School of Nursing, Midwifery and Paramedicine

Health Professionals' Perception of Patient Safety and Quality in a Western Australian Hospital

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Declaration

To the best of my knowledge and belief, this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Human Ethics The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number # HR29/2016.

Signature:

Date: 31 January 2018

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Abstract

Patient safety is a priority worldwide because despite initiatives put in place injuries, infections and deaths still occur in healthcare. The aim of this study was to explore the attitudes, beliefs and values on patient safety by health professionals at a Western Australian general hospital. The Hospital Survey on Patient Safety Culture™ (HSOPSC™) was distributed to nurses, midwives, medical officers and allied health staff working on the inpatient wards and the emergency department. The finding of the study was that health professionals share a perception of patient safety, which was more positive at the unit level than the wider hospital. This was most evident in relation to the perception of management. The immediate manager was seen to be promoting safety, whereas hospital management's safety priorities were not as evident. A significant difference was found between the health professionals' perception with medical officers most positive of their immediate manager's actions promoting safety. Teamwork within the units was identified as an area of strength. In comparison to the Agency for Healthcare Quality and Research 2016 comparative database the reporting of adverse events was higher at the study site. Most of those submitting adverse event reports were nurses. Two aspects were found to positively influence the reporting of adverse events: receiving feedback and communication about clinical errors and the combined patient safety culture (PSC). The HSOPSC™ was found to be an acceptable tool to use in the Australian setting. Future research is recommended using the HSOPSC™ with a larger sample across several acute hospital sites to allow quantification of PSC in the Australian healthcare context.

Table of Contents

List of Figures

List of Tables

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Abbreviations

AHPRA	Australian Health Practitioner Regulation Agency
AHRQ	Agency for Healthcare Research and Quality
ACSQHC	Australian Commission on Safety and Quality in Health Care
HSOPSC™	Hospital Survey on Patient Safety Culture™
MSI	Modified Stanford Instrument
PSC	patient safety culture
PSCHO	Patient Safety Climate in Healthcare Organizations
National Standards	National Safety and Quality Health Service Standards
SAQ	Safety Attitudes Questionnaire
US	United States

Chapter 1 – Introduction

1.1 Overview

Patient safety culture (PSC) has been described as the shared attitudes, values, beliefs and perceptions of safety issues within an organisation (Sorra, Gray, Streagle, et al., 2016). A positive PSC is integral to keeping hospital patients safe and to providing quality care (Agnew, Flin, & Mearns, 2013). Research measuring safety culture in healthcare has been evident in the literature since the early 2000s (Pronovost et al., 2003; Sorra & Nieva, 2004). The findings of these early studies clearly identified that the safety culture attitudes were far from ideal. As found in the reported studies there is a need to not only measure PSC but to address the reported attitudes to allow improvements in patient safety to be made (Vincent & Amalberti, 2016). Due to the importance of measuring PSC, the Agency for Healthcare Research and Quality (AHRQ) has provided access to a database of results from participating United States (US) hospitals so that benchmarking may occur (Agency for Healthcare Research and Quality [AHRQ], 2016). Surveying PSC enables identification of organisational conditions that may lead to adverse events and patient harm so that these may be addressed (Leape et al., 2009). The AHRQ continues to support research into PSC, including the development of new survey tools that can be applied in a greater, more comprehensive range of healthcare settings (AHRQ, 2016).

This study aimed to investigate the perception health professional groups have of PSC in a Western Australian general hospital. The study has utilised a PSC measurement tool developed by the AHRQ because the tools have been validated and used in international healthcare settings. Benchmarking of study results can occur because the AHRQ has not placed any restrictions on use of the database. The findings of this study will establish a baseline of PSC for the study site. The baseline data will allow the organisation to identify strategies required to enhance the culture of safety and to influence quality improvement interventions focused on patient harm reduction and minimisation, which is a central focus of clinical governance.

1.2 Introduction

This chapter provides an overview of hospital PSC and the relationship of PSC to clinical governance, clinical risk management and clinical improvement. The chapter will illustrate the benefits of a positive PSC in reducing patient harm caused by clinical error. An overview of the key concepts is presented and the chapter elaborates the significance of this study to the clinical management of health services. This overview allows for an

understanding of the diverse components of PSC, including the values, attitudes and beliefs that establish the safety behaviours within a health service. The importance of this understanding is that it connects with what safety behaviours are sustained and rewarded in the health service that lead to a reduction in patient harm.

