table 21 below shows that MHCPs perceptions of both age groups have a statistical association with facility clinical governance structures presence, where all p-values (sig) < 0.05 are significant, with a real association between two variables and not a chance association. However, in terms of *effectiveness*, responses show p-values >0.05, hence there is not enough evidence to conclude these variables are associated.

Similarly, in terms of perceptions of MMR and PSC, age was a factor in MHCPs responses to ranking these, as shown in Table 21 below.

NB: Coeff of Variance (CV) = $\frac{SD}{Mean}$ = CV

Table 21: Age: MHCPs perception variance of patient safety practices

Age		Overall, the level of patient safety at this facility is improving	Hospital Board	Effectiveness	Maternal death review committee	Effectiveness	Patient safety committee	Effectiveness	Adverse events committee	Effectiveness	Maternal Mortality Ratio	Patient safety Culture
< 36	N	99	99	65	100	80	100	68	100	71	100	100
	Mean	3.3838	1.5354	3.0000	1.3100	3.8750	1.5800	3.0441	1.4900	3.5352	2.7400	3.0100
	Std. Deviation	1.10386	0.84893	1.25000	0.72048	0.89124	0.91210	1.27471	0.85865	1.15673	1.21954	1.08707
≥ 36	N	91	92	81	92	87	92	77	91	82	91	92
	Mean	3.2857	1.1522	3.1975	1.0543	3.9770	1.2391	3.3117	1.1319	3.7805	3.0879	3.3478
	Std. Deviation	1.30201	0.51216	1.24920	0.30970	1.10997	0.63539	1.25928	0.47630	1.17615	1.18929	1.09379
Total	N	190	191	146	192	167	192	145	191	153	191	192
	Mean	3.3368	1.3508	3.1096	1.1875	3.9281	1.4167	3.1862	1.3194	3.6667	2.9058	3.1719
	Std. Deviation	1.20062	0.73089	1.24913	0.57546	1.00941	0.80790	1.26922	0.72373	1.16980	1.21461	1.10052
Coeff. of Variance (CV)		0,4	0,5	0,4	0,5	0,3	0,6	0,4	0,5	0,3	0,4	0,3
Sig. (P-value)		0,575	0,000	0,344	0,002	0,516	0,003	0,206	0,001	0,197	0,048	0,033

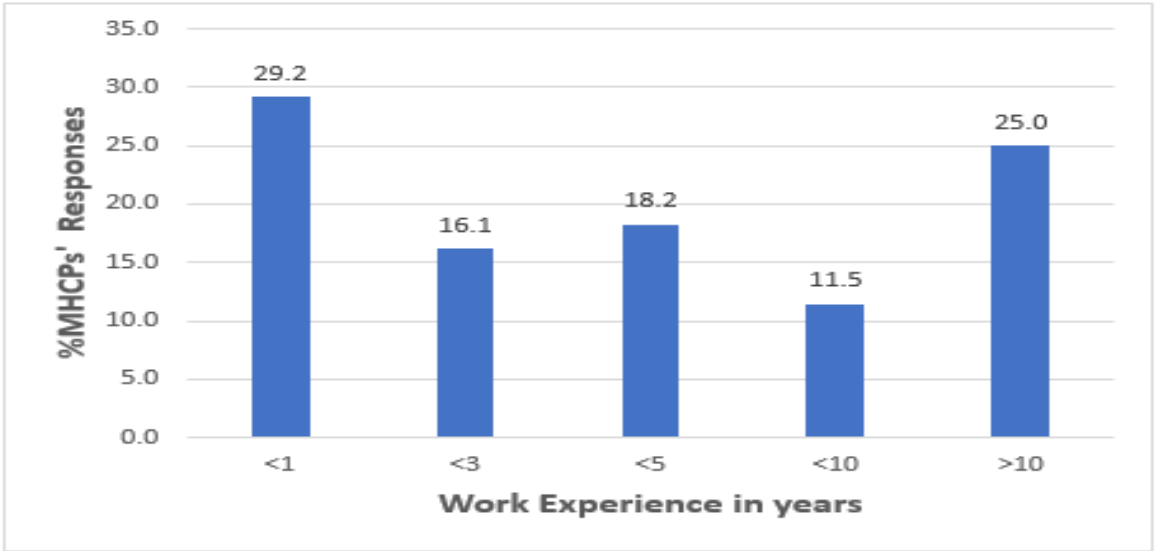
In terms of perceptions of *overall facility patient safety levels improving* where *p*>0.05, age as an independent variable was not a factor. A coefficient of variance CV <1 can be considered low standard deviation (SD). Therefore, with respect 'overall facility patient safety improvement' and the Mean ranking of MMR and PSC shows low variance or more consistency in responses overall for <36 and ≥36 years of age.

Of interest though is the pattern whereby MHCPs <36 years are more aware of these structures but have scored effectiveness of each lower than those ≥ 36 years of age. This alternative may imply that experience is a factor that affects perceptions. The most agreement across both age groups was on the Maternal Death Review and Adverse Events Committee effectiveness and PSC rankings as *adequate*.

4.2.7.5 Work Experience

Figure 11 below indicates that in terms of years of work experience in maternity units 29.2% (n= 56) had less than one year; 16.1% (n= 31) had less than three years; 18.2% (n = 35) had less than five years; 11.5% (n= 22) had less than 10 years and 25% (n=48) had more than 10 years work experience.

Figure 11: Work experience of MHCPs in years



Hence, two thirds of the MHCP workforce have less than 5 years' work experience in MOUs. Figure 11 shows extremes of work experience with the largest number (29.2%) of MHCP intakes, many of whom are trainees. A quarter or 25% of the MHCPs are due to retire soon.

To obtain a clearer picture of the views of trainees and youth, compared to longer serving, more experienced and mature MHCPs, work experience was further divided into <3 years and ≥ 3 years where there's almost a 50% split as shown in Table 22 below:

Table 22: Work experience frequency distribution

Work Experience		Frequency	Valid Percent
Valid	< 3	87	45.3
	≥ 3	105	54.7
	Total	192	100.0

The Coefficient of Variance (CV) is (<1) for all selected items in Table 23. In terms of work experience perceptions, there is low variance. The statistical significance, p-values only for the awareness of clinical governance structures was <0.05.

In terms of *overall facility patient safety improving* and *governance structures effectiveness*, MHCPs with <3 years work experience believe more strongly that safety is improving and structures are effective, compared to those ≥ 3 years. In terms of MMR and PSC, MHCPs < 3 years Mean scores were lower than those with ≥ 3 years' work experience

Table 23: Work experience: MHCPs perception of variances of patient safety practices

Work experience in maternity units		Overall, the level of patient safety at this facility is improving	Hospital Board	Effectiveness	Maternal death review committee	Effectiveness	Patient safety committee	Effectiveness	Adverse events committee	Effectiveness	Maternal Mortality Ratio	Patient safety Culture
< 3	N	86	86	56	87	69	87	57	87	63	87	87
	Mean	3.5116	1.5349	3.1429	1.2989	3.7826	1.5977	3.2105	1.4368	3.6825	2.8851	3.1034
	Std. Deviation	1.02606	0.84988	1.27106	0.70075	0.92147	0.92082	1.27807	0.81699	1.14758	1.30674	1.12099
≥ 3	N	104	105	90	105	98	105	88	104	90	104	105
	Mean	3.1923	1.2000	3.0889	1.0952	4.0306	1.2667	3.1705	1.2212	3.6556	2.9231	3.2286
	Std. Deviation	1.31516	0.57846	1.24200	0.42796	1.05961	0.66891	1.27055	0.62250	1.19137	1.13798	1.08537
Total	N	190	191	146	192	167	192	145	191	153	191	192
	Mean	3.3368	1.3508	3.1096	1.1875	3.9281	1.4167	3.1862	1.3194	3.6667	2.9058	3.1719
	Std. Deviation	1.20062	0.73089	1.24913	0.57546	1.00941	0.80790	1.26922	0.72373	1.16980	1.21461	1.10052
Coeff. of Variance (CV)		0,4	0,5	0,4	0,5	0,3	0,06	0,4	0,5	0,3	0,4	0,3
Sig. (P-value)		0,068	0,001	0,801	0,014	0,118	0,004	0,853	0,040	0,889	0,830	0,434

4.3 Reliability Statistics

Precision is determined by *reliability* and *validity* where reliability is calculated by taking several measurements on the same items. According to Tavakol & Dennick (2011), a reliability coefficient or Cronbach's Alpha score of 0.70 or higher is considered as *acceptable*. Table 24 below reflects the Cronbach's Alpha for all the items that constituted the questionnaire.

Table 24: Cronbach Alpha Scores: PSCHO Survey

Section	Topic	N of Items	Cronbach's Alpha
1.1	Organisational	9	0.892
1.2	Unit	9	0.851
1.3	Interpersonal	5	0.830
2.22	Clinical Governance Structures	4	0.761
2.23	Outcomes Indicators	2	0.747

In this study, Section 1 and 2 consisted of twenty-nine items on the peer reviewed, extended PSCHO survey and Cronbach's Alpha values were >0.7 for all domains shown in Table 24 above. This means that there is a degree of acceptable, consistent internal scoring on each item, hence the results are reliable.

The Unit section highlighted key processes on teamwork, training, supervision and performance procedures with safety quality emphasis, showing moderate to strong correlations and high Cronbach's Alpha scores of 0.851. Overall, there was strong internal consistency of the measuring tool or PSCHO Survey administered with items that measured what they were supposed to, as shown above in Table 24. This is illustrative of rigour in the methodology.

4.4 Factor Analysis: Validity Measure

The validity of the research shows the degree to which its conclusions can be considered accurate and generalisable (Wagner *et al*., 2012). Factor analysis is

a statistical method to reduce data, applicable to various situations and therefore is a validity measure (Field, 2005).

4.4.1 KMO and Bartlett's Test

Principal factor analysis was conducted by IBM Corp (2017) on the responses to the first twenty-three questions of the PSCHO survey, yielding eight factors which made up 80% of the systematic variation across the questions labelled as: senior management, resources, rewards, communication, training shame / blame, disciplining and career change.

The matrix tables below are illustrated as summarized tables that reflects the KMO and Bartlett's Test results (IBM Corp, 2017). The requirement is that Kaiser-Meyer-Olkin Measure of Sampling Adequacy should be greater than 0.50 and Bartlett's Test of Sphericity less than 0.05. In all cases the conditions were met allowing for the factor analysis procedure. Furthermore, factor analysis is done only for the Likert scale items where bigger components have been divided into smaller components. This analysis is shown below in the rotated component matrix in Table 25.

Table 25: KMO and Bartlett's Test

		Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
Section	**Topic**		Approx. Chi-Square	df	Sig.
1.1	Organisational	0.871	814.186	36	0.000
1.2	Unit	0.827	541.551	36	0.000
1.3	Interpersonal	0.757	393.179	10	0.000
2.22	Governance Structures	0.694	208.700	6	0.000
2.23	Outcome Indicator	0.500	83.953	1	0.000

The extraction method comprised Principal Component Analysis and the Rotation Method used the Varimax with Kaiser Normalization (IBM Corp, 2017). The Organisational domain rotation converged in three iterations, whilst the other domains extracted a single component, as illustrated in Tables 26, 27, 28, 29 and 30.

Firstly, factor analysis produced inter-correlations between variables. Secondly, items of statements that loaded equivalently imply measurement along a similar factor. An analysis of the content of items loading at or above 0.5 (and using the higher or highest loading in cases where items cross-loaded at greater than this value) effectively measured along the various components.

Hence, the statements that comprised all sections, except S1.1, loaded perfectly along a single component. This means that the statements in these sections perfectly measured what they set out to measure, achieving validity as all conditions for the KMO and Bartlett's Test were met.

However, the variables that made up Section S1.1 loaded along two components or sub-themes. Respondents showed different trends within the section denoted by colour-coded splits. The green second sub-theme indicates a commitment to safety, at the senior management levels of the organisation. This, according to Singer *et al.,* (2007) translates into shared values, beliefs and behavioural norms at all levels (See Table 26). The first sub-theme in beige, places emphasis on adequate organisational resources and incentives or rewards to foster commitment. This is clearly illustrated in the Singer *et al*., (2007) nine-dimension model in Figure 4, where *senior management engagement* and *organisational resources* are dimensions one and two, respectively.

4.4.2 Rotated Component Matrix: Section 1: Patient Safety Culture

Table 26: Organisational

Organisational	Component	
	1	2
Senior management has a clear picture of the risks associated with patient care	0.231	0.865
Senior management considers patient safety when programme changes are discussed	0.322	0.787
Patient safety decisions are made by the most qualified people, regardless of rank or hierarchy	0.152	0.810
Provision of adequate resources: Personnel	0.645	0.171
Budget	0.845	0.155
Equipment	0.839	0.156
Senior management provides a climate that promotes patient safety	0.733	0.402
I have enough time to complete patient care tasks safely	0.720	0.312
Overall, the level of patient safety at this facility is improving	0.627	0.514

Table 27: Unit

In my unit, management puts safety at the same level of importance as meeting the schedule and productivity	0.741
My unit takes the time to identify and assess risks to ensure patient safety	0.691
I am rewarded for taking quick action to identify a serious mistake	0.555
In my unit, patient safety problems and errors are communicated to right people so problem can be corrected	0.758
Staff freely speak up if they see something that may negatively affect patient care	0.705
When I take time to communicate about patient safety problems there is appropriate follow up	0.758
In my unit, disregarding policy and procedure is rare	0.501
My unit follows a specific process to review performance against defined training goals	0.704
My unit provides training on teamwork in order to improve patient care performance and safety	0.713

Table 28: Interpersonal

People will doubt my abilities if I ask a question	0.820
My co-workers will lose respect for me if they know I've made a mistake	0.804
If people find out that I made a mistake, I will be disciplined	0.809
I will be blamed if I make an error	0.817
I feel like changing my career	0.634

4.4.3 Rotated Component Matrix: Section 2: Provision of safe patient care

Table 29: Governance Structures

Hospital Board	0.663
Maternal death review committee	0.802
Patient safety committee	0.811
Adverse events committee	0.790

Table 30: Outcomes Indicators

Maternal Mortality Ratio	0.894
Patient safety Culture	0.894

4.5 Correlations

The Correlation Coefficient (r) describes the relationship between two variables, hence bivariate. It is calculated as a Pearson Product Moment correlation with

numerical values always between -1 and 1 to interpret its strength and direction (Wagner *et al*., 2012).

If, r = 0 = no relationship or if r = 1 = perfect relationship. Therefore, r can be positive or negative and strong or weak, determining relationships between two variables (Wagner *et al*., 2012).

The Correlations (see Annexure 13), highlighted key dimensions of safety components within HRO Theory, showing notable statistical significances. The results are outlined in Chapter 4 and discussed in Chapter 5, using Donabedian's Conceptual Framework.

4.5.1 Organisational

Firstly *structure* is described by organisational factors and Correlations shows strong to moderate positive relationships. For example, the more *senior management considers patient safety when programme changes are made*, the more resources are prioritised towards *personnel, budget; equipment; safety climate and time*, i.e. r (175) = .363; r (182) = .393; r (182) =.418; r (179) = .512 and r (179) = .416, respectively. The significance level is $p<0.001$. This also favours *overall facility patient safety improvement* where, r (179) =.508 and $p<0.001$.

There is both positive and negative, strong and moderate to weak correlations, with respect to *senior management engagement*, *leadership* and *overall emphasis on safety*, being organisational domains linked to unit and interpersonal domains. However, there is a positive but weak correlation, currently with PSC, i.e. r (186) = .304; r (182) = .340 and r (183) = .312 where $p<0.001$ compared to a positive, moderate relationship to facility patient safety improvement i.e. r (183) =.483; r (179) = .508 and r (180) =.422 where $p<0.001$.

4.5.2 Unit

In terms of the unit perceptions of patient safety, the element of *rewards* was most highlighted with weak to moderate positive correlations across all domains but with weak negative correlation i.e. r (176) = -.267 to *I feel like changing my*

career (Interpersonal). Hence, the less MHCPs are *rewarded for quick action in identifying serious mistakes*, the more likely they are to *change their career* resulting in high turnover problems. Similarly, in terms of (Table 14), the *rewards* dimension was just as strongly *problematic* as the *budget* and *being disciplined* in the organisational and interpersonal domains, respectively.

In terms of *taking time to communicate about patient safety problems with appropriate follow up*, there is a consistent moderate positive correlation across two domains, e.g. *overall facility patient safety improving*, i.e. r (184) = .359 and PSC i.e. r (186) = .368. However, there is a weak positive correlation with Patient Safety Committee Effectiveness i.e. r (139) =186. There is moderate positive correlation with *unit patient safety problems and errors communicated to the right people to be corrected* i.e. r (175) =.642 and 'training on teamwork to improve patient care and patient safety' i.e. r (171) = .611 and p<.001. However, PSC r (183) =.173 with p=0.019 is a weak positive correlation but in the *interpersonal* domain there is weak negative Correlation for *my co-workers will lose respect for me*, i.e. r (174) = -.234 and p = .002 and *I feel like changing my career* and *staff speak freely if they see something negative* i.e. r (172) = -.382 and *p*=.001. Hence, the less MHCPs *speak up freely,* and if more *co-workers lose respect for them,* the more likely they are to *change their career.* There is also weak positive correlation with PSC and effectiveness of the Patient Safety Committee, i.e. r (145) = .270 and *p*=.001, indicating a need for *openness* which a strong Patient Safety Committee can encourage to improve PSC.

Unit safety norms as a dimension of the unit was illustrated by the consistent weak to moderate positive correlation of *in my unit disregarding policy and procedure is rare.* Correlations of note are: *changing career,* MMR and PSC i.e.: r (170) =.169 with p=0.02 and r (177) = .195; and p=0.009; r (178) =.258 and p = 0.001, respectively; which shows that MHCPs are aware of rules and procedures, which if followed ensures staff retention and improved MMR and PSC. Furthermore, there was moderate positive correlation with MHCPs *speaking up freely,* r (171) =285 and r (168) =.353 and p<0.001 for *training on teamwork.*

In terms of the need for *training on teamwork in order to improve patient care, performance and safety*, shows very strong positive correlation with unit

dimensions such as *error communicated to the people so that problems can be corrected* and *disregarding policy and procedure is rare* i.e. r (171) = .611; r (168) = .353 and p <0.001. Again, this has a progressive positive relationship with MMR outcomes, hence PSC improvement i.e. r (177) = .164 and r (177) = .302. However, it has a weak negative correlation with *changing career* i.e. r (168) =-.223 with p=0.004, therefore the need for continuous training.