1.3 Background to the research

The goal of healthcare organisations is to nurture a culture where patient safety is a priority. A positive PSC provides a needed level of protection for patients because health care can be a high-risk situation, with unsafe practices causing injuries, infections and death (World Health Organization [WHO], 2014). The degree of patient harm occurring in healthcare has been highlighted in both published government reports and academic journal articles (Kohn, Corrigan, & Donaldson, 2000; Leape et al., 1991; R. Wilson et al., 1995). The overall findings of numerous research studies into hospital PSC recommended changes to the organisational culture to focus on improving patient safety because much of the harm was preventable (Sorra & Nieva, 2004; R. Wilson, Harrison, Gibberd, & Hamilton, 1999). Harm can cause patient suffering and increase the cost of health care delivery (Patient Safety Surveillance Unit [PSSU], 2016). Encapsulated within improving organisational culture was the requirement for executive leaders to provide and promote patient safety programs (Kohn et al., 2000; Leape et al., 1991; R. Wilson et al., 1999).

Executive support for patient safety is the essential component of clinical governance (Braithwaite & Travaglia, 2008). Clinical governance is a system for continuously improving the quality of services while ensuring high standards of patient care are provided (WA Health, 2016a). High standards are achieved by creating an environment where excellence in clinical care is encouraged (WA Health, 2016a). Clinical governance needs to have strong leadership at the executive level and engagement at the clinical level to work effectively (Braithwaite & Travaglia, 2008). Accreditation, which is part of clinical governance, applies standards of care to healthcare organisations (Braithwaite & Travaglia, 2008). Accreditation has been used to measure the safety and quality of patient care since 1996 when the Australian Council on Healthcare Standards established a voluntary accreditation process (Myer, 2011). This voluntary approach to accreditation did not provide assurance that all Australian health services met the quality standards and nurtured a culture that focused on patient safety.

In 2010, the Australian Safety and Quality Framework for Health Care was endorsed by the Australian Health Ministers (Australian Commission on Safety and Quality in Health

Care [ACSQHC], 2010). This framework became a core component of the new compulsory accreditation scheme. The Framework provided 21 areas for action to improve the safety and quality of patient care provided (ACSQHC, 2010). Subsequently, the Framework was divided into ten National Safety and Quality Health Service Standards which have been compulsory to meet Australian healthcare accreditation since 2013 (ACSQHC, 2015). Individual health service adherence to the National Standards allows for auditing of safe practices and a focus on improvement actions, including harm minimisation that aims to reduce or prevent clinical errors (ACSQHC, 2015). This compliance with the National accreditation scheme enables a level of uniformity of care across Australia for the assessment and accreditation of patient safety and quality within each healthcare setting. However, so far there is little evidence to demonstrate a relationship between the hospital's accreditation status and reduced patient harm (Mumford et al., 2015). Although many improvements in the safety and quality of patient care have been documented with the implementation of the National Standards, the Australian Commission on Safety and Quality in Health Care (ACSQHC) recognises that compliance with the National Standards alone will not eliminate patient harm (ACSQHC, 2017c).

So, while accreditation provides a level of compliance, hospitals have implemented a range of additional safety measures with the aim of further reducing the incidence of patient harm. The additional measures include risk management, continuous education and continuous improvement (Braithwaite & Travaglia, 2008). Risk management identifies possible hazards, quantifies their impact and puts a management plan in place to prevent or minimise the identified risk (Braithwaite & Travaglia, 2008). One important area of a management plan is the implementation of education. Continuous education should be provided to ensure staff are informed of new practices allowing them to implement evidence-based care. The education and evaluation of the implemented evidence-based care form part of the continuous improvement cycle. Continuous improvement activities are a means to measure what is happening within the organisation so that recommendations can be made for areas where further improvement is required (ACSQHC, 2012; Braithwaite & Travaglia, 2008). The focus of these additional measures is to promote continuous improvement to allow for the reduction of clinical error and the delivery of quality and safe patient care.

Australian healthcare has a history of clinical error reporting as a strategy to improve patient care (ACSQHC, 2017b; Paterson, 2005). A reporting system has been available in Western Australia since 2001 (PSSU, 2015) and nationally any event that causes

death or serious harm to patients has been reported publicly since 2004 (ACSQHC, 2017b). The reporting of clinical errors, with or without injury caused to the patient, is expected practice in Australia. The number of clinical errors in Western Australia has not changed significantly with approximately 3.2% – 4.7% of hospital admissions resulting in an injury or near miss (PSSU, 2013, 2016, 2017). Even these small improvements are wins in the goal of continuously improving the quality of patient care. Although the reporting systems demonstrate the organisation's commitment to patient safety, it is difficult to measure the clinicians' engagement with the reporting system. Many clinical errors in Australia go unreported making it difficult to ascertain a true figure of incidences and improvements (Westbrook et al., 2015). It is hypothesised that a spike in incidences may in fact be an improvement in the reporting culture, whereas a reduction in incidences may be related to a reluctance to report (PSSU, 2013). Providing a non-punitive culture where the reporting of clinical errors is encouraged without fear of punishment is essential to the implementation of a reporting culture (AHRQ, 2017a; Braithwaite & Travaglia, 2008).