In terms of clinical governance structures, the patient safety committee and its effectiveness both correlated weakly but positively for the unit dimensions of *error communication and correction* i.e. r (183) = .176 and r (136) = .215 and *teamwork and training* i.e. r (177) = .227 and r (132) = .236 where p = 0.06.

4.5.3 Interpersonal

The *discipline* factor in *making mistakes,* scored 52.8% as *problematic* in Table 14. Similarly, *I would be blamed if I made an error* scored 43.6% and 35.9% for *I feel like changing my career.* There's a moderate to strong positive correlation seen for the entire interpersonal domain of *discipline fear of shame, loss of respect and blame* i.e. r (176) = .365; r (174) =.454; r (178) =.686 and p < 0.001. This further correlates with *career changing,* r (175) =.312 and p < 0.001.

Alternatively, there is a negative correlation i.e. r (176) = -.173 and p = 0.02 where the more MHCPs are *disciplined*, the less likely it will be for them to *communicate patient safety problems for appropriate follow up.*

In terms of, *overall level of facility patient safety improving*, and *Feeling like changing one's career* has a weak negative correlation i.e. r (178) =-.230 and p=0.002 because it would be less likely for MHCPs to consider *changing their career*, the more all other organisational, unit, interpersonal and provision of care dimensions improve.

PSC showed consistent weak negative correlation, with respect to, all *interpersonal* elements especially *feeling like changing ones career* i.e. r (181) = - .188 and p=0.011.

Alternatively, both correlated a weak positive with MMR and PSC i.e. r (191) =.171 with p = 0.02; r (144) = .175 with p = 0.04 and r (192) = .189 and r (145) = .270 with p = 0.01, respectively.

4.5.4 PSC and MMR

Both PSC and MMR have a weak to moderate or strong positive correlation on *structure* elements in organisational, such as, *personnel* provision i.e. r (183) = .164 and p = 0.03 and *budget* r (184) =.207 and p = 0.01, *equipment* i.e. r (191) = .227 and p = 0.00 and 'time' r (192) =.343, however only PSC was moderately positively correlated with the *budget* provided i.e. r (191) =.299 and p<0.001.

Similarly, in the unit dimensions on *safety importance* i.e. r (188) =.158 and p=0.03 and r (189) = .353 and p<0.001; staff speaking freely, i.e. r (181) = .152 and r (182) =.286 and p <0.001, *problem communication and correction* i.e. r (186) =.154 and p=0.04 and r (186) = .368 and p<0.001, *disregarding policy rarely* i.e. r (177) =.195 and r (178) =.258 with p = 0.01 and 0,001 respectively; and *training matters* i.e. r (184) =.155 and r (185)= .342 ; r (177) =.164 and r (177) = .302 and p<0.001 for the unit dimension. *Changing careers* is weakly negatively correlated with PSC hence, if PSC improves then MHCPs are less like to *change their careers*. Here all $p < 0.001$ and are statistically significant, showing an association between these two variables.

PSC is positively correlated with all *clinical governance structures* i.e. r (191) =.190 for Hospital Board with p=0.01 and r (167) = .179 with p=0.02 for effectiveness of Maternal Death Review Committee; Patient Safety Committee r (192) = .189 where p= 0.01 and r (145) = .270 and *p*<0.001 for its *Effectiveness*. PSC is weakly positively related to the *effectiveness* of the Adverse Events Committee i.e. r (153) = .165 where *p*= 0.04.

Finally, PSC is strongly and positively correlated to MMR r (191) =.627 and p<0.001 and vice versa.

Therefore, both PSC and MMR are inextricably linked, i.e. if PSC improves then MMR outcomes will improve.

4.6 Conclusion

The results of the data collection obtained from the completed surveys were presented in this chapter and confirmed a positive correlation which demonstrates that: as PSC improves, so does MMR.

Chapter 5 provides a detailed discussion on these results.

CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction and Purpose of this Chapter

This chapter presents the interpretation and analysis of findings using the HRO theory model and Donabedian's (1988) Quality of Care conceptual framework. In summary Chapter 5 discusses the Chapter 4 key findings, to the research objectives, problem statement, questions, methodology and theoretical and conceptual frameworks, covered in literature in Chapters 1, 2 and 3.

It has been long recognised that MMR reduction requires improvement at all levels of the healthcare system, because maternal health is considered a *tracer condition* for the whole health system (Liljestrand, 2000, p.3).

The study objective was to understand the perceptions of MHCPs towards PSC. The problem statement identified the gap that it was critical to assess actual awareness amongst MHCPs, of the potential for things to go wrong when treating pregnant women. This mean't assessing the extent to which PSC was present in selected MOUs, in the uMgungundlovu District Municipality. The aim was to guide safety improvement initiatives and strengthen the clinical governance framework in these institutions.

The main research question assumed that there is either a lack of or some level of PSC is present in selected MOUs, based on the high district MMR. Exactly what the current level of PSC was, needed measuring to establish a PSC baseline for the UMgungundlovu District to work from, for continuous assessment and improvement. The quantitative methodology followed the first Singer *et al*., (2003, p. 112) hospital wide study, which concluded that *safety culture may not be as strong as is desirable of a high reliability organisation*, meaning it was *adequate*.

The perceptions of MHCPs towards patient safety culture and how perceptions varied across job types, age groups and work experience, was measured. The measurement of *problematic* survey responses resulted in key findings.

The overall results provide sufficient available information on the perceptions of MHCPs about PSC, in selected MOUs in the uMgungundlovu District.

The PSC level was ranked *adequate,* with a 95% confidence level and can therefore be seen as an objective indicator of facility based PSC. PSC showed was also positively correlated with MMR which, also reflects the overall strength of the health system strength. The main research question, *To what extent is patient safety culture present in selected maternity obstetric units, in the uMgungundlovu District Municipality?* was answered, by both Ranking and Mean methods.

The PSCHO survey used was a reliable measuring tool as seen by the high Cronbach's Alpha scores. Similarly, the Cronbach's Alpha for MMR and PSC Outcomes Indicators = 0,747. Hence, routine monitoring and evaluation can be done in our health organisations using the PSCHO survey to assess future PSC levels. Greater intervention efforts are needed to improve the current PSC baseline to *excellent*.

5.2 Relationship to Literature Reviewed

The Benzer *et al*., (2017) peer reviewed PSCHO survey consisted of the organisation, unit and interpersonal domains. The *interpersonal* domain was explained by Donabedian (1988), when he separated healthcare clinicians' interactions with patients into both clinical or technical and interpersonal or individual aspects, the latter being behavioural in nature. The results obtained in this study have been found to be consistent in terms of the Reliability scores of Benzer *et al*., (2017) making analysis easier.

In terms of variables, PSC is an *outcome* variable whilst the nine dimensions of the HRO theory according to Benzer *et al*., (2017) and survey questions or statements (1-24) are predictor variables. Demographics comprise questions 25 to 28, which are moderator variables.

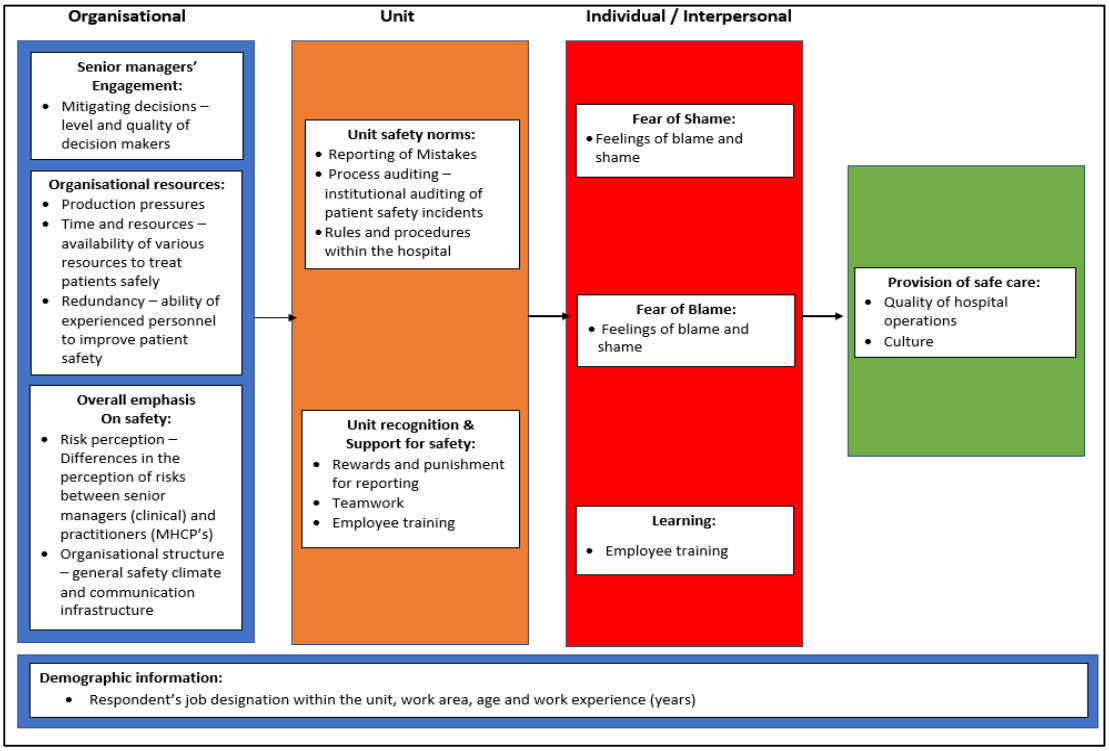
Moderator variables cause relationship differences for the predictor and outcomes variables, depending on the level of the moderator present in the sample. For example, in the organisational domain (predictor), if senior management (moderator) is committed to safety then the organisational dimension is positive which in turn improves PSC (outcomes variable). Similarly, if interpersonal or individual perceptions show negative tendencies e.g. fear of

shame and blame (independent or predictor variables) then negative correlations affect PSC (outcome variable).

This argument has been confirmed by the various correlation results obtained, although weak to moderate in most cases. It can be safely argued that MMR improvement is dependent on PSC improving. The positive correlation results between these two variables can be seen. PSC is also dependent on both technical or clinical and interpersonal skills of MHCPs hence, assessing behaviour of MHCPs through measuring their perceptions of PSC is critical for PSC baseline setting, with appropriate interventions.

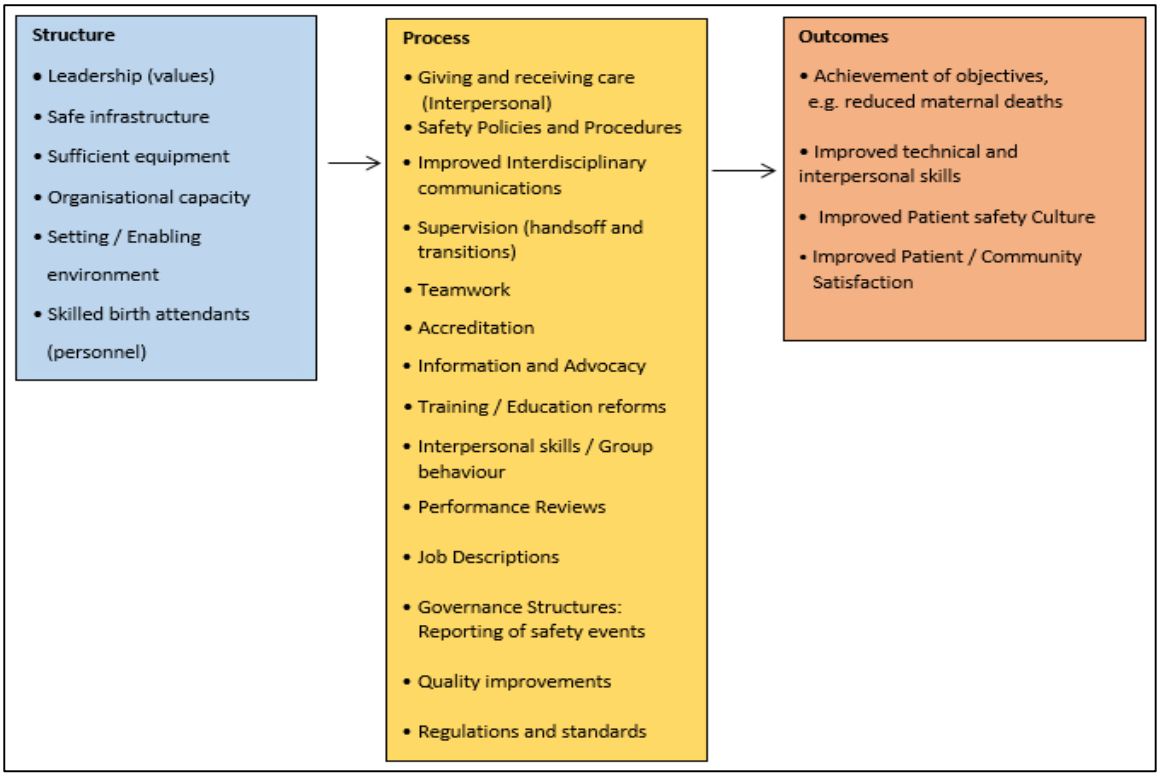
Based on the results obtained, key elements on which PSC improvement depends are shown in Figures 12 and 13 below, which are expanded versions of Figure 4 and 5 from Chapter 2. The expanded versions included more safety elements or dimensions gathered from similar literature reviewed, as well as key findings from this research. These linkages are clearly seen as per section 1 of the PSCHO survey (Annexure 12), within the matching domains which result in the *provision of care*. This meets the objectives and purpose of this research.

Figure 12: HRO Expanded Theoretical Framework



Source: Adapted from (Singer *et al*., 2007)

Figure 13: Donabedian's Expanded Model of Care



Source: Adapted from (Donabedian, 1980)

5.3 Presentation and Interpretation of the PSCHO Survey Results Using Descriptive Statistics

As summarised in Table 31 below, a large number of respondents gave problematic responses whilst many respondents were compatible with a culture of patient safety.

Table 31: Key findings from the PSCHO Survey 2018

1.	Many participants acknowledged the presence of patient safety culture.
2.	The overall average problematic responses was 31.01% and 14.5% neutral, i.e. almost half of the respondents which included a substantial minority.
3.	Respondents gave more problematic responses on interpersonal statements.
4.	Midwives gave most problematic responses than clinicians and managers.
5.	The majority of respondents wouldn't like to "change their career," contrary to other literature.
6.	In terms of provision of safe patient care, almost a quarter of respondents did not know that certain governance structures existed and if they knew then almost a quarter ranked these as poor.
7.	Almost 89% of respondents wanted a step by step patient safety reference guide to assist them.
8.	The majority of respondents ranked the district PSC level as "adequate."

The level of *problematic* responses in this study compared to the findings of Singer *et al*., (2003) study, showed similar results provided by hospital clinicians and non-clinicians. This study results were similar to the Flin *et al*., (2003) study results where theatre staff responded to statements about resources, time, communication, fear of blame, reward and teamwork. Theatres just like MOUs are high risk units. HRO Theory emphasizes that to realise a workplace safety culture, high consistency in safety attitudes and experience is required.

These results obtained from various studies show why patient safety lapses have pushed policy-makers, researchers and healthcare providers to intensify their efforts in understanding and changing organisational conditions and patient safety *processes* systemically. It is evident that maintaining a safe environment shows alertness for patient welfare (Stone, Hughes & Dailey, 2016).

Keeping this in mind, the results showed minimal variation of PSC perceptions amongst participating hospitals based on the high, combined hospital reliability scores across all domains measured. This indicates that their patient safety problems are similar. Furthermore, the MOUs were purposively selected for the homogeneity of the sample of MHCPs who are medical professionals in direct contact with pregnant women. They are the best suited target population to answer the PSCHO survey.

5.3.1 Correlation Trends

PSC is inextricably linked to MMR outcomes. Correlations clearly illustrates the following trends:

- If PSC improved then MHCPs are less likely to change their careers, evidenced by a negative weak correlation where $p<0.001$, hence this is not a chance association. This means nurse retention improves with benefits of a stable, trained and experienced workforce, for continuous improvement of MMR;
- PSC is weakly but positively correlated with all clinical governance structures with p-values <0.05, hence as structure effectiveness improves, so does PSC.
- Budgeting for MOUs must improve, although PSC has a weak to moderate positive correlation with budget, i.e. $r(191) = .299$ and $p<0.001$. If budget

increases, so do other critical resources shown by correlations e.g. equipment, time and personnel and inevitably PSC improves to reduce MMR

- In organisational terms the problem statement questioned whether MHCPs were actually aware that things can go wrong when caring for pregnant women, especially during labour. This is due to the difference in description of PSC to *climate* since *culture* has *interpersonal* elements which are more difficult for senior managers to control. The *actual awareness* though on the side of MHCPs is evident, hence training specifically on *interpersonal* elements is recommended.
- Patient Safety Committee although present, must become more effective with skilled members in promoting PSC to improve MMR.
- MHCPs will openly *communicate errors* if they are not *blamed or disciplined*, hence a *Just Culture* must prevail.
- If PSC improves then MMR outcomes will improve but interventions must be targeted and evidence-based, with the routine use of the PSCHO survey.

5.3.2 Key *Problematic* Safety Dimensions

The assumption outlined in Chapter 3, was that there may be either some level of PSC in MOUs or lack (not present), based on the Singer *et al*., (2003) methodology which focused on *problematic* responses to determine this. Therefore, key combined scores were obtained from Table 14 and a summarised view of key *problematic* safety components illustrated in Table 32 below, gives a clearer picture that across all hospitals specific dimensions or factors were *problematic*, as follows:

Table 32: Key problematic safety dimensions

Problematic % Responses	Safety Dimensions	Domains (Donabendian)	Domains (HRO)
>50%	Budget	Structure	Organisational
	Rewards	Process	Unit
	Disciplining	Process	Interpersonal
>40%	Personnel	Structure	Organisational
	Equipment	Structure	Organisational
	Time	Structure	Organisational
	Blame	Process	Interpersonal
>30%	Senior management providing enabling environment	Process	Organisational
	Career change	Outcome	Interpersonal

Overall, the average total sum of problematic responses is 47.74% in (Table 14), which is almost 50% for 9 out of 21 factors, requiring serious attention. This shows that although PSC is ranked *adequate*, MHCPs are well aware and actually conscious of the potential for things to go wrong whilst caring for pregnant women. The identified gap questioned this risk awareness amongst MHCPs and the results of almost 50% problematic answers confirms their awareness of the problems, has been answered. Timeously, appropriate interventions in weak areas of *structure and processes* within the MOUs must be made, to improve patient safety culture. These factors also span across both HRO and Donabedian's (1980) Model of Care components of *structure, process and outcomes*.

What is clear is that health systems strengthening requires investment in these components with line – item budgeting for these factor improvements. Also, there is a clear emphasis on *process* and *outcome* since the *interpersonal problematic* factors of, *disciplining, blame and career change* are linked to the high turnover of midwives and obstetricians (Ndaba, 2013; Medical Brief, 2016 and Mhlongo, 2016).

All twenty-one survey questions had more than 10% problematic responses in the findings in this research. This is worrisome as these results strongly suggest a lack (absence) or weakness of safety culture, based on prior cohort research

and patient safety initiatives, by Ciavarelli and Roberts (as cited in Singer *et al*., 2003, p.117). The authors' stated that when problematic attitudes exceed about 10% of a cohort, there should be concerns because those studying HROs know that high consistency in experiences and safety is required to achieve a working safety culture. It is by these standards that the overall problematic response in my study i.e. 31.01% is of concern.

Legislatively to improve patient safety in South Africa, more can be done. Whittaker and Litlhakanyane (2016) stated that currently there was no official national patient safety programme but an accreditation programme to improve quality was operating in five of the nine South African provinces. However we need more than accreditation. In addition we require regulations to ensure maternal safety.

The question of safety versus access to maternal care remains the dilemma as observed by Patterson (2015) that many units were unsafe for pregnant women in labour compared to some facilities which were overstaffed for workload but understaffed for a safe service. Therefore, policy-makers must now focus on 'met' need of pregnant women.

5.4 Discussion on the Key Findings on the PSCHO Survey

5.4.1 Senior Manager Engagement and Leadership

In terms of leadership, the Stone *et al*. (2016) meta-study concluded that there was evidence that linked the work environments to behaviour, values, attitudes and motivation amongst clinicians. This required supportive and empowering leadership. This means that safety has to become an explicit healthcare organisational goal. This can be accomplished by investment in governance, management and clinical leadership (Kohn *et al*., 2000). Respondents in this study clearly showed different trends in articulating senior management commitment to safety denoted by CA=0.892 as opposed to the provision of adequate resource components.

These results further illustrate the evolving nature of a bureaucratic work culture, in terms of country contexts as evidenced by the Xu *et al*., (2018) case study on the changing PSC in Mainland China. This study recommended that more effort

should be made to change the healthcare workers PSC mind-set positively, through a bottom – up approach to cultural change. Similarly, the Mayeng and Wolvaardt (2015) South African study also illustrated that PSC remains mostly bureaucratic.

However, in my study bureaucrats were more concerned about all safety issues, with a senior NHI director stating that healthcare workers needed a mind-set change to perform better, since the department was providing the resources.

5.4.2. Resources

The *problematic* responses for MHCPs are *budget, personnel, equipment and time*, however there are vital factors that prevent consistent and high quality patient care according to Armstrong *et al*., (2015). These resource shortages hurts *time* management. Time delays imposes added risks to mothers', making them vulnerable to morbidity and mortality. These resources shown by Stone *et al*., (2005), are critical to perceptions of stressors to *organisational* PSC. Healthcare services are complex and like technological industries, prone to accidents. Structurally MOUs need to be made more reliable and safe because one of the biggest reasons for accidents is human mistakes. Kohn *et al*., (2000) explained that system failure posed the biggest threats to patient safety. There needs to be investment in both skilled personnel, communication processes and information technology because these are part and parcel of organisational structure (Stone *et al*., 2005).

In the recent years, KZN government departments have weathered the pressure of budget cuts. The cuts have impacted mostly on patient care. Some respondents even wrote notes on the questionnaire about the Provincial government austerity measures not considering productivity.

The UMgungundlovu District MMR is very high at 208.3/100000 live births and PSC is barely *adequate* (M=3.2, SD=1.1), therefore other successful efforts to reduce MMR must be considered, e.g. inter-facility transport improvement (Schoon, 2013). The transport intervention reduces the second delay i.e. identifying and reaching a health facility which impacts on the third delay of accessing a health facility (Pajuelo, Huaynate, Correa, Malpartida *et al.,* 2018).

Overall, if appropriate interventions are made to reduce the third delay then despite the level of healthcare development, positive patient outcomes can be achieved.

The Correlations results illustrated that positive correlations exist for key organisational resources such as budget, personnel, equipment and time. Therefore, budgets should be increased and prioritised to improve patient safety with planned initiatives. An *enabling environment,* despite limited resources are critical. MHCPs perceptions of *organisational* PSC needs to be addressed for to provide better than adequate safe patient care.

Minimizing delays should be the priority as it is seen as *problematic* in this study. *Time* is impacted by competing organisational *structural* resources. In this regard Calvello, Skog, Temner & Wallis (2015), commented that an estimated 74% of maternal mortality could be prevented if all women receive timeous and appropriate emergency obstetric care.

5.4.3. Overall Emphasis on Safety

Mean rankings for the *overall level of patient safety at the facility improving*, indicate the perceptions of most agreement in ascending order was: manager and others; midwives and gynaecologists, obstetricians and doctors, giving the highest Mean scores. The lack of communication between managers' and clinicians' is clearly seen. However in terms of the Standard Deviation (SD), the midwives showed most variance in their perceptions. The researcher's expectations that data would be spread around the Mean as PSC components are affected by many factors and situations holds true. Therefore, the data does not meet the assumption of the high performance where MOUs should mimic HROs. For PSC to be excellent with a Mean = 5, instead of the Mean = 3 (adequate) currently, major health safety reforms are needed.

There is a need for interventions at management level, where control measures appears weak according to (Mayeng and Wolvaardt, 2015). The recommendation that nurse managers' participate in PSC workshops by Mayeng and Wolvaardt (2015), as well as trained in assessment and planning of PSC is

supported. Regular PSC reviews and workshops will raise awareness real-time on strengths and weaknesses to achieve targets. This would benefit all MHCPs.

On a positive note, job designation, age and work experience, show *p-values* (0.995; 0.575 and 0.068), which improved incrementally, respectively. This illustrates that these demographic factors play a crucial role over time, to assess PSC level trends. Retaining senior MHCPs to supervise younger entrants is also key to improving overall patient safety, as recommended by (Cronje & Mokati, 2015).

5.4.4 Unit Safety Norms

Key conditions for safety in high-hazard industries includes a culture or a set of shared beliefs. Such a culture supports safe practises among individuals, e.g. *open communication, teamwork, interdependencies and safety* as a priority at all levels (WHO, 2008).

This study revealed that most MHCPs adhered to unit policy and procedure. In terms of safety, unsafe acts being rare, no matter how busy a unit is, showed that MHCPs are careful however, the high MMR contradicts this finding. This contradiction of high MMR outcomes has a bearing on *process* and *interpersonal* dimensions. These are, *shame, blame, fear of discipline* and the thought of *changing career*, denoted by high staff turnover. Indirectly, even low staff retention where there is an almost 50% split in work experience of MCHPs < 3 years and ≥ 3 years, shows less senior MHCPs remaining. It is critical that the unit recognition and support for safety has to be strengthened through senior MHCP retention, a factor stressed by Ndaba (2013).

5.4.5 Unit Recognition and Support for Safety

Communication and training on teamwork were *problematic* as follows:

a) Teamwork and Communication: Both are critical for optimal *unit* functioning in HRO theory and Donabedian's (1980) framework in terms of *process.* These are dealt with extensively and practically in the recommended *Seven Steps to Patient Safety Reference Guide* (NPSA, 2004). The levels of *problematic*

responses for teamwork, time and senior management engagement in MOUs are similar to those of the theatre unit reported by Sexton and colleagues (as cited in Flin *et al.,* 2006 & Singer *et al*., 2003).

This study shows that teamwork and communication are ongoing challenges and improvement is imperative to promote PSC in the MOUs. This is illustrated in a directly proportional and significant relationship between the factors *senior management provision of a patient safety climate* and *my unit provides training on teamwork in order to improve patient care performance and safety*. This can be consolidated with ongoing training and senior management supervision.

The Mayeng and Wolvaardt (2015) patient safety study domains showed similar significant results and called on nursing managers' to implement changes to foster quality patient care (Mayeng & Wolvaardt, 2015). In terms of *outcome*, it can be inferred from the strength of positive correlations that, there would be a positive impact from a teamwork-oriented culture on patient satisfaction, according to Donabedian's (1980) Quality of Care Framework. Furthermore, for improvement Okuyama *et al*., (2018), recommended focus on effective communication, feedback and environments conducive to learning from errors.

b) Rewards: almost 76% MHCPs responded that their efforts towards quick identification of serious mistakes is not acknowledged by any reward. This highlights the MHCPs expectations and need for some sort of recognition, after all its human nature to want to feel appreciated. More than 50% of MHCPs believed that they would be *disciplined if a mistake made was discovered*. Punitive responses demotivates MHCPs in terms of recognition and support required. This may explain why PSC was consistently ranked as *adequate.*

c) Training: In South Africa, maternal care needs such as coverage by skilled birth attendants and quality of care remains critical (Pattinson, 2015). Furthermore, in 2014 the National Minister of Health, at a Millennium Development Goals Conference stated that, obstetric and gynaecological training was dismal and contributed to maternal deaths. Furthermore, doctors lacked care and were negligent because of insufficient role models in the academia to ensure professionalism, hence more concentration on the clinical

aspects was needed (Bateman, 2014). Hence, the *interpersonal* aspects of training becomes essential to avoid maternal deaths.

In terms of *training* the correlations illustrated the need for MOUs to embed *ongoing training*, especially in view of showing a positive correlation between MMR and PSC. Training motivates and gives MHCPs confidence, therefore investing in relevant training will improve these outcomes indicators. The study gap has been resolved as there is awareness about patient safety risks and challenges to achieve MMR targets, amongst MHCPs, who require training.

The high UMgungundlovu District MMR outcomes and the problematic responses, especially with respect to the *interpersonal* domain, signals that for good MMR outcomes PSC must be strongly present both clinically and in terms of *interpersonal* factors. Therefore it is interpersonal skills development that is required by MHCPs to improve PSC, given the stronger positive correlations between training and PSC. The South African study by Wageng (2014), using the Maternal and Neonatal Programmes Effort Index illustrated general poor performance of MHCPs in training, communication and using hospital protocols. The type of MHCP training must include training on PSC, with a strong emphasis on clinician-patient relationship, communication, judgemental skills, empathy and other behaviour studies.

The recognition and support for safety is an important aspect encapsulated in HRO theory. The safety components and Donabedian's (1980) Model of Care, feature *teamwork and training,* repeatedly. Therefore, *Organisational Learning* becomes a valued recommendation, to respond to patient safety problems in terms of improving *system* performance, rather than focussing on individual *blame* noted by Leape *et al.* (as cited in Ossthuizen and Carstens, 2015), .

5.4.6 Fear of Shame / Blame

This study in recording perceptions on the *interpersonal* aspects of MHCPs was mindful that a larger SD is not necessarily bad as it simply reflects a large amount of variation in the group studied, e.g. when job designation sub – groups yielded smaller SD's, it was not better but just less variable. Similarly in Singer *et al*., (2003, p. 115) study, questions which were personal and related to quality of care

recieved more *neutral* responses than those with respect to co-workers. *Problematic* combined scores were obtained for 44.7% respondents who stated that their *co-workers would lose respect for them if they knew that they had made a mistake*, whilst 50.6% said they would not, *change their career*. The *interpersonal* section recorded the highest, *not applicable* (N/A) scores. This points to underlying *fear* and lack of openness that only training on soft or interpersonal skills can eliminate.

The *blame* culture does exist in the MOUs, as reiterated by the Holmes and Goldstein (2012) study. This study found that 59% (n=112) respondents were concerned about the *blame game* culture, which must be removed. Equally important is growing evidence from studies suggesting that pregnant women do not want facility deliveries because MHCPs are disrespectful and abusive, according to (Warren *et al*., 2013). The stigma has blurred the culture of patient safety, therefore a *Just Culture* has to prevail (DoH, 2015). According to Oosthuizen and Carstens (2015), when focusing on the unsafe acts of the practioners and healthcare providers, taking the *person approach* is bias when errors are *blamed on* the mental processes of individuals and managed by *discipline*. This approach is inappropriate in the complex health environment, therefore system failures targeting all components to reduce errors must be utilised.

Of interest in this regard is the findings on four critical factors of *rewards*, *disciplining*, *blame* and *career change* to the *nonpunitive response to errors* being the worst rated or problematic dimension in Okuyama *et al*., (2018). We, therefore have a big problem if there is either punitive or non-punitive cultures in healthcare safety. Okuyama *et al.,* (2018) conclude that the bigger problem of both the culpability culture of hospitals and comprehensiveness of the problem need reversing. The meta-study concluded that this culpability culture was pervasive in the hospitals studied. The danger of this behaviour leads to reduced error reporting and corrective measures implementation. Similar to the Xu *et al*., (2018) study results, *non-punitive culture* received a low positive response, which was much lower in the experimental hospital than others in Mainland China. It can be seen that most healthcare workers prefer a non-punitive culture, fearing that mistakes will be held against them and kept in their personnel file. This

behaviour goes against an accountability culture and is of extreme concern in low reporting of incidents for similar reasons, expressed in the Mayeng and Wolvaardt (2015) study.

Fear of *blame* and *shame* shows the critical need for *openness, communication channels and reporting mechanisms*. The recommended NPSA (2004) *Step By Step Reference Guide* will assist to replace the *blame culture*, with one of *ongoing organisational learning* (IOM, 2011; Ndaba, 2013 and The Draft Patient Safety Incidents….Bill, 2015).

In this study, MHCPs found both punitive and non-punitive factors problematic, hence there should be a *just culture*, which requires further discussion.

5.4.7 Career change

Although 57.3% MHCPs stated that they would not *change their career*, almost half (42.7%) felt the opposite. This is in keeping with high midwife and obstetrician staff turnover which is a growing problem in South Africa (Blaauw, Ditloop & Rispel, 2014; Medical Brief, 2016 & Pillay, 2009). In the United States healthcare is the second fastest growing sector yet high nurse turnover is also a major problem. The Institute of Medicine (as cited in Stone *et al*., 2016) noted that the unconducive work environment requires improvement, as this would provide a stable workforce to render safe patient care and improve quality. Furthermore, this would benefit patients, providers, insurers and families who bear the major financial consequences. This meta-study linked the work environment to behaviour and motivation amongst clinicians, requiring a supportive leadership wherein all researchers reported that positive organisational climate increases worker satisfaction and reduces turnover.

Therefore, the *career change* factor with respect to *PSC* and *MMR* outcomes has a relationship, worth further exploring. For a PSC vs climate argument, in the short and long term, both must be established to co-exist. Thus both patient safety and quality of care can improve.

5.4.8 Provision of Safe Patient Care

This study focused primarily on *process* and *outcome* in terms of both HRO Theory and Donabedian's (1980) Model of Care. It is accepted that, sufficient knowledge and skilled MHCPs are necessary to perform key process activities to improve the culture of patient safety in MOUs. However, there are knowledge gaps that MHCPs require training in.

Patient safety prioritisation means MHCPs giving attention to the care *process*, using specific interventions. Continuous facility and outcomes assessments, must be carried out.

5.4.9 Clinical Governance Structures: Presence vs Effectiveness

It is through clinical governance structures that accountability for quality healthcare is achieved. Continuous improvement of services will ensure high patient care standards. This study partly undertook a *structural* approach by asking MHCPs about the presence of the four key clinical governance structures i.e. the Hospital Board, Maternal Death Review Committee, Patient Safety Committee and Adverse Events Committee. The effectiveness rankings of both the Patient Safety Committee and Hospital Board were barely *adequate* and needed strengthening. These vital committees serve the entire hospital in terms of monitoring and evaluating the provision of safe patient care.

It is imperative for strong and effective clinical governance structures to be in place to monitor patient safety. The MOU specific clinical governance structures are functioning better. More awareness must be done by hospital managers' in terms of the value and functions of these structures. However, it is *problematic* that between 8.9% and 20.3% of respondents 'Don't Know' and between 1 to <5% have no knowledge of the existence of these structures. This must be addressed by the hospital management, ensuring that all MHCPs are aware of these structures and their functions. The lack of communication between bureaucrats and clinicians is clear.

A review of governance structure organograms, with specific member skills to improve effectiveness is required. The Patient Safety Committee and its effectiveness correlated weakly but positively for *unit* factors on *error*

communication and correction. *Training on teamwork* weakly but positively correlated with PSC. These indicates the need for strengthening the Patient Safety Committee with knowledgeable persons. The *interpersonal* dimension elements constraining MHCPs from reporting incidents must also be addressed by these governance structures. Human errors have to reduce to improve MMR. In terms of accountability and to eradicate a *blame* and *shame* culture which affects MHCPs on an *interpersonal* level, an investment in *soft skills* training must be allocated and overseen by Hospital Boards. This will prevent institutional culpability (Okuyama *et al*., 2018). Such training is key to stopping the rising malpractice litigation costs the DoH is facing.

We need to move towards a safety culture beyond compliance with standards through accreditation, which is the norm. Improving safety culture requires regulations that MHCPs must adhere to (WHO, 2008). Therefore, strong functioning clinical governance structures are critical in achieving these goals. Such structures illustrate the need for monitoring which supports *safety as the primary priority, even at the expense of production and efficiency*. This links the HRO domain of *provision of safe care* and Donabedian's quality of care model on *process* and *outcomes*. For example, reporting safety events, decreases maternal deaths by improving technical and interpersonal skills. This improves PSC, patient or community satisfaction and participation. Xu *et al*., (2018) recommended specific interventions e.g. building an all-inclusive and integrated incident management system and strengthening staffing and team building to improve patient safety. This requires a strong clinical governance system.