Clinical governance, the implementation of safety measures, participation in accreditation and reporting of incidences have a common factor; they require staff engagement for success. Having staff with a positive PSC, is therefore, the key to making change within an organisation because positive staff are more likely to engage in safe practices, such as reporting errors when they occur (D. Wilson, 2013). Positive staff also respond to change and look for improvements in everyday work situations (Agnew et al, 2013). The PSC is therefore an essential element in the safety and quality of patient care. The importance of culture for an organisation's success has been recognised and when discussing culture Peter Drucker's mantra, that the culture of an organisation is more important than its strategies, is often quoted (as cited in Torben, 2013).

An assessment of the current safety culture of a hospital is recommended because this is the first step in identifying areas for improvement in an overall organisational strategy (Patankar, Brown, & Sabin, 2012). An assessment will also allow benchmarking with comparable settings so that the similarities and differences across different sites can be studied and areas that are below the benchmark can be improved (Patankar et al., 2012). This information may be used to implement improvement measures that can be monitored and tracked over time to ensure planned improvements are achieved (Patankar et al., 2012). This study measures the PSC in a Western Australian general hospital. The public hospital provides a range of services focusing on general medical, surgical and mental health (East Metropolitan Health Service, 2017). Health professionals ranging from

nurses, midwives, medical officers, allied health, pharmacists and mental health specialists are employees of the hospital. The hospital first achieved organisation wide accreditation for the National Standards in November 2014. Since then the hospital has also undertaken a periodic review (East Metropolitan Health Service, 2017). Considering the hospital profile, it was deemed a suitable site for this study.

1.4 Research questions

This research focuses on the following questions:

- What are health professionals' views on safety and quality and are there differences between nurses, medical officers and other health professionals at the study site?
- Do health professionals perceive differences between unit level and hospital performance on safety and quality measures?
- Is there a correlation between health professionals' patient safety culture and perception of the frequency of adverse event reporting?

The research questions are addressed throughout the thesis. See Appendix A to locate in which chapters the questions are addressed.

1.5 Justification for the research

Research into gaining a better understanding of the role culture plays on patient safety in the Australian context is now warranted (Willmott & Mould, 2018). In 2015 the National Patient Safety Foundation described a strong safety culture as

one in which health care professionals and leaders are held accountable for unprofessional conduct yet not punished for human mistake: errors are identified and mitigated before they harm patients; and strong feedback loops enable frontline staff to learn from previous errors and alter care processes to prevent recurrences (National Patient Safety Foundation, 2015, p.11).

This research is also timely because there have been few studies about PSC conducted in Australia in an acute care setting within the last decade (Willmott & Mould, 2018). While similar studies have been conducted internationally the literature search, conducted on published research for this study, revealed only a few Australian studies had assessed clinical staff's perception of safety and quality care. This may be considered a

major gap in the Australian PSC research literature and its influence on safety and quality improvement in health care. As will be discussed in chapter 2, the three Australian studies included in the literature review differ from the current study because they:

- are specific to one department within an acute hospital
- assessed all public health services or
- involved the implementation of an intervention (Chaboyer et al., 2013; Gallego, Westbrook, Dunn, & Braithwaite, 2012; Lee, Allen, & Daly, 2012).

The findings of the current study will add to research into Australian patient safety and may be used to raise awareness and improve PSC in the Australian healthcare setting.

1.6 Definitions of terms

Definitions can vary and are not uniform internationally. Therefore, the key terms used in this thesis are provided.

Accreditation	a status awarded to an organisation when assessment demonstrates agreed standards have been met (ACSQHC, 2012)
Adverse event	an injury caused by the health care provided and not by the underlying disease (PSSU, 2017)
Composite	a measure of patient safety culture (Sorra, Gray, Streagle, et al., 2016)
Clinical errors	when something that was planned as part of clinical care did not work out or the wrong plan was used (Kohn et al., 2000)
Event	any type of clinical error, mistake, or accident, regardless of whether or not it results in patient harm (ACSQHC, 2017)
General hospital	acute hospital providing secondary level health care (WA Health, 2017)
Harm	an impairment of structure or function of the body that may be caused by injuries or infection (AHRQ, 2016)
Health care	the action of providing patient care (ACSQHC, 2017)
Healthcare	the system in which patient care is provided (ACSQHC, 2017)
Health professional	health care practitioner recognised by AHPRA (Australian Health Practitioner Regulation Agency, 2016)
Near miss	an event that did not cause a patient injury, but only by chance (PSSU, 2017)
Patient safety	a reduction in the risk of unnecessary harm from health care to an acceptable minimum (PSSU, 2017)