In my study, Hospital Board and Patient Safety Committee effectiveness Correlations faired less strongly compared to Maternal Death Review and Adverse Events Committees. Statistically significant lower Mean values were obtained for job designations, indicating that Hospital Boards and Patient Safety Committees have to become more effective. These structures are responsible for enforcing monitoring and evaluation, initiating interventions to improve facility level PSC, overall. Within the monitoring and evaluation framework for skilled birth attendants and structure Adegoke, Hofman, Kongnyuy & Van Den Broek (2011), stated that an enabling environment must exist. Therefore, midwives must have knowledge of clinical aspects, legislation, regulations and policy. It

can be deduced that if such knowledge is weak or absent then these structures are not effective. The hospital management and DoH should review and strengthen the functions of these clinical governance structures.

5.4.10 Outcomes Indicators: PSC and MMR

PSC is inextricably linked to MMR outcomes. The main research question set out to establish the extent to which PSC is present in selected MOUs. The means for both MMR (M=2.9) and PSC (M=3.2) averages gave a baseline of *adequate.* However, at District Hospital level both MMR and PSC were slightly below the Mean. Yet, it is at this level that the most maternal deaths occur. Therefore, more budgets are required for resources at the District Hospital level to prevent complications from escalating to higher levels. With facility delays, mothers' die. PSC level also has a direct positive and strong correlation to MMR therefore more interventions are needed at District Hospital level than just budget shifts. With better monitoring of future improvements in PSC implementation, better MMR outcomes can be achieved, because most maternal deaths are avoidable.

In terms of MMR, an ideal MMR of 14/100000 live births was used in Q23a, quoting MMR Country Comparisons (2018) based on the United States figure, since both major US studies were used in this research (IOM, 2001; Singer *et al*., 2003 & 2007). In the same ranking South Africa reported an MMR of 138 deaths/100000 live births. Both these were 2015 MDG5 country achievement figures, establishing a baseline to work from towards the new target of SDG3 2030 of < 70/100000 live births. Whilst 45 other countries ranked better than the US, it was important to take other country population and healthcare systems into account, so that the local MCHPs' could respond on a more realistic comparative basis. The fact that the 2015 MMR in the uMgungundlovu District was 208.3/100000 live births this represents the risk probability of death once a women becomes pregnant in this district, which therefore reflects that weaknesses in our health system must be corrected.

Notably, patient safety problems can occur at all levels of healthcare but there are particular risks in MOUs. Therefore, pregnant women make up a growing percentage of medical *adverse events*, as noted in the NCCEMD (2015) report.

This has led to a recommendation by the National DoH to introduce, *Institute Maternal Near Miss* data collection and analysis at every delivery site, in the form of *severe adverse event* reporting. In the long term such data can be valuable to design patient safety indicators and to develop anti-risk or safety policies, as explained by (Mello *et al.,* 2007, p. 855).

Maternal health indicators must be developed according to the WHO (as cited in African Partnership for Patient Safety, 2009). A radical re-think of the current organisation of women's healthcare is required, to ensure efficiency savings without compromising quality.

Work experience data showed that MHCPs with ≥ 3 years work experience were less confident on safety improving and effectiveness of governance structures but showed more agreement that MMR and PSC were adequate. Therefore, younger professionals must become more proactive to implement PSC interventions to reduce MMR because they believe more strongly that PSC and MMR are improving. This could be the result of fresher knowledge of these indicators and their work contribution to improved maternal care processes at the facilities. Older MHCPs therefore seem to need a mind-set change.

A key finding since MMR had a 70/30 *adequate to good* frequency score whilst PSC had a 60/40 split, meant that overall MHCPs are actually aware that there are safety risks when caring for pregnant women. This awareness presents opportunities to research further multiple workplace factors, especially the *unit* and *interpersonal* domains, to improve *process and outcomes*. Improved PSC will achieve improved MMR outcomes, for the uMgungundlovu District.

5.4.11 Organisational Learning

Safety studies in high-risk industries showed that *adverse events* are mainly due to human failures rather than technical malfunctions (Flin *et al*., 2006). Experienced practitioners in the medical field have technical expertise but in terms of non-technical skills e.g. leadership, decision-making and team coordination for cultivating safety they are weak, causing *adverse events* (Flin *et al.,* 2006). It is true that the admission of or to learn collectively from errors is difficult, however it is this type of learning that is required to improve safety

culture. According to Schoon (as cited in Fawcus & Moodley, 2011), a multi-disciplinary team needs to evaluate cases using root cause analysis. Thereafter, policies and guidelines must be adjusted within institutions. The recommended Safety Full Reference Guide, NPSA (2004), is practical and will assist for *on the job* learning and improve incident reporting. This is important although reporting *adverse* outcomes or events due to systemic weaknesses may lead to medico-legal liability costs. It is however better to take corrective action which fosters learning. The Singer *et al*., (2003) study major finding was the communication gap of clinicians versus managers hence administrators did not Know the actual state or level of PSC. Under-reporting, led to not planning with appropriate interventions. Similarly, in my study there was >50% *problematic* responses to *disciplining* in the interpersonal domain. This is hugely disturbing because, fear leads to under-reporting and if undetected, leads to institutional culpability.

Two *problematic* trends to note from the Xu *et al*., (2018) case study are the *handsoff and transitions*, where problems occur during handovers or shift changes and patient transfers. Secondly, there is a top-down bureaucratic cultural change, showing that cultural resistance has emerged. This is similar to findings by (Ndaba, 2013). It can be inferred that the PSC attitudinal change in MHCPs is much needed, with better linkages between management levels to improve patient safety, through continuous learning.

5.4.12 Patient Safety Reference Guide

This study asked MHCPs if they needed a *Seven Steps to Patient Safety Full Reference Guide* NPSA (2004), to assist them. This received an overwhelming 89% (n=169) *YES* response. Efforts in the past to reduce MMR tended to focus essentially on clinical interventions, using monographs and protocols which are clinical in nature. The NPSA (2004) *full reference guide* can be used as a change instrument for training, whilst working. Understandably, human errors at all work levels can be prevented by building a safer healthcare system. This is the responsibility of all stakeholders. MHCPs, in particular need to work as seamless teams to eradicate the culture of *blame.* The *Safety Reference Guide* means introducing changes in MOUs to improve awareness of maternal safety, assisting

MHCPs in daily decisions. A compounding system weakness is the voluntary reporting of patient safety incidents by health professionals according to the Health Professions Amendment Act of 2007. This may lead to under-reporting. Alternatively, the *Just Culture* philosophy mooted in the draft Patient Incident Safety Bill (2015), will enable a conducive environment to report patient safety incidents and is supported as it forms part of the *Safety Reference Guide*, recommended.

Norms and Standards focus on facilities improvements whilst all available safety guides are, standard operating procedures, clinical monographs, complaints mechanisms or *after the fact* reporting. However, the *Seven Step to Patient Safety Full Reference Guide* NPSA (2004), is preventative and *process* directed for better patient *outcomes*. It should be adapted and implemented to enforce protocol adherence, supervision, recording, storage, reporting and accountability (NPSA, 2004). This will also greatly assist the three individual factors of MHCPs fears, *shame, blame and discipline*, as well as learning by *admitting mistakes* and *seeking help* which are positively addressed in this guide.

5.4.13 Demographics and PSC

The *problematic* response rates with respect to job designation was compared i.e. obstetricians/ gynaecologists; doctors; advanced/ midwives; nursing and clinical managers and others for, *overall improvement in facility level patient safety*. Midwives provided more *problematic* responses than doctors however, responses by managers were generally most negative. This was expected because midwives' frequently deal directly with patients' compared to doctors' or specialists'. From my own work experience managers usually do more administrative work and spend less time with clinicians' and their challenges. However, the response target of 100% doctors was not achieved, with approximately 50% responding due to their busy schedule, as per feedback. Similar challenges were experienced in Singer *et al*., (2003) study wherein a lower than expected number of physicians responded to the PSC surveys due to busy work schedules.

With respect to MMR and PSC, managers' and midwives rated these adequate whereas doctors' rated these closer to poor. The results also indicated low variance and consistency in perceptions as per job designation, in terms of *overall facility patient levels improving*. These results reflect similar findings to a study carried out in a rural South African hospital by Nkosi (2014) where health professionals faced challenges which prevented them from delivering quality services to patients. Nkosi (2014) recommendation that the hospital work environment should be reviewed and made as conducive as possible, through government policies and implementable service delivery plan reviews. I strongly supported this view.

MCHPs *age* as an independent variable was not a factor other than a pattern whereby MHCPs <36 years are more aware of clinical governance structures but have scored their effectiveness lower than those ≥ 36 years of age. Younger MHCPs showed that they have interacted with these structures and or were unhappy with their functioning.

There is a high staff turnover in MOUs, hence the need to retain staff. More senior staff need to train, mentor and act as preceptors for younger recruits, to prevent *adverse events* (Bateman, 2014 and Cronje *et al*., 2015). This would remove fear. To reduce harm to patients, supervision can be strengthened and supported by the *Safety Reference Guide*, NPSA (2004). This would improve PSC and MMR outcomes.

5.6 Trends Identified from the findings of The PSCHO Survey

The following patterns or trends were identified with respect to perceptions of MHCPs regarding the dimensions within the three MOU domains.

- The correlations described the PSC baseline as *adequate.*
- In terms of concurrent Validity, PSC is a new measure, whilst established measures such as personnel, budget, equipment and time have correlated positively but weakly.

- Reliability in terms of test- retest reliability, using the peer reviewed PSCHO survey shows that the measures for various PSC items are consistent (Meterko *et al.*, 2011).
- Theory verification illustrating predictive Validity was attempted using the highest *problematic* scores and comparing correlations scores for the same elements which could be generalised if carried out within homogenous units e.g. MOUs.
- Key organisational resources are required e.g. personnel, budget, equipment and time to enable MHCPs to complete patient care safely.
- All *unit* elements are crucial to improve PSC or MHCPs will opt to *change their career*.
- Clinical governance structures are important and must be in place, with MHCPs aware of their existence, functions and effectiveness to improve PSC and MMR.
- It is evident with a strong positive correlation r (191) =.627 and $p<0.001$ that, improved PSC will improve MMR outcomes.

5.7 Limitations of the Study

The results are not representative of hospitals generally as only three MOUs in a health district were surveyed. Hence, the generalisability of the findings may be limited. Furthermore, the three hospitals surveyed represented three referral levels with funding and structure differences. This did not allow for consideration of statistically significant differences amongst these, as this study dealt specifically with MOUs as a unit within the larger hospitals.

The overall participant response rate was 78.1% could have been higher, having aimed for almost 100% of physicians and doctors by predicting a lower response from these groups. However, 22.9% (n = 44) responded which was relatively satisfactory, given the complexity of the survey administered to busy professionals. The constraint of sample size and the fact that no hypothesis testing was done means that causation could not be inferred.

5.8 Implications

Given these limitations, the consistency of the findings points to the importance of a positive organisational climate on patient and personnel outcomes (Stone *et al*., 2008). This has implications for hospital managers'. The uMgungundlovu District is a NHI pilot site with extra budgets, some of which must be are prioritized for patient safety initiatives.

On comparing the patterns among MHCPs to clinicians in the Singer *et al.,* (2003) study, similar trends prevail with respect to all domains and dimensions shown by the high Cronbach's Alpha scores obtained in Chapter 4. The Singer *et al.,* (2007) study called for further studies to confirm its findings and this study has accomplished this, despite both the delimitations and limitations. Therefore, this study reiterates the Singer studies recommendations for reasonable strategies to improve PSC. This involves the creation of better linkages between administrators', clinical managers' and MHCPs who are directly in contact with patients.

5.9 Conclusion

The aim of this study was to interrogate the findings with reference to the level of PSC present in the selected MOUs in the UMgungundlovu District in KZN. The overall study findings showed that the organisational climate, if improved beyond *adequate* will foster better patient safety outcomes. In light of the huge litigation costs faced by the DoH this would decrease overall healthcare costs. Also, the assumption that if the *structure* is good then *processes* are good and therefore *outcome* would be good, has been clearly demonstrated.

From the discussion of results it is clear that issues of mindset changes are critical. Cultural resistance, bureaucratic verses clinical management, power struggles and health systems *process* weaknesses in *handsoff and transitions*, all add to a pervasive culpability culture in hospitals. These gaps will benefit from the Patient Safety Reference Guide, NPSA (2004) recommended.

The concern remains that some of the *problematic* responses suggest low levels or may imply absence of safety culture. Therefore, the recommendations that

follow in Chapter 6 are aimed at improving the established *adequate* PSC baseline to *excellent*, if MOUs start mimicking HROs.

Furthermore, the adapted PSCHO survey can be reliably used to make decisions about PSC. Its repeated use is recommended to monitor and evaluate the *adequate* PSC baseline established in this study.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises and concludes the research results. It outlines the recommendations to senior planners' and managers' in the provincial DoH. The recommendations can be utilised to inform maternal health policy and patient safety practices by MHCPs, so as to guide safety improvement initiatives and strengthen the clinical governance framework for MOUs.

This chapter includes suggested further research for monitoring, evaluating and continuously improving quality of patient care.

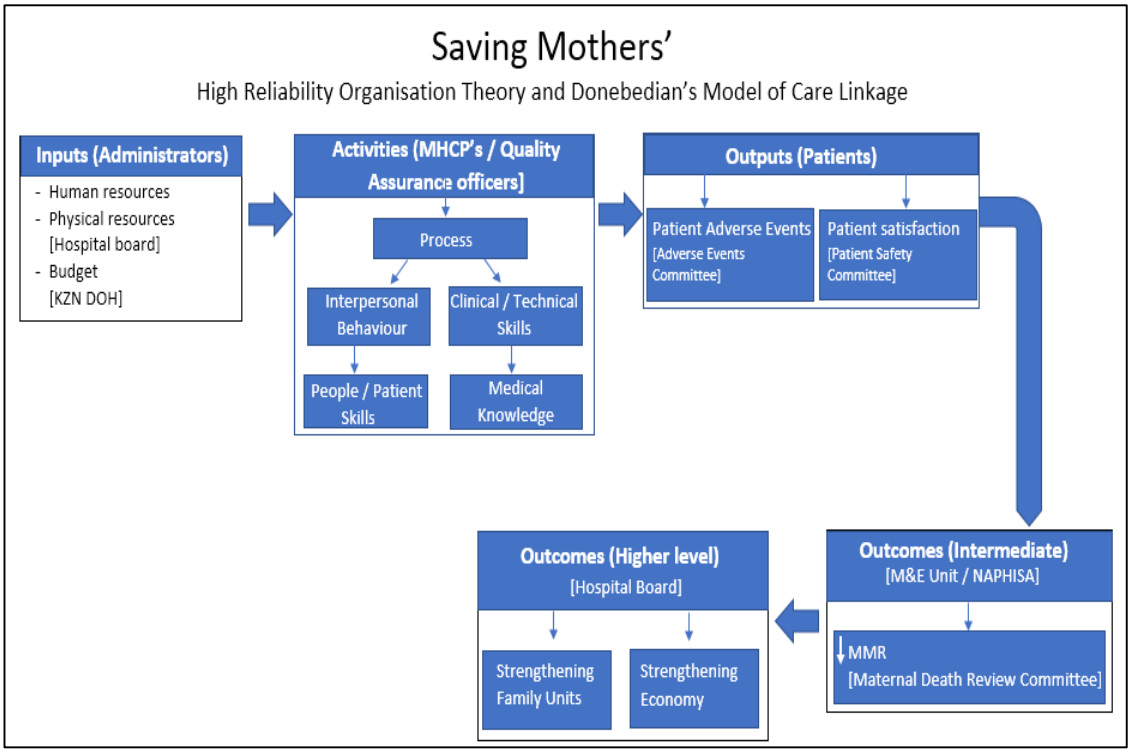
6.2 Lessons Learned

This study was undertaken because the uMgungundlovu District MMR *outcome* was high, pointing to weaknesses in both *structure and process* at MOU level. South Africa's 2015 Millennium Development Goal 5, MMR target was also missed. Every effort therefore has to be made not to miss the SDG3 (2030) target.

The *roadmap to saving mothers* sketched by the researcher was based on the lessons learned and is an actionable *real-time*, *process* schematic wall information map for timeous MHCP and management decision-making. This roadmap will assist MHCPs with an examination of real-time *processes* which provides data that can be acted upon quickly rather than past data collected on *outcomes*.

These are critical for success in reducing MMR and ensuring quality of services and patient satisfaction. Lessons learned from literature (Chapter 2); fieldwork (Chapter 3); findings (Chapter 4) and insights derived from discussions (Chapter 5), inspired a roadmap for the *processes* operationalization of 'Saving Mothers', who use both public and private hospitals because interventions must be *process and outcomes* targeted at facility level, as shown below.

Figure 14: Roadmap to saving mothers'



Source: Thakur – Rajbansi (2019)

Notably, as shown in Figure 14 above, where research focuses more on *processes* of care, it becomes difficult to establish strong relations between *processes and outcomes* (WHO, 2008). This study targeted several *processes* and analysed these to add more value by linking these directly to favourable patient *outcome*. Figure 14 serves as an advantage for senior hospital managers' and MHCPs in decision-making because *outcomes* is based on the end results of care. Positive outcomes in terms of patients' treatment is seen as both their physical well-being and behaviour e.g. patient health and satisfaction. These are the ultimate tests on the assumptions inherent in the use of *structure and process*, in the assessment of care.

Knowing the level of MMR is not enough because underlying factors have to be understood, as these are leading to maternal deaths. The key message is that maternal deaths are avoidable as far as possible, even with limited resources. Hospitals require the right kind of information from which to design activities within key *structures and processes*, to produce better *outcomes*. This roadmap can be used as quick pathway reference.

As a legislator and researcher it is important to implement recommended changes and actively participate in the *process* of change management. The power of advocacy must also be used to influence policies, raise awareness and mobilise resources to improve PSC and thereby reduce MMR.

6.3 Conclusion

This research set out to assess PSC in MOUs in the uMgungundlovu district in KZN. The findings confirmed the researcher's assumption that there is PSC failure to some extent at institutional and more especially, MOU levels. This conclusion is drawn at the backdrop of the UMgungundlovu district's high MMR of 208.3 maternal deaths per 100 000 live births as at 2015. The figure is five times more than the missed Millennium Development Goal 5. South Africa has 10 years to achieve the new SDG3 (2030) MMR target of <70/100 000 live births. We cannot miss this target again. It would be a tragedy for mothers' and babies.

What became apparent as the study progressed was that midwifery is a caring profession. However, the safety of pregnant women remains a concern because few women receive adequate care, with lapses in safety due to inadequate facility safety protocols (WHO, 2008).

This study committed to a quantitative methodology replicating the Singer *et al*., (2003) study. The validated PSCHO survey by Benzer *et al.,* (2017) was used to measure MHCPs perceptions on safety related issues at three levels: organisation, unit and individual or interpersonal (Singer *et al.,* 2007).

The main research question was, *To what extent is patient safety culture present in selected MOUs, in the uMgungundlovu District Municipality?* Various Correlations and the Mean described PSC as *adequate.* This established a PSC baseline to work from. In order to reduce MMR, much more has to be done to determine how senior healthcare managers' can successfully have a mind-set change to embed PSC in MOUs. Such commitment would improve MMR.

Singer *et al*., (2007, p. 2002), made the following assumptions with respect to the methodology, firstly, maternal patient *outcomes* are the result of care given by many MHCPs across work areas; secondly, individual values, beliefs and behaviours become acculturated in the workplace over time through daily

interactions and thirdly, these cultural norms are also influenced by workplace policies, procedures and decision-making. These assumptions have a bearing on the findings with regards to the research sub-questions.

1.5.1 (a) to (c) What are the perceptions of organisational; unit and interpersonal patient safety culture?

Based on the results it can be argued that, good *structure* and *process* coupled with training in soft or *interpersonal* skills in the workplace can improve PSC and thereby improve MMR outcomes. These are inter-linked and require continuous assessment of the established *adequate PSC* baseline. Noting that the death of even one mother is a death too many, key organisational resources are required e.g. personnel, budget, equipment and time to afford MHCPs to complete patient care tasks safely, making them both productive and efficient.

Unit elements are crucial to improve PSC otherwise MHCPs will opt to *change their career*. The fact that the slight majority of MHCP's stated that they would not like to *change their career* contrary to secondary literature review (IOM, 2001) means that for the 49.4% of MHCPs much more has to be done to retain and career-path these professionals in the workplace. A key finding showed that MHCPs who identified and mitigated patient risks, felt the need to be *rewarded* and the DoH should make a concerted effort to improve quality of care outcomes with a rewards programme.

1.5.1 (d): Do perceptions of patient safety culture in MOUs vary amongst hospitals surveyed?

This showed slight variance at the District hospital level where PSC was slightly below the Mean (M=2.7) and most of the maternal deaths occur, hence the district hospital needs more resources to improve efficiency in saving mothers'.

1.5.1 (e): Are effective clinical governance structures in place to ensure patient safety?

In descending order of effectiveness the clinical governance structures are as follows: Maternal Death Review Committee, Adverse Events Committee, Hospital Board and Patient Safety Committee. The latter two need strengthening with skilled personnel. MHCPs must be aware of their existence, functions and effectiveness to improve PSC and MMR.

1.5.1 (f): Do perceptions of patient safety practices vary across MHCPs with respect to; job designation, work area, age and work experience in MOUs?,

It must be noted that the perceptions of managers' were most *problematic*, followed by doctors' then midwives'.

The overall average *problematic* responses was 31.1% across the three domains in MOUs. The high level of *problematic* responses is well above the 10% acceptable for HROs and can be explained by the skewed demographics of fewer senior MHCPs, who are critical to supervise and mentor the younger staff who are mainly trainees. More important is that this study showed that MHCPs are actually aware that things can go wrong when caring for mothers'.

The terms of transforming our health institutions into learning organisations, there was an overwhelming 89% respondent need for the *Seven Steps Patient Safety Full Reference Guide*. (NPSA, 2004). Upon recommendation, it is hoped that it would be locally adapted and routinely used. Training will equip MHCPs to render quality care to patients. This would turnaround the trust deficit that has developed between patients' and healthcare workers', based on the rising litigation against the DoH.

The fact that the uMgungundlovu District MMR is currently almost three times the global average set at <70/100000 live births by 2030, means that sufficient knowledge and supportive maternal and childcare policies with adequate operational management resources are required, especially at District Hospital level. The main challenges to a positive PSC remains: incomplete knowledge about safe practices, staff deficits, stress, fatigue, production pressure, lack of knowledge transfer, device safety, misdiagnosis, substandard care, lack of patient involvement and inadequate measures of patient safety (IOM, 2001).

This PSCHO survey provided data on perceptions of MHCPs and therefore possible areas for improvement have been recommended. However, overall PSC level is *adequate* but needs to improve in MOUs. This study further confirms that as PSC improves, so does MMR.

6.4 Recommendations

Based on the findings of this study the following recommendations are made, which have implications for senior planners' and managers' in the DoH, with special reference to maternal PSC reforms to include:

6.4.1 MOU Strengthening

(a) Enabling Environment: MOUs must become enabling environments within a well-functioning health system. This needs: a regulatory framework and policies that protect women and support the provision of effective maternal healthcare. Mothers' must have access to skilled birth attendants, trained with both maternal life-saving and *interpersonal* skills. MHCPs must adhere to patient safety standards and protocols, guiding high quality maternal and new-born healthcare. There must be budgetary provisions for equipment, personnel and training. Sufficient time must be factored into workforce planning, to attend to pregnant women. Continuous senior management engagement and leadership is needed to motivate, especially trainee MHCPs. This includes career advancement opportunities and supportive mechanisms for MHCPs. Infrastructure (buildings and obstetric ambulances), information technology upgrades, transport and efficient referral systems, requires investment. *Training on teamwork*, women and community satisfaction feedback, with strong linkages between maternity health services and the community, must form part of the active participation process.

(b) Institutional Capacity Development: Strengthening institutional capacity, based on feedback mechanisms through the Monitoring and Evaluation directorate is required. There must be continuous maternal and child safety policy development and analysis to empower MHCPs.

(c) District Health System Strengthening: Having obtained a PSC baseline of *adequate* for the selected MOUs in the uMgungundlovu District, the degree of workplace cultural change in hospitals can be assessed using the validated short format PSCHO survey. More budgets should be allocated at the District hospital level, where the patient is treated first to prevent complications. As the PSC was weaker at this level and most deaths occur here, investing the necessary

resources at district level can prevent more maternal deaths (Makinga *et al*., 2012).

6.4.2 Clinical Governance Structure Strengthening

The results of this study showed that Hospital Boards and Patient Safety Committees need more strengthening. These require members who meet regularly to play oversight on the hospital management. The Draft National Patient Safety Incident Bill (2015) states that a provincial DoH must establish a Patient Safety Committee. This means strengthening the District Patient Safety Committee and Hospital Board with the selection of appropriately skilled members. Clinical governance entails a system of steps and procedures to ensure that patients receive the highest quality of care (Gerada and Cullen, 2004). Therefore, a Clinical Governance Committee should be established in the Office of Health Standards Compliance in the National DoH, to oversee overall clinical quality management. A comprehensive clinical governance framework is required through which the National DoH becomes accountable. This will ensure continuous improvement in quality of health services, thereby creating an environment in which excellence in clinical care will grow (Gerada & Cullen, 2004). It is about time that a centre for clinical governance research was established at one of South Africa's universities, as well as a clinical excellence commission which can do continuous patient safety research (Hindle, Braithwaite and Iedema, (2005).

Board and committee members must be tasked to develop standard operating procedures for patient safety incident management, as outlined in the national policy and supply data to the National Public Health Institute of South Africa. A patient safety programme must be established by Quality Assurance officers in hospitals. This programme must have personnel and budget, monitored with progress reports to the Patient Safety Committee. Regular evaluation on current approaches should also be done to close gaps with effective interventions (Kohn *et al*., 2000).

Hospital management should bring about more awareness in MHCPs of the existence and functions of the Maternal Death Review Committee, Adverse Events Committee, Hospital Board and Patient Safety Committee.

A lean governance framework must be developed to align and regulate the maternity unit with the rest of the hospital. This will strengthen accountability and quality of care with patient safety as a key component. Furthermore, these are mandatory steps to stop a culpability culture and build a PSC to end maternal deaths. Budgets for information technology strengthening must be allocated to ensure data collection, as relevant data is required to plan interventions.

The DoH must do more than facility-based maternal death reviews and confidential enquiries into maternal deaths (WHO, 2004, p. 4). It is weak on other reviews which, if included can improve MMR by following facility initiated assessments that will also improve PSC:

a) Community-based maternal death reviews requiring good medical record systems

b) Clinical Audit: for quality *process* improvement

c) Surveys of severe morbidity (near misses): this requires a good quality medical reward system to identify and assess care where pregnant women survive obstetric complications (WHO, 2004, p. 4).

6.4.3 Organisational Learning

(a) Use of *Seven Steps to Patient Safety Full Reference Guide*: Based on the overwhelming positive responses (88.9%) for the *reference guide*, it is recommended that it be adopted from the NPSA (2004) for *on the job* training. It should also be contextually adapted by the National Office of Health Standards Compliance, which is mandated to resolve patient complaints (National Health Amendment Act, 2013). This will build a safety culture in MOUs since these guidelines describe the steps that a healthcare organisation needs to take to improve patient safety, mimicking HROs. Furthermore, these guidelines encourage openness, which requires the support of patient safety and quality assurance officers, using clinical governance structures and frameworks.

(b) Use of PSCHO Survey: The PSCHO survey can be used routinely by Patient Safety Committees or Quality Assurance Officers to examine the degree of agreement in the organisational scale in order to identify systemic patient safety concerns about culture, policies and resources or compare unit and interpersonal scores for specific work units, e.g. MOUs that may have developed climates that threaten patient safety (Benzer *et al*., 2017).

Repeated use will assist with the development of an assessment tool that can be uniformly used across healthcare institutions to establish PSC baselines. Therefore, facilities can focus on change and develop defence plans to cope with system failures. Individual action will allow for lessons learned and potentially stop the same incidents recurring. For MHCPs this is necessary because both clinical expertise and *interpersonal* aspects of quality of care are embraced. Moreover, record keeping at facility level is critical to retrieve notes and defend litigation. This will also encourage *openness* amongst MHCPs to discuss and apply revised protocols of care without fear of *shame and blame*, as a *Just Culture* will prevail.

The PSCHO survey can be used in its short format or expanded. It can be used for institution wide or in specific units to measure PSC outcomes. Through routine use it may increase participation of individuals and teams to manage change, even at service levels, making monitoring easier to continually improve MMR through improved PSC.

(c) MHCP Retention: In order to retain MHCPs, PSC integration is recommended into the nursing and medical school curriculum. The *Seven Step to Patient Safety Full Reference Guide* (NPSA, 2004) can be used to raise PSC awareness. This will modify the practice of clinical care WHO (2008), since nursing education reform is key in terms of organisational capacity for leadership and governance (Blaauw, Ditlopo & Rispel, 2014). The main goal is to empower MHCPs to work in high hazard environments, like MOUs.

6.4.4 Maternal Care Indicator Development:

Maternal care indicators according to Isaac (as cited in WHO, 2008, p. 85), should include the *adverse outcomes index* which is a full measure of obstetrical

safety, calculated as the percentage of deliveries with one or more adverse events. However, only after validation, since it is based on administrative data, can it be used in South Africa. This implies that data collected from manual record keeping systems must be captured electronically. Investment in computers will ensure the safe keeping of patient data for the effective use as indicators. Our health institutions must have reliable data to work with and become learning organisations.

6.4.5 Legal Reforms:

Policy reviews with respect to patient safety, in domain 2 of the national core standards for health establishments DoH (2011) should be completely revised to incorporate the recommendations of this study. As it stands, it is weakly drafted in very broad terms and needs specific details on patient safety.

The draft 2015 National Policy to Manage Patient Safety Incidents in South Africa (DoH, 2015), is simply reactive and directs the mandate to health facilities to manage patient safety incidents post errors, rather than being proactive to prevent harm. Control of guidelines to set up e.g. Patient Safety Committees should be in the policy and not left to hospitals. Therefore, the recommended *Safety Reference Guideline* is proactive. This will provide direction to both healthcare providers and patients' for feedback and sharing of learned lessons.

Mere MOU accreditation to build a culture of patient safety is insufficient to improve our health systems, although this is a formal process of external assessment using published, specified standards (WHO, 2008, p. 52). Therefore, patient safety regulations are required to establish standards to which healthcare providers must adhere. Ideally, accreditation and regulatory efforts must be coordinated to best improve patient safety outcomes (WHO, 2008, p. 53).

What is now necessary, is a *Patient Safety Bill* in South Africa, similar to the Irish government (General Scheme of Patient Safety Bill, 2018). This will provide for mandatory open disclosure of those responsible for patient safety incidents. The bill must enable clinical commitment to improve patient care and outcomes. It must ensure monitoring of the private sector healthcare, as well.

6.4.6 Restructuring Maternal and Child Healthcare

In terms of specialized care, a maternal and child hospital would allow for women and the community to be involved in designing the model of care required. In this way mothers' needs are met and they will use the services. This is important as the evidence before us suggests that women do not seek care at facilities if they are given substandard care.

6.4.7 Community Participation in Maternal Care

More non-governmental organisations need to cater for maternal safety, to empower families. The DoH must support these initiatives because such groups can strengthen advocacy on maternal healthcare rights. This is in keeping with a human rights approach to maternal healthcare.

The above recommendations are strategic in nature and aimed at improving the established current *adequate* level of PSC in selected MOUs, in the uMgungundlovu District in KZN.

6.5 Further Research

Further patient safety studies are required, with the routine use of the PSCHO survey, to detect any unsafe culture across both public and private hospitals, over larger geographic areas with a broader range of healthcare personnel. Longitudinal mixed studies should be undertaken to continuously measure the impact of interventions implemented to address PSC, (Singer *et al*., 2003).

6.6 Concluding Remarks

South Africa had missed the MMR target of 38 maternal deaths / 100 000 live births for the 2015 Millennium Development Goal5. Now every effort must be escalated to meet the SDG3 (2030) MMR target of <70/100 000. Given that the level of PSC was ranked *adequate* in selected MOUs, in the UMgungundlovu District where the 2015 MMR was 208.3 maternal deaths / 100 000 live births, is not acceptable. It is with this sentiment that, although an ideal of 14 maternal

deaths/100 000 live births translates to one death too many for our mothers', the recommendations of this research report must be taken seriously by all stakeholders. In essence it remains true that we too will probably be a patient in our healthcare system someday and it's onerous on us to address patient safety problems or we will become vulnerable (Kohn *et al.,* 2000).

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Annexure 1: Wits Ethics Clearance

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Thakur-Rajbansi

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H17/11/57**
PROJECT TITLE	Assessing 'Patient Safety Culture' in maternity obstetric units, In a District in KwaZulu-Natal
INVESTIGATOR(S)	Mrs S Thakur-Rajbansi
SCHOOL/DEPARTMENT	Wits School of Governance/
DATE CONSIDERED	17 November 2017
DECISION OF THE COMMITTEE	Approved
EXPIRY DATE	28 February 2021
DATE 01 March 2018	**CHAIRPERSON** (Professor J Knight)

cc: Supervisor : Mr M Cairns

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

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 completion of a yearly progress report.**

Sur - Rajbansi
Signature

01 / 03 / 2018
Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Annexure 2: Research and Support Letter: DOH



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

330 Langalibalele Street
Pietermaritzburg
Tel: 033-395 2197 Fax: 033-342 9427
Email: Samukelisiwe.kheswa@kznhealth.gov.za
www.kznhealth.gov.za

DIRECTORATE:
Strategic Health Programmes

Enquiries: Dr V Mubaiwa

Wits Ethics Committee (Non-Medical)
University of the Witwatersrand
Johannesburg

To whom it may concern

Re: Research Support - Student Number: 762 193

The study proposed by Mrs. Thakur-Rajbansi, Assessing 'Patient Safety Culture' in Maternity Obstetric Units, in a KwaZulu-Natal District, has reference.

The Province of KZN has prioritized provision of safe and good quality health care, particularly in the care of pregnant women and children. The findings and recommendations from this proposed study will be considered and used to inform the Department in its efforts for continuous quality improvement.

The study is supported to be carried out in hospitals in KZN. The results of the research must be submitted to the Department on completion and the researcher is also encouraged to present the findings at the Departmental Research Day.

Thanking you

Date: 19/12/2017

Dr V Mubaiwa
Chief Director: Strategic Health Programmes

Fighting Disease, Fighting Poverty, Giving Hope

Annexure 3: Research Approval Letter

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 330 Langalibalele Street, Pietermaritburg
Postal Address: Private Bag X9051
Tel: 033 395 2805/ 3189/ 3123 Fax: 033 394 3782
Email:
www.kznhealth.gov.za

DIRECTORATE:
Health Research & Knowledge Management

HRKM Ref: 150/18
NHRD Ref: KZ_201804_012

Date: 24 April 2018
Dear Mrs S. Thakur-Rajbansi

Approval of research

1. The research proposal titled **'Assessing 'Patient Safety Culture in Maternity Obstetric Units, in a District in KwaZulu-Natal'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at Edendale, Grey's and Northdale Hospital.

2. You are requested to take note of the following:
   a. Make the necessary arrangement with the identified facility before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

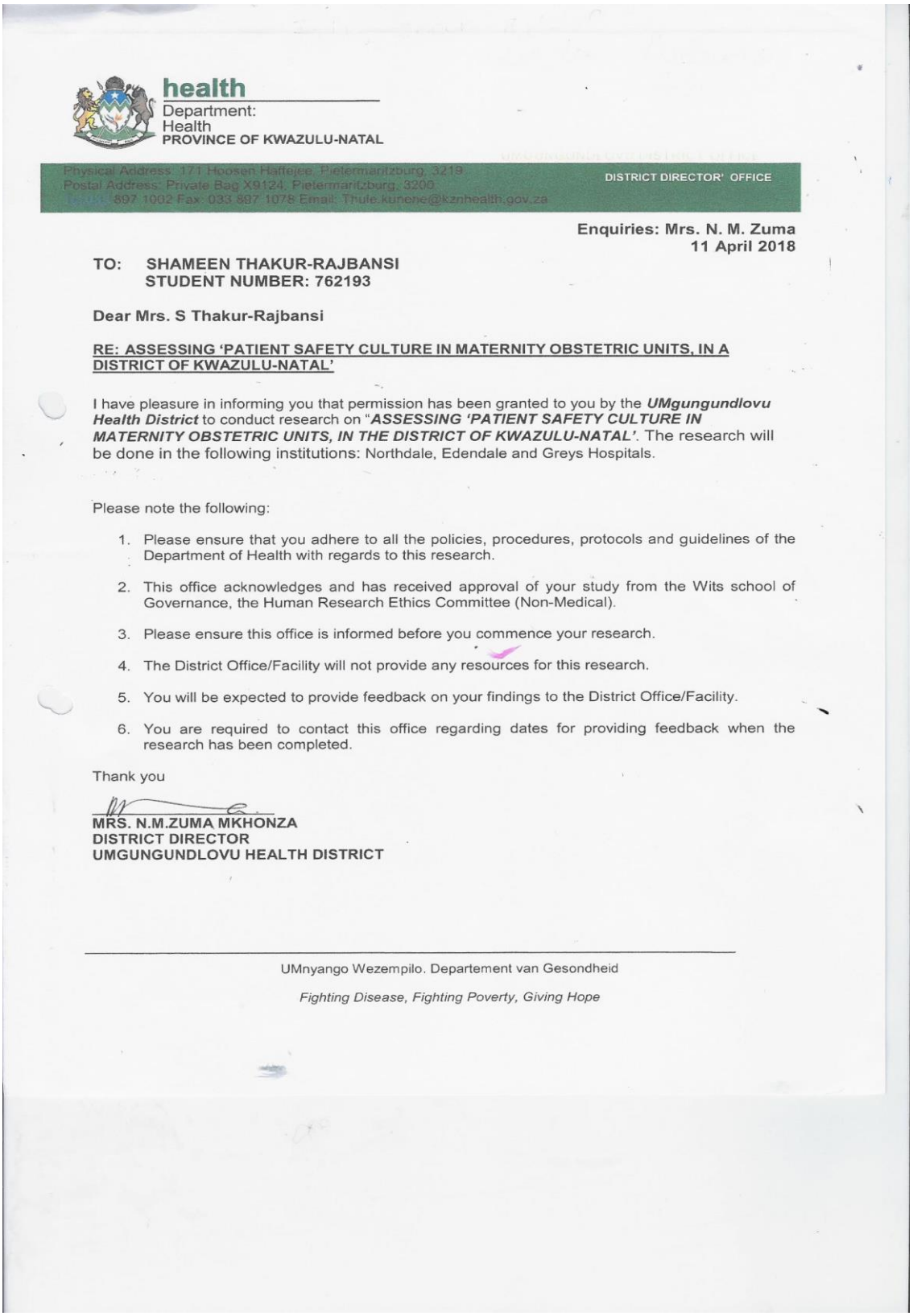
For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee
Date: 24/04/18

Fighting Disease, Fighting Poverty, Giving Hope

Annexure 4: Support Letter form the uMgungundlovu Health District



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 171 Hoosen Haffejee, Pietermaritzburg, 3219
Postal Address: Private Bag X9124, Pietermaritzburg, 3200
[illegible] 897 1002 Fax: 033 897 1078 Email: Thule.kunene@kznhealth.gov.za

DISTRICT DIRECTOR' OFFICE

Enquiries: Mrs. N. M. Zuma
11 April 2018

TO: SHAMEEN THAKUR-RAJBANSI
STUDENT NUMBER: 762193

Dear Mrs. S Thakur-Rajbansi

RE: ASSESSING 'PATIENT SAFETY CULTURE IN MATERNITY OBSTETRIC UNITS, IN A DISTRICT OF KWAZULU-NATAL'

I have pleasure in informing you that permission has been granted to you by the ***UMgungundlovu Health District*** to conduct research on "***ASSESSING 'PATIENT SAFETY CULTURE IN MATERNITY OBSTETRIC UNITS, IN THE DISTRICT OF KWAZULU-NATAL'***. The research will be done in the following institutions: Northdale, Edendale and Greys Hospitals.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This office acknowledges and has received approval of your study from the Wits school of Governance, the Human Research Ethics Committee (Non-Medical).
3. Please ensure this office is informed before you commence your research.
4. The District Office/Facility will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office/Facility.
6. You are required to contact this office regarding dates for providing feedback when the research has been completed.

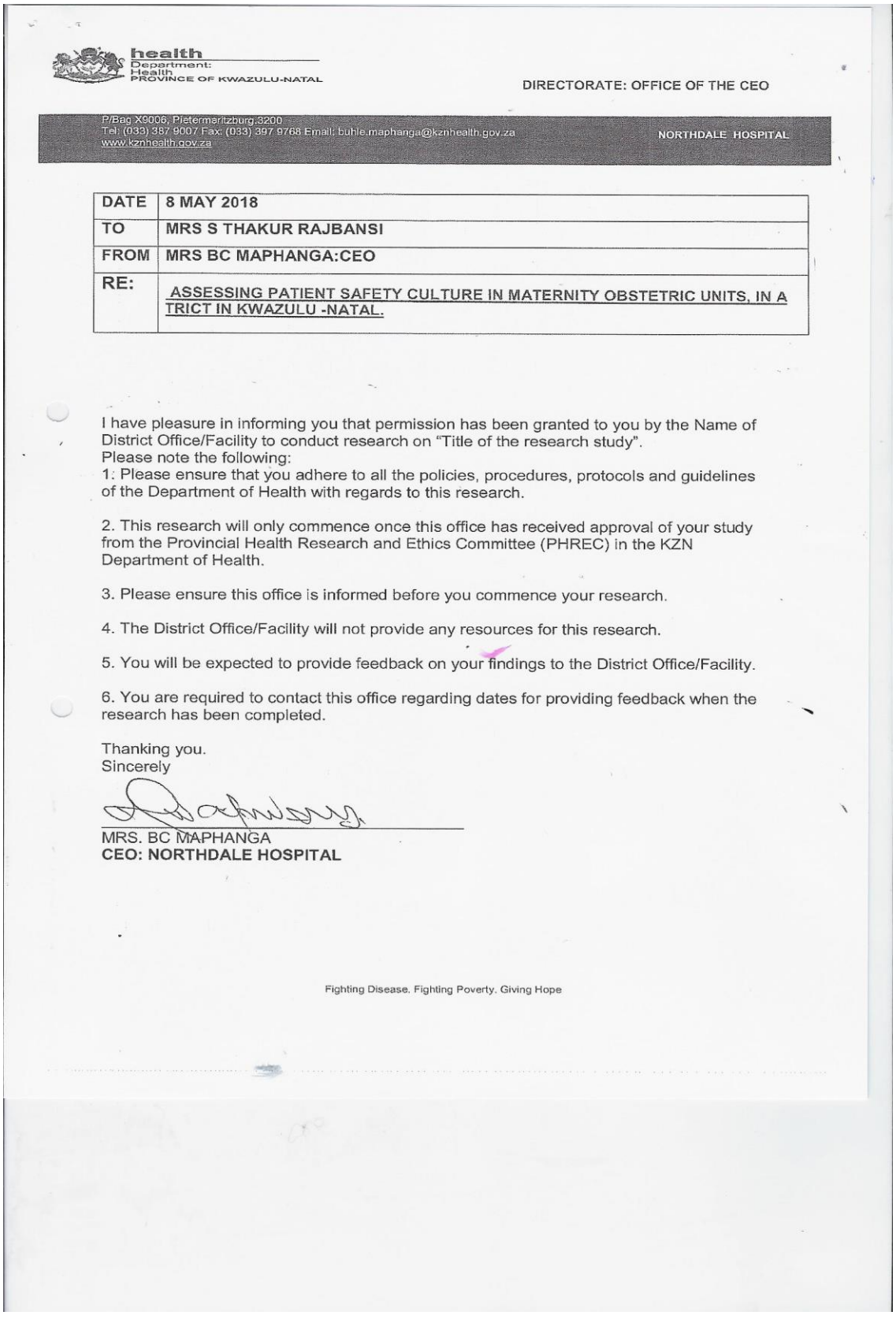
Thank you

MRS. N.M.ZUMA MKHONZA
DISTRICT DIRECTOR
UMGUNGUNDLOVU HEALTH DISTRICT

UMnyango Wezempilo. Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

Annexure 5: Permission Letter from Hospital A



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE: OFFICE OF THE CEO

P/Bag X9006, Pietermaritzburg,3200
Tel: (033) 387 9007 Fax: (033) 397 9768 Email: buhle.maphanga@kznhealth.gov.za
www.kznhealth.gov.za

NORTHDALE HOSPITAL

DATE	8 MAY 2018
TO	MRS S THAKUR RAJBANSI
FROM	MRS BC MAPHANGA:CEO
RE:	ASSESSING PATIENT SAFETY CULTURE IN MATERNITY OBSTETRIC UNITS, IN A TRICT IN KWAZULU -NATAL.

I have pleasure in informing you that permission has been granted to you by the Name of District Office/Facility to conduct research on "Title of the research study".
Please note the following:
1: Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.

2. This research will only commence once this office has received approval of your study from the Provincial Health Research and Ethics Committee (PHREC) in the KZN Department of Health.

3. Please ensure this office is informed before you commence your research.

4. The District Office/Facility will not provide any resources for this research.

5. You will be expected to provide feedback on your findings to the District Office/Facility.

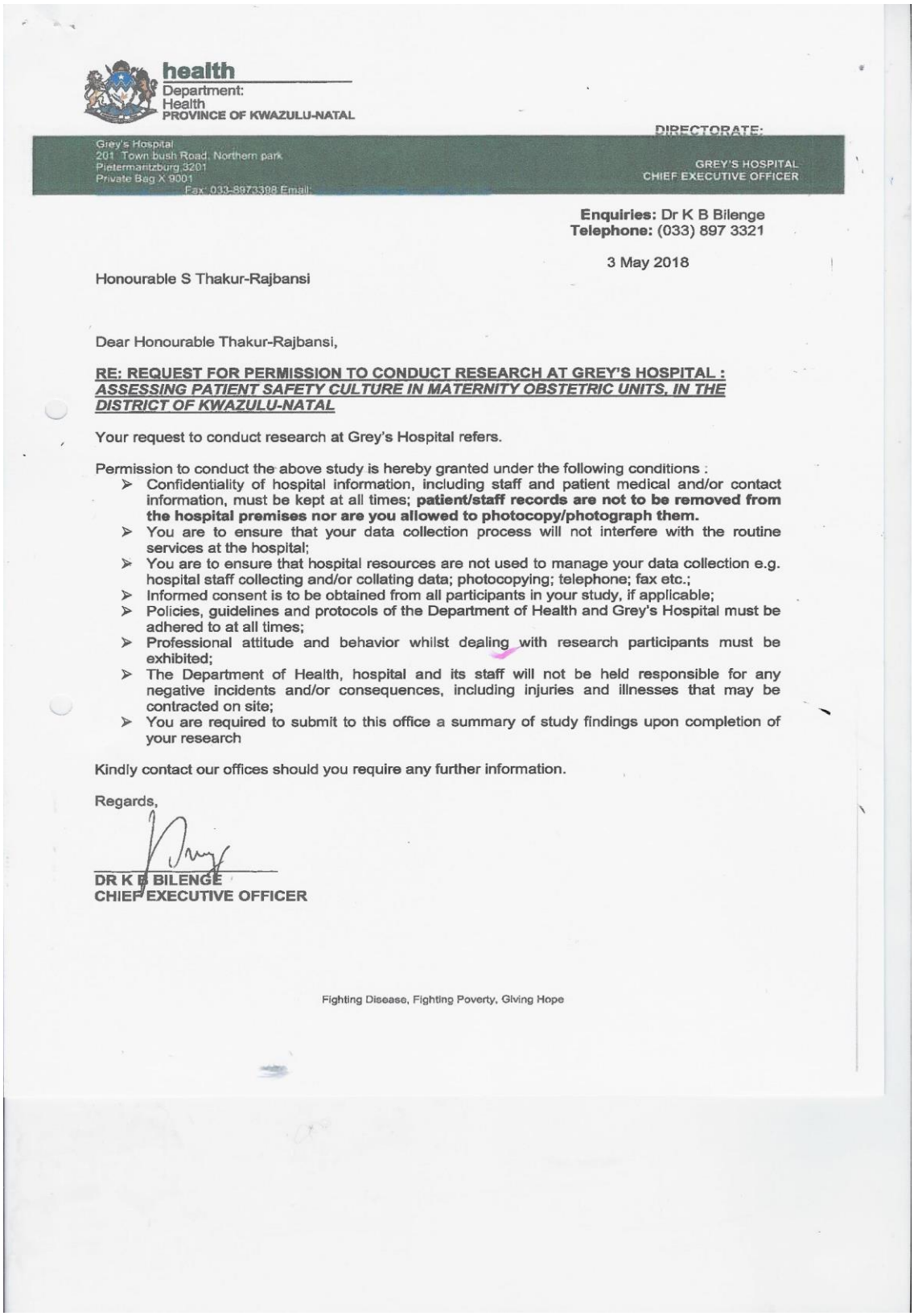
6. You are required to contact this office regarding dates for providing feedback when the research has been completed.

Thanking you.
Sincerely

MRS. BC MAPHANGA
CEO: NORTHDALE HOSPITAL

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Annexure 6: Permission Letter from Hospital B



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:

Grey's Hospital
201 Town bush Road, Northern park
Pietermaritzburg,3201
Private Bag X 9001
Fax: 033-8973398 Email:

GREY'S HOSPITAL
CHIEF EXECUTIVE OFFICER

Enquiries: Dr K B Bilenge
Telephone: (033) 897 3321

3 May 2018

Honourable S Thakur-Rajbansi

Dear Honourable Thakur-Rajbansi,

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT GREY'S HOSPITAL : *ASSESSING PATIENT SAFETY CULTURE IN MATERNITY OBSTETRIC UNITS, IN THE DISTRICT OF KWAZULU-NATAL*

Your request to conduct research at Grey's Hospital refers.

Permission to conduct the above study is hereby granted under the following conditions :

- Confidentiality of hospital information, including staff and patient medical and/or contact information, must be kept at all times; **patient/staff records are not to be removed from the hospital premises nor are you allowed to photocopy/photograph them.**
- You are to ensure that your data collection process will not interfere with the routine services at the hospital;
- You are to ensure that hospital resources are not used to manage your data collection e.g. hospital staff collecting and/or collating data; photocopying; telephone; fax etc.;
- Informed consent is to be obtained from all participants in your study, if applicable;
- Policies, guidelines and protocols of the Department of Health and Grey's Hospital must be adhered to at all times;
- Professional attitude and behavior whilst dealing with research participants must be exhibited;
- The Department of Health, hospital and its staff will not be held responsible for any negative incidents and/or consequences, including injuries and illnesses that may be contracted on site;
- You are required to submit to this office a summary of study findings upon completion of your research

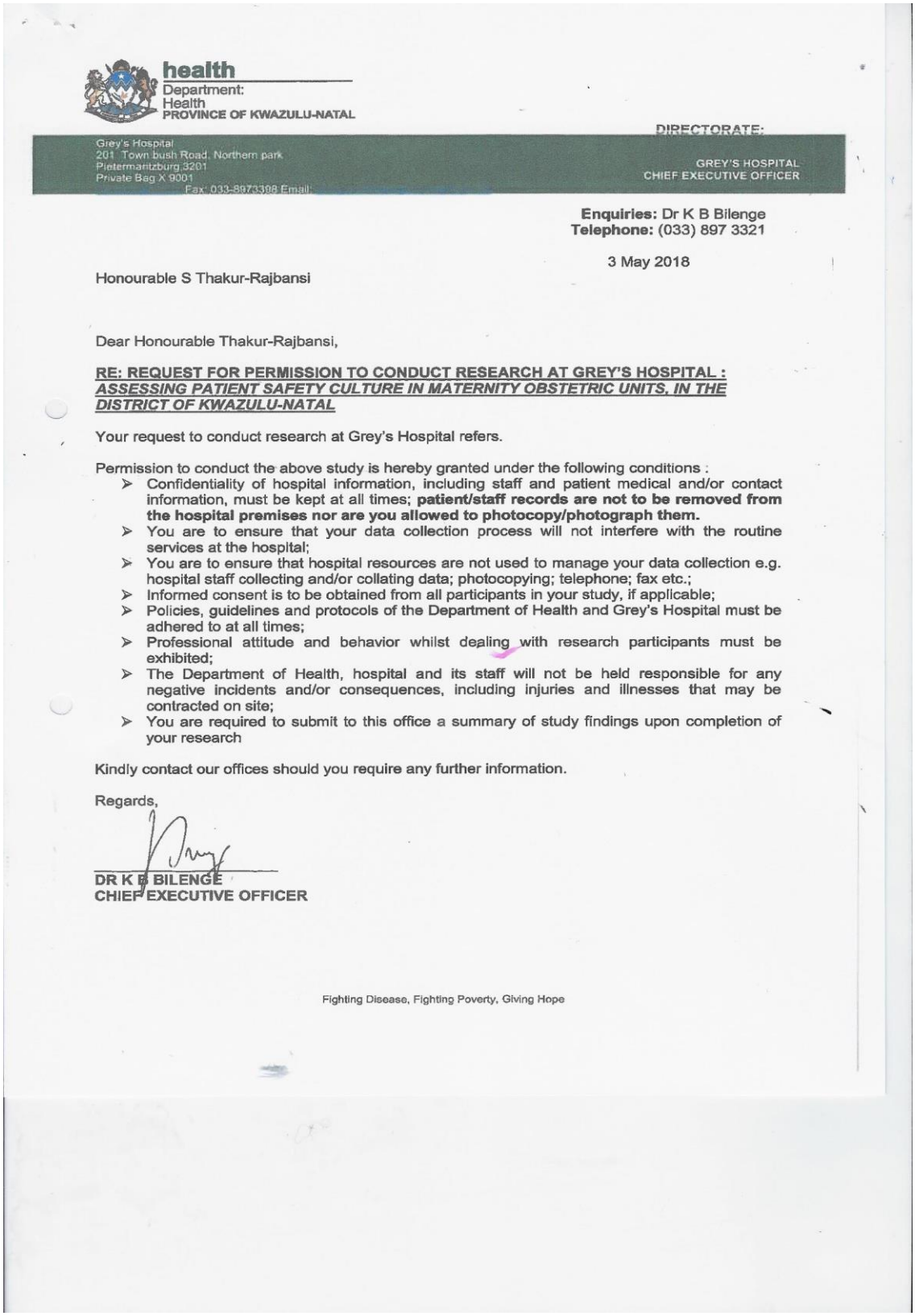
Kindly contact our offices should you require any further information.

Regards,

DR K B BILENGE
CHIEF EXECUTIVE OFFICER

Fighting Disease, Fighting Poverty, Giving Hope

Annexure 7: Permission Letter from Hospital C



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Grey's Hospital
201 Town bush Road, Northern park
Pietermaritzburg,3201
Private Bag X 9001
Fax: 033-8973308 Email:

DIRECTORATE:
GREY'S HOSPITAL
CHIEF EXECUTIVE OFFICER

Enquiries: Dr K B Bilenge
Telephone: (033) 897 3321

3 May 2018

Honourable S Thakur-Rajbansi

Dear Honourable Thakur-Rajbansi,

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT GREY'S HOSPITAL : *ASSESSING PATIENT SAFETY CULTURE IN MATERNITY OBSTETRIC UNITS, IN THE DISTRICT OF KWAZULU-NATAL*

Your request to conduct research at Grey's Hospital refers.

Permission to conduct the above study is hereby granted under the following conditions :

- Confidentiality of hospital information, including staff and patient medical and/or contact information, must be kept at all times; **patient/staff records are not to be removed from the hospital premises nor are you allowed to photocopy/photograph them.**
- You are to ensure that your data collection process will not interfere with the routine services at the hospital;
- You are to ensure that hospital resources are not used to manage your data collection e.g. hospital staff collecting and/or collating data; photocopying; telephone; fax etc.;
- Informed consent is to be obtained from all participants in your study, if applicable;
- Policies, guidelines and protocols of the Department of Health and Grey's Hospital must be adhered to at all times;
- Professional attitude and behavior whilst dealing with research participants must be exhibited;
- The Department of Health, hospital and its staff will not be held responsible for any negative incidents and/or consequences, including injuries and illnesses that may be contracted on site;
- You are required to submit to this office a summary of study findings upon completion of your research

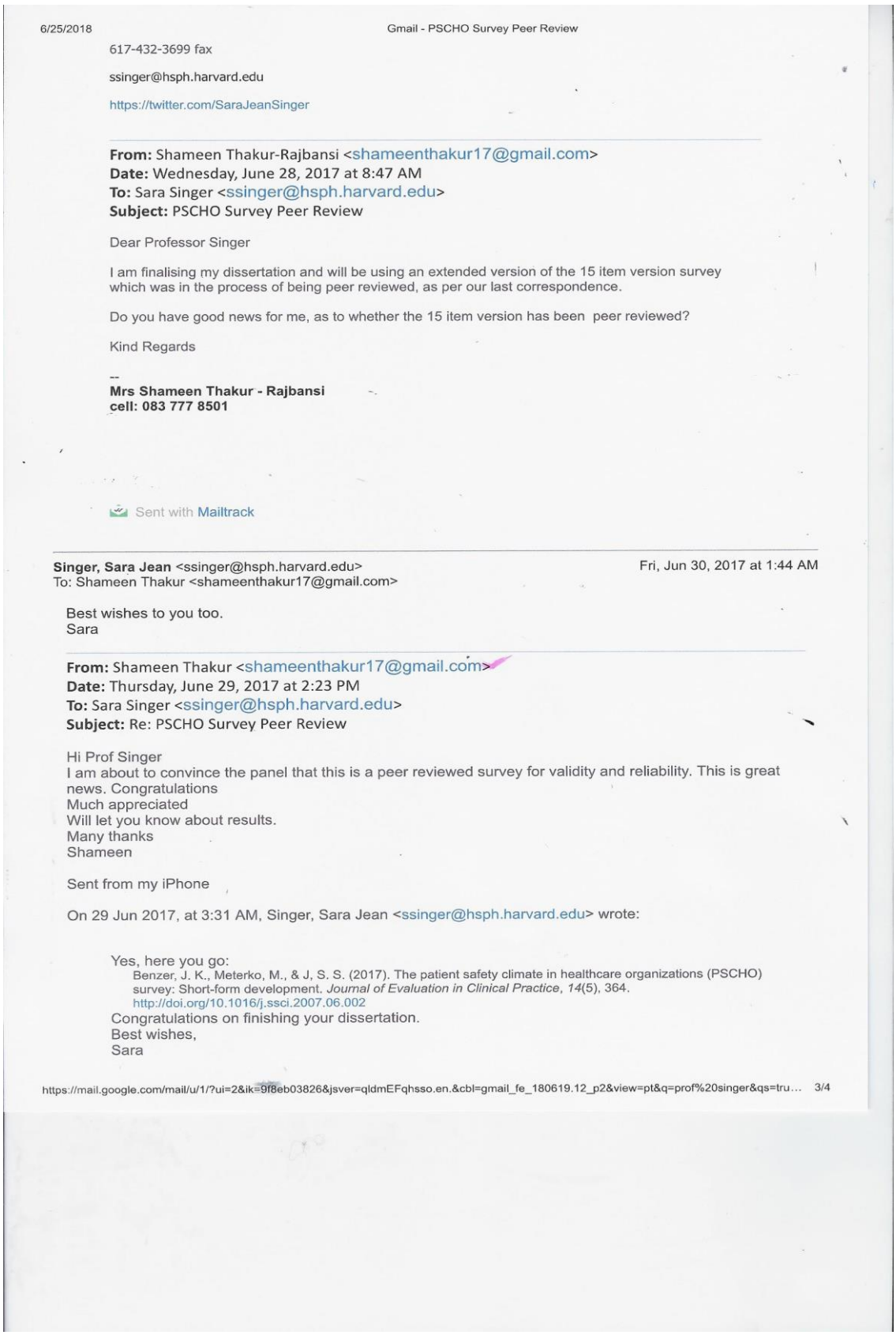
Kindly contact our offices should you require any further information.

Regards,

DR K B BILENGE
CHIEF EXECUTIVE OFFICER

Fighting Disease, Fighting Poverty, Giving Hope

Annexure 8: Permission Letter from Prof. S. Singer to use PSCHO Survey



6/25/2018 Gmail - PSCHO Survey Peer Review

617-432-3699 fax

ssinger@hsph.harvard.edu

https://twitter.com/SaraJeanSinger

From: Shameen Thakur-Rajbansi <shameenthakur17@gmail.com>
Date: Wednesday, June 28, 2017 at 8:47 AM
To: Sara Singer <ssinger@hsph.harvard.edu>
Subject: PSCHO Survey Peer Review

Dear Professor Singer

I am finalising my dissertation and will be using an extended version of the 15 item version survey which was in the process of being peer reviewed, as per our last correspondence.

Do you have good news for me, as to whether the 15 item version has been peer reviewed?

Kind Regards

--
Mrs Shameen Thakur - Rajbansi
cell: 083 777 8501

Sent with Mailtrack

Singer, Sara Jean <ssinger@hsph.harvard.edu> Fri, Jun 30, 2017 at 1:44 AM
To: Shameen Thakur <shameenthakur17@gmail.com>

Best wishes to you too.
Sara

From: Shameen Thakur <shameenthakur17@gmail.com>
Date: Thursday, June 29, 2017 at 2:23 PM
To: Sara Singer <ssinger@hsph.harvard.edu>
Subject: Re: PSCHO Survey Peer Review

Hi Prof Singer
I am about to convince the panel that this is a peer reviewed survey for validity and reliability. This is great news. Congratulations
Much appreciated
Will let you know about results.
Many thanks
Shameen

Sent from my iPhone

On 29 Jun 2017, at 3:31 AM, Singer, Sara Jean <ssinger@hsph.harvard.edu> wrote:

Yes, here you go:
Benzer, J. K., Meterko, M., & J, S. S. (2017). The patient safety climate in healthcare organizations (PSCHO) survey: Short-form development. *Journal of Evaluation in Clinical Practice*, *14*(5), 364. http://doi.org/10.1016/j.ssci.2007.06.002
Congratulations on finishing your dissertation.
Best wishes,
Sara

https://mail.google.com/mail/u/1/?ui=2&ik=9f8eb03826&jsver=qldmEFqhsso.en.&cbl=gmail_fe_180619.12_p2&view=pt&q=prof%20singer&qs=tru… 3/4

Gmail Shameen Thakur-Rajbansi <shameenthakur17@gmail.com>

FW: Letter to Prof SJ Singer - Harvard School of Public Health

1 message

Shameen Thakur Rajbansi <arajbansi@telkomsa.net> Wed, Aug 17, 2016 at 12:26 AM
To: shameenthakur17@gmail.com

From: Singer, Sara Jean [mailto:ssinger@hsph.harvard.edu]
Sent: Wednesday, May 4, 2016 4:08 PM
To: Shameen Thakur Rajbansi <arajbansi@telkomsa.net>
Subject: Re: Letter to Prof SJ Singer - Harvard School of Public Health
Importance: High

Dear Shameen,

You're welcome to use our survey. I'm attaching our 2004 survey (consistent with the paper you read), our 2006 survey (several later papers relied on this version) and a recent paper we wrote (under review, so please don't share further), which describes a 15-item version of the survey (we didn't field this 15-item version, but have recommended it to other investigators). You'd be welcome to use any version that suits you.

I'd be curious to know which you choose, so please feel free to stay in touch.

Best regards,

Sara

Sara J. Singer, MBA, PhD

Professor

Department of Health Policy and Management, Harvard T.H. Chan School of Public Health

Department of Medicine, Harvard Medical School

Mongan Institute for Health Policy, Massachusetts General Hospital

677 Huntington Avenue

Boston, MA 02115

617-432-7139 tel

617-432-3699 fax

ssinger@hsph.harvard.edu

https://twitter.com/SaraJeanSinger

Annexure 9: Letter from Statistician

DEEPAK SINGH

Database and Statistical Analysis

P. O. Box 24002
Hillary
4024

(cell): 083-775-9239
singhd@hotmail.co.za

TO WHOM IT MAY CONCERN

28 November 2018

Analysis of Data: Ms S. Thakur Rajbansi (Student Number: 762193)

This is to certify that I have assisted Ms Thakur Rajbansi with the analysis of her data for her Master's studies using SPSS ver25.0.

Sincerely



Deepak Singh

Annexure 10: Participation Information Sheet

THE HUMAN RESEARCH ETHICS COMMITTEE

(NON – MEDICAL)

PARTICIPANT INFORMATION LETTER

Dear Participant, below are the details of this study

Title of Research Study:

Assessing 'Patient Safety Culture in Maternity Obstetric Units, in a District of Kwazulu-Natal'

Principal Researcher: Mrs Shameen Thakur-Rajbansi

Cell Phone: 083 777 8501

E-mail: shameenthakur17@gmail.com

Background and Purpose of the Study: High maternal mortality is a growing concern for all. This questionnaire assesses the perceptions of maternal healthcare providers on patient safety practises in maternal obstetric units, so that, there is continuous improvement in patient safety measures.

Outline of the Procedure: The data collection method will be distribution of a hard copy of a close-ended questionnaire which consists of 3 sections, comprising of 28 questions. You are required to place an X to indicate your answer. When complete, you are required to enclose the questionnaire and place in the secured collection box in the maternity lecture room or boardroom.

The survey is voluntary and anonymous. You will not be required to indicate your name or any identifying information when you submit your answers. Should you

no longer wish to participate in the survey, you may withdraw your consent at any time.

The data obtained in the study will be kept only for the purposes of this study and no findings which could identify any individual participant will be kept. Should you choose to participate in the survey, please complete the survey which will take 30 minutes.

The results of the study will be communicated to all stakeholders and copies will be available at the WITS library.

Risks: Nil

Benefits: The information obtained from this study may improve Patient Safety Culture in the maternity obstetric units, hence improving maternal mortality outcomes.

Cost to Participant: None

Compensation: There is no monetary compensation offered to you.

Confidentiality: Please do **NOT** write any identifying information on your questionnaire. Every effort will be made by the researcher to protect your questionnaire by keeping it locked and when no longer necessary for research, all materials will be destroyed.

Research – Related Injury: None anticipated

Person to Contact for any Queries:

Researcher: Mrs Shameen Thakur-Rajbansi on shameenthakur17@gmail.com or 083 777 8501

Supervisor: Mr Murray Cairns on murray.cairns@gmail.com or 082 535 1186

Research Administrator: Shaun Schoeman on Shaun.Schoeman@wits.ac.za or +27(0) 11 717 1408

Annexure 11: Consent Form to Participate in the Research Study



CONSENT FORM TO PARTICIPATE IN THE RESEARCH STUDY:

I participant's full name _____

ID number _____, have read this document in its entirety and understands its contents. Where I have had any questions or queries, these have been explained to me by _____ to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Participant's name (print) _____

Participant's signature _____ Date: _____

Researcher's name (print) _____

Researcher's signature _____ Date: _____

Witness name (print) _____

Witness signature _____Date:_____

Annexure 12: Questionnaire

PATIENT SAFETY CLIMATE IN HEALTHCARE ORGANISATIONS

INSTRUCTIONS

Please complete as follows:
Use Blue or Black pen. Do not use pencil or felt tip markers.
Fill the chosen block by placing a 
If you wish to change the answer, colour in the chosen block and answer again correctly with an "X" in the new block of choice.

Note: By completing & submitting this survey, your responses will be included in the data set.

SECTION 1

This set of questions relates to patient safety in your unit and at your facility.

Instructions: For the following statements, please answer if you "Strongly Disagree," "Disagree," "Neither Agree nor Disagree," "Agree", or "Strongly Agree." If an item does not apply, please fill in the block corresponding with "Not Applicable".

Definition: Patient Safety – Activities to avoid, prevent, or correct adverse patient outcomes which may result from the delivery of healthcare.

		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Not Applicable
1. Organisational							
1	Senior management has a clear picture of the risks associated with patient care	☐	☐	☐	☐	☐	☐
2	Senior management considers patient safety when programme changes are discussed	☐	☐	☐	☐	☐	☐
3	Patient safety decisions are made by the most qualified people, regardless of rank or hierarchy	☐	☐	☐	☐	☐	☐
4	I am provided with the adequate resources below to provide safe patient care:						
4a	Personnel	☐	☐	☐	☐	☐	☐
4b	Budget	☐	☐	☐	☐	☐	☐
4c	Equipment	☐	☐	☐	☐	☐	☐
5	Senior management provides a climate that promotes patient safety	☐	☐	☐	☐	☐	☐
6	I have enough time to complete patient care tasks safely	☐	☐	☐	☐	☐	☐
7	Overall, the level of patient safety at this facility is improving	☐	☐	☐	☐	☐	☐
2. Unit							
8.	In my unit, management puts safety at the same level of importance as meeting the schedule and productivity	☐	☐	☐	☐	☐	☐
9.	My unit takes the time to identify and assess risks to ensure patient safety	☐	☐	☐	☐	☐	☐

10.	I am rewarded for taking quick action to identify a serious mistake	☐	☐	☐	☐	☐	☐
11.	In my unit, patient safety problems and errors are communicated to right people so problem can be corrected	☐	☐	☐	☐	☐	☐
12.	Staff freely speak up if they see something that may negatively affect patient care	☐	☐	☐	☐	☐	☐
13.	When I take time to communicate about patient safety problems there is appropriate follow up	☐	☐	☐	☐	☐	☐
14.	In my unit, disregarding policy and procedure is rare	☐	☐	☐	☐	☐	☐
15.	My unit follows a specific process to review performance against defined training goals	☐	☐	☐	☐	☐	☐
16.	My unit provides training on teamwork in order to improve patient care performance and safety	☐	☐	☐	☐	☐	☐
3. Interpersonal							
17.	People will doubt my abilities if I ask a question	☐	☐	☐	☐	☐	☐
18.	My co-workers will lose respect for me if they know I've made a mistake	☐	☐	☐	☐	☐	☐
19.	If people find out that I made a mistake, I will be disciplined	☐	☐	☐	☐	☐	☐
20.	I will be blamed if I make an error	☐	☐	☐	☐	☐	☐
21.	I feel like changing my career	☐	☐	☐	☐	☐	☐

SECTION 2: Provision of safe patient care

INSTRUCTIONS:

Please complete as follows:
Fill the chosen block with an "X"
To rank, use the numbers 1 to 5. Where 1 is "Poor" and 5 is "Excellent"

22 (a) The following clinical governance structures are in place
(b) If 'Yes', rank its effectiveness from 1 to 5

Governance Structure	YES	NO	Don't Know	Ranking
(i) Hospital Board				
(ii) Maternal death review committee				
(iii) Patient safety committee				
(iv) Adverse events committee				

23 (a) The ideal maternal mortality ratio (MMR) is 14/100 000 live births but this district MMR is 208.3/100 000 live births. In your own opinion, rank this MMR outcome

(b) In your own opinion rank this institution's level of patient safety culture

Outcome Indicator	Poor (1)	Bad (2)	Adequate (3)	Good (4)	Excellent (5)
Maternal Mortality Ratio					
Patient safety Culture					

24 A step by step patient safety reference guide will assist me

YES	NO

SECTION 3: Demographics

Please complete the following information. Remember, your answers are anonymous.
Fill your answer in the block by placing an "X"

25. Job Designation:

	Obstetrician/ Gynaecologist		Nursing Manager
	Clinical Manager		Advanced Midwife
	Doctor		Midwife
	Trainee Doctor		Other

26. Maternal Obstetric Unit: Work area:

	Early Labour Ward		Antenatal Clinic
	Labour Ward		Nursery
	High Care		Administration
	Postnatal		Other

27. Age:

>18-24		25-35		36-45		46-55		56-65		>65	

28. Work experience in maternity units:

6months to <1 year		1 to <3 years		3to <5 years		5to <10 years		10+ years	

Thank you for your participation

SOURCE ADOPTED FROM: SINGER etal.; (2004) & (2006) AND METERKO etal.; (2011)

Annexure 13: Correlations

		Organisational							Unit				Interpersonal			Provision of Care			
Spearman's rho		Senior management considers patient safety when programme changes are discussed	Personnel	Budget	Equipment	Senior management provides a climate that promotes patient safety	I have enough time to complete patient care tasks safely	Overall, the level of patient safety at this facility is improving	I am rewarded for taking quick action to identify a serious mistake	Staff freely speak up if they see something that may negatively affect patient care	In my unit, disregarding policy and procedure is rare	My unit provides training on teamwork in order to improve patient care performance and safety	If people find out that I made a mistake, I will be disciplined	I will be blamed if I make an error	I feel like changing my career	Patient safety committee	Effectiveness	Maternal Mortality Ratio	Patient safety Culture
ORGANISATIONAL																			
Senior management has a clear picture of the risks associated with patient care	Correlation Coefficient	.706**	.339**	.370**	.342**	.566**	.385**	.483**	0,015	.243**	.166*	.255**	0,147	0,119	-.255**	0,096	0,135	0,109	.304**
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,838	0,001	0,029	0,001	0,052	0,114	0,001	0,193	0,110	0,139	0,000
	N	180	180	185	186	181	182	183	179	176	173	173	176	177	177	186	141	185	186
Senior management considers patient safety when programme changes are discussed	Correlation Coefficient	1,000	.363**	.393**	.418**	.512**	.416**	.508**	0,130	.261**	0,133	.277**	.149*	0,087	-.251**	0,079	.253**	0,131	.340**
	Sig. (2-tailed)		0,000	0,000	0,000	0,000	0,000	0,000	0,085	0,001	0,083	0,000	0,050	0,250	0,001	0,287	0,003	0,079	0,000
	N	182	175	182	182	177	179	179	176	173	170	169	174	175	175	182	138	181	182
Patient safety decisions are made by the most qualified people, regardless of rank or hierarchy	Correlation Coefficient	.548**	.412**	.296**	.333**	.405**	.300**	.442**	.148*	.321**	.198**	.322**	0,054	.154*	-0,134	0,132	.208*	0,125	.312**
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,050	0,000	0,010	0,000	0,482	0,042	0,080	0,074	0,014	0,092	0,000
	N	178	175	182	183	178	180	180	176	174	170	171	173	174	173	183	138	183	183

Personnel	Correlation Coefficient	.363**	1,000	.606**	.570**	.483**	.391**	.378**	.206**	.218**	0,128	.157*	0,113	0,148	0,001	-0,056	0,105	.164*	.207**
	Sig. (2-tailed)	0,000		0,000	0,000	0,000	0,000	0,000	0,006	0,004	0,095	0,041	0,137	0,050	0,988	0,447	0,215	0,026	0,005
	N	175	184	183	184	179	180	181	177	174	172	170	174	175	174	184	140	183	184
Budget	Correlation Coefficient	.393**	.606**	1,000	.708**	.609**	.590**	.525**	.435**	.234**	0,138	.230**	0,004	0,068	-0,128	-0,023	0,106	0,104	.299**
	Sig. (2-tailed)	0,000	0,000		0,000	0,000	0,000	0,000	0,000	0,002	0,067	0,002	0,955	0,368	0,087	0,749	0,207	0,153	0,000
	N	182	183	191	191	186	187	188	183	181	177	176	179	180	180	191	144	190	191
Equipment	Correlation Coefficient	.418**	.570**	.708**	1,000	.594**	.476**	.516**	.288**	.379**	.194**	.287**	0,034	0,101	-.180*	0,018	.168*	.227**	.343**
	Sig. (2-tailed)	0,000	0,000	0,000		0,000	0,000	0,000	0,000	0,000	0,010	0,000	0,654	0,176	0,015	0,807	0,043	0,002	0,000
	N	182	184	191	192	187	188	189	184	182	178	177	180	181	181	192	145	191	192

I have enough time to complete patient care tasks safely	Correlation Coefficient	.416**	.391**	.590**	.476**	.563**	1,000	.647**	.346**	.302**	.180*	.203**	-0,050	-0,025	-.241**	-0,073	0,084	0,092	.213**
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000		0,000	0,000	0,000	0,017	0,007	0,509	0,743	0,001	0,321	0,318	0,211	0,003
	N	179	180	187	188	184	188	186	180	180	174	174	177	178	178	188	142	187	188
Overall, the level of patient safety at this facility is improving	Correlation Coefficient	.508**	.378**	.525**	.516**	.639**	.647**	1,000	.257**	.282**	.203**	.313**	0,125	0,145	-.230**	-0,030	.188*	0,141	.306**
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000	0,000		0,000	0,000	0,007	0,000	0,097	0,053	0,002	0,684	0,025	0,054	0,000
	N	179	181	188	189	185	186	189	181	180	175	176	178	178	178	189	142	188	189
UNIT																			
In my unit, management puts safety at the same level of importance as meeting the schedule and productivity	Correlation Coefficient	.393**	.345**	.392**	.483**	.513**	.486**	.529**	.351**	.456**	.279**	.368**	0,007	-0,022	-0,138	-0,009	0,073	.158*	.353**
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,925	0,775	0,066	0,907	0,388	0,031	0,000
	N	179	181	188	189	184	185	187	181	179	175	175	178	178	178	189	142	188	189
My unit takes the time to identify and assess risks	Correlation Coefficient	.353**	.197**	.238**	.369**	.446**	.322**	.467**	.148*	.360**	.243**	.340**	0,013	0,012	-.178*	0,049	0,092	0,100	.237**

to ensure patient safety	Sig. (2-tailed)	0,000	0,008	0,001	0,000	0,000	0,000	0,000	0,046	0,000	0,001	0,000	0,861	0,869	0,018	0,506	0,277	0,172	0,001
	N	178	180	187	188	184	185	187	181	181	175	177	178	179	178	188	141	187	188
I am rewarded for taking quick action to identify a serious mistake	Correlation Coefficient	0,130	.206**	.435**	.288**	.215**	.346**	.257**	1,000	.283**	0,143	.281**	-0,123	-0,068	-.267*	-0,036	0,022	0,033	.271**
	Sig. (2-tailed)	0,085	0,006	0,000	0,000	0,004	0,000	0,000		0,000	0,060	0,000	0,105	0,369	0,000	0,632	0,800	0,662	0,000
	N	176	177	183	184	180	180	181	184	176	174	171	175	176	176	184	138	183	184
In my unit, patient safety problems and errors are communicated to right people so problem can be corrected	Correlation Coefficient	.200**	.163*	0,116	.269**	.246**	0,110	.216**	.299**	.642**	.375**	.611**	-0,127	-0,126	-.357**	.176*	.215*	0,037	.173*
	Sig. (2-tailed)	0,008	0,030	0,119	0,000	0,001	0,140	0,003	0,000	0,000	0,000	0,000	0,097	0,098	0,000	0,017	0,012	0,619	0,019
	N	175	177	183	183	179	180	181	177	175	172	171	173	174	173	183	136	182	183
Staff freely speak up if they see something that may negatively affect patient care	Correlation Coefficient	.261**	.218**	.234**	.379**	.363**	.302**	.282**	.283**	1,000	.285**	.467**	-0,109	-0,091	-.382**	0,086	.259**	.152*	.286**
	Sig. (2-tailed)	0,001	0,004	0,002	0,000	0,000	0,000	0,000	0,000		0,000	0,000	0,155	0,232	0,000	0,246	0,002	0,041	0,000
	N	173	174	181	182	179	180	180	176	182	171	172	172	174	172	182	136	181	182

When I take time to communicate about patient safety problems there is appropriate follow up	Correlation Coefficient	.303**	.257**	.302**	.341**	.380**	.285**	.359**	.363**	.497**	.400**	.377**	-.173*	-0,039	-.348**	0,143	.186*	.154*	.368**
	Sig. (2-tailed)	0,000	0,001	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,021	0,607	0,000	0,051	0,028	0,036	0,000
	N	176	178	185	186	182	183	184	179	179	174	175	176	176	177	186	139	186	186
In my unit, disregarding policy and procedure is rare	Correlation Coefficient	0,133	0,128	0,138	.194**	.239**	.180*	.203**	0,143	.285**	1,000	.353**	-0,116	-0,027	-.169*	0,115	0,136	.195**	.258**
	Sig. (2-tailed)	0,083	0,095	0,067	0,010	0,002	0,017	0,007	0,060	0,000		0,000	0,132	0,724	0,027	0,127	0,116	0,009	0,001
	N	170	172	177	178	174	174	175	174	171	178	168	169	170	170	178	135	177	178
My unit follows a specific process to review performance against defined training goals	Correlation Coefficient	.349**	.257**	.245**	.299**	.287**	.187*	.230**	0,125	.321**	.423**	.534**	-0,050	-0,007	-0,140	.265**	0,109	.155*	.342**
	Sig. (2-tailed)	0,000	0,001	0,001	0,000	0,000	0,012	0,002	0,097	0,000	0,000	0,000	0,509	0,924	0,065	0,000	0,202	0,035	0,000
	N	175	178	184	185	180	181	182	179	178	175	173	177	176	175	185	138	184	185
My unit provides training on teamwork in order to improve patient	Correlation Coefficient	.277**	.157*	.230**	.287**	.313**	.203**	.313**	.281**	.467**	.353**	1,000	-0,038	0,017	-.223**	.227**	.236**	.164*	.302**

care performance and safety	Sig. (2-tailed)	0,000	0,041	0,002	0,000	0,000	0,007	0,000	0,000	0,000	0,000		0,625	0,820	0,004	0,002	0,006	0,030	0,000
	N	169	170	176	177	174	174	176	171	172	168	177	170	171	168	177	132	177	177
INTERPERSONAL																			
People will doubt my abilities if I ask a question	Correlation Coefficient	-0,035	.194*	.188*	-0,002	0,084	0,144	0,036	0,111	-0,139	-0,064	-0,068	.365**	.357**	.342**	-0,016	-0,109	0,058	-0,027
	Sig. (2-tailed)	0,649	0,010	0,012	0,974	0,269	0,056	0,634	0,142	0,070	0,404	0,383	0,000	0,000	0,000	0,832	0,205	0,437	0,722
	N	175	175	179	180	175	177	177	175	171	170	169	176	177	176	180	136	179	180
My co-workers will lose respect for me if they know I've made a mistake	Correlation Coefficient	-0,017	.183*	0,117	-0,026	0,061	0,041	0,079	-0,079	-.234**	-0,114	-0,112	.454**	.501**	.349**	0,043	-0,078	0,019	-0,040
	Sig. (2-tailed)	0,823	0,016	0,119	0,727	0,422	0,588	0,292	0,297	0,002	0,139	0,150	0,000	0,000	0,000	0,562	0,369	0,797	0,592
	N	172	174	180	181	176	178	178	175	174	169	168	174	175	173	181	135	180	181
If people find out that I made a mistake, I will be disciplined	Correlation Coefficient	.149*	0,113	0,004	0,034	0,138	-0,050	0,125	-0,123	-0,109	-0,116	-0,038	1,000	.686**	.312**	0,067	0,075	-0,046	-0,028
	Sig. (2-tailed)	0,050	0,137	0,955	0,654	0,069	0,509	0,097	0,105	0,155	0,132	0,625		0,000	0,000	0,373	0,386	0,543	0,706

	N	174	174	179	180	175	177	178	175	172	169	170	180	178	175	180	136	179	180
I will be blamed if I make an error	Correlation Coefficient	0,087	0,148	0,068	0,101	0,084	-0,025	0,145	-0,068	-0,091	-0,027	0,017	.686**	1,000	.298**	0,032	0,055	-0,061	0,044
	Sig. (2-tailed)	0,250	0,050	0,368	0,176	0,264	0,743	0,053	0,369	0,232	0,724	0,820	0,000		0,000	0,668	0,524	0,415	0,553
	N	175	175	180	181	177	178	178	176	174	170	171	178	181	176	181	137	180	181
I feel like changing my career	Correlation Coefficient	-.251**	0,001	-0,128	-.180*	-.188*	-.241**	-.230**	-.267**	-.382**	-.169*	-.223**	.312**	.298**	1,000	-0,126	-0,161	-0,117	-.188*
	Sig. (2-tailed)	0,001	0,988	0,087	0,015	0,013	0,001	0,002	0,000	0,000	0,027	0,004	0,000	0,000		0,090	0,060	0,119	0,011
Hospital Board	N	175	174	180	181	176	178	178	176	172	170	168	175	176	181	181	137	180	181
	Correlation Coefficient	0,064	0,020	0,078	0,127	-0,032	-0,043	-0,005	0,105	0,125	0,053	.150*	0,000	0,069	-0,100	.425**	0,100	0,122	.190**
	Sig. (2-tailed)	0,395	0,784	0,286	0,079	0,664	0,558	0,943	0,159	0,094	0,485	0,047	0,998	0,359	0,180	0,000	0,233	0,093	0,009
Effectiveness	N	181	183	190	191	186	187	188	183	181	177	176	179	180	180	191	144	190	191
	Correlation Coefficient	.202*	0,129	.240**	.278**	.182*	.348**	.387**	.195*	.329**	0,075	.205*	0,020	0,016	-.283**	0,067	.549**	0,143	.284**

	Sig. (2-tailed)	0,017	0,127	0,004	0,001	0,030	0,000	0,000	0,022	0,000	0,384	0,017	0,817	0,853	0,001	0,424	0,000	0,087	0,001
	N	140	140	146	146	142	142	143	139	137	137	136	138	140	138	146	127	145	146
Maternal death review committee	Correlation Coefficient	0,101	0,005	0,026	0,035	0,013	-0,005	-0,050	0,016	0,123	0,141	.164*	-0,024	-0,018	-0,109	.410**	0,047	0,007	0,040
	Sig. (2-tailed)	0,175	0,948	0,719	0,634	0,858	0,947	0,498	0,828	0,099	0,060	0,029	0,751	0,813	0,143	0,000	0,574	0,922	0,585
	N	182	184	191	192	187	188	189	184	182	178	177	180	181	181	192	145	191	192
Effectiveness	Correlation Coefficient	0,013	-0,142	-0,054	-0,016	-0,053	-0,012	0,038	-0,041	0,149	0,083	.246**	-0,112	-0,051	-.168*	0,135	.499**	0,150	.179*
	Sig. (2-tailed)	0,871	0,074	0,492	0,833	0,504	0,883	0,632	0,608	0,061	0,305	0,002	0,160	0,522	0,034	0,082	0,000	0,054	0,021
	N	161	160	166	167	162	164	164	159	158	156	154	158	159	160	167	140	166	167
Patient safety committee	Correlation Coefficient	0,079	-0,056	-0,023	0,018	-0,043	-0,073	-0,030	-0,036	0,086	0,115	.227**	0,067	0,032	-0,126	1,000		.171*	.189**
	Sig. (2-tailed)	0,287	0,447	0,749	0,807	0,558	0,321	0,684	0,632	0,246	0,127	0,002	0,373	0,668	0,090			0,018	0,009
	N	182	184	191	192	187	188	189	184	182	178	177	180	181	181	192	145	191	192

Effectiveness	Correlation Coefficient	.253**	0,105	0,106	.168*	0,161	0,084	.188*	0,022	.259**	0,136	.236**	0,075	0,055	-0,161		1,000	.175*	.270**
	Sig. (2-tailed)	0,003	0,215	0,207	0,043	0,056	0,318	0,025	0,800	0,002	0,116	0,006	0,386	0,524	0,060			0,035	0,001
	N	138	140	144	145	141	142	142	138	136	135	132	136	137	137	145	145	144	145
Adverse events committee	Correlation Coefficient	0,017	-0,049	0,031	0,034	-0,049	-0,023	-0,057	0,040	0,107	0,088	0,133	0,045	-0,061	-0,061	.510**	0,042	-0,034	0,042
	Sig. (2-tailed)	0,822	0,514	0,672	0,639	0,507	0,751	0,434	0,595	0,149	0,242	0,077	0,546	0,413	0,412	0,000	0,619	0,645	0,563
	N	181	183	190	191	186	187	188	183	182	177	177	179	181	180	191	144	190	191
Effectiveness	Correlation Coefficient	0,089	-0,025	0,015	0,067	0,008	0,025	.176*	-0,023	0,083	0,136	.188*	0,017	0,073	-0,081	0,044	.609**	0,136	.165*
	Sig. (2-tailed)	0,283	0,760	0,852	0,409	0,927	0,763	0,031	0,779	0,321	0,108	0,026	0,843	0,384	0,335	0,588	0,000	0,096	0,042
	N	146	147	152	153	149	150	150	145	144	142	141	144	146	145	153	134	152	153

Maternal Mortality Ratio	Correlation Coefficient	0,131	.164*	0,104	.227**	0,067	0,092	0,141	0,033	.152*	.195**	.164*	-0,046	-0,061	-0,117	.171*	.175*	1,000	.627*
	Sig. (2-tailed)	0,079	0,026	0,153	0,002	0,362	0,211	0,054	0,662	0,041	0,009	0,030	0,543	0,415	0,119	0,018	0,035		0,000
	N	181	183	190	191	186	187	188	183	181	177	177	179	180	180	191	144	191	191
Patient safety Culture	Correlation Coefficient	.340**	.207**	.299**	.343**	.174*	.213**	.306**	.271**	.286**	.258**	.302**	-0,028	0,044	-.188*	.189**	.270**	.627**	1,000
	Sig. (2-tailed)	0,000	0,005	0,000	0,000	0,017	0,003	0,000	0,000	0,000	0,001	0,000	0,706	0,553	0,011	0,009	0,001	0,000	
	N	182	184	191	192	187	188	189	184	182	178	177	180	181	181	192	145	191	192