Patient safety climate	the perceived value placed on safety by the organisation (Work Cover Queensland, 2017)
Patient safety culture	the shared attitudes, values, beliefs and perceptions of safety issues within an organisation (Sorra, Gray, Streagle, et al., 2016)

For clarification on the difference between harm and clinical errors, and to quantify the degree to which they occur in Western Australian healthcare, the following information from the 2016 to 2017 financial year is provided (PSSU, 2017).

Harm	injuries resulting from a patient fall were the number one cause of severe harm or death, whereas issues with hospital processes, such as delays in transfer or treatment, were responsible for the second most number
Clinical errors	it was reported that 3.8% of hospital separations were associated with a clinical error. Medication incidents were the most frequently reported followed by inpatient falls

1.7 Significance

The significance of this research is that it contributes to a better understanding of PSC in the Australian healthcare context. Healthcare organisations that can identify contributing factors to a PSC and use these to build a positive safety culture will reduce patient harm, improve staff satisfaction and manage their resources more effectively and efficiently (Brandis, Rice, & Schleimer, 2017; Campione & Famolaro, 2018). The assessment of the hospital's PSC allows healthcare executives, managers and clinicians to focus on cultural issues that lead to a reduction in patient harm and quality improvements. This focus may lead to improved effectiveness by achieving quality patient outcomes but also improved efficiency by staff undertaking productive clinical work.

1.8 Outline of research methodology

The research approach used to answer the research questions was a quantitative, descriptive, cross-sectional design. The Hospital Survey on Patient Safety Culture™ (HSOPSC™) was selected and used with permission of the AHRQ. The HSOPSC™ is attached at Appendix B. Administration of the HSOPSC™ followed the instructions outlined in the AHRQ Hospital Survey on Patient Safety Culture User's Guide (Sorra, Gray, Streagle, et al., 2016; Sorra & Nieva, 2004). The quantitative data were analysed using Statistical Package for Social Sciences (SPSS 24) software package. The qualitative comments from a free text

section were entered into an Excel spreadsheet, grouped into eight broad themes and presented as a sum of themes.

1.9 Outline of the thesis

The thesis is organised into six chapters including this introduction. Chapter two follows with an integrated review of the patient safety literature. Literature in the international and Australian setting has been reviewed. Chapter three describes the methodology. A quantitative, descriptive, cross-sectional study design was used with a section for qualitative comments to add depth to the results. The justification for the use of the HSOPSC™ is provided. The sampling procedure, data collection methods, procedures for data analysis and ethical issues are detailed. Chapter four presents the quantitative findings from the questionnaire. These findings are compared against demographic details for representativeness. The qualitative findings from the free text section are also presented. Chapter five provides a discussion of the results and how these relate to the current literature. A comparison with the results from the AHRQ 2016 comparative database is discussed. Chapter six presents the conclusions of the study with recommendations for further studies.

Chapter 2 - Literature Review

2.1 Overview

This chapter provides an analysis of the literature on patient safety culture (PSC). Although patient safety has always been important in healthcare it has not been made a priority until the extent of patient injuries were identified over two decades ago (Kohn et al., 2000; Leape et al., 1991; R. Wilson et al., 1995). The seminal report from the Institute of Medicine, *To Err is Human*, called for immediate action to address patient safety (Kohn et al., 2000). The patient safety literature recommended that research into organisational culture be conducted and thus this field of study has emerged in healthcare.

The chapter commences with a discussion on the purpose of the literature review, then proceeds to the search strategy used and concludes with a summary of the PSC literature. This approach was used to establish the background information to focus on the study's research questions. A structured approached to the reviewed literature allowed for the identification of key concepts, terms and definitions.

2.2 Introduction

The purpose of this chapter was to evaluate the literature, including identifying the current research findings on PSC to contextualise the research because it is noted that the perception of PSC differs widely. Therefore, the literature review focuses on the different health professional groups and the various organisational levels. Not only does perception of PSC differ but there are also differences in how adverse events are reported and how interventions are implemented. The evolution of PSC research from small scale studies that identified the current culture of an organisation, to large scale studies that compared the safety culture across multiple organisations is discussed.

2.3 Search strategy

A literature review was undertaken using an integrative review methodology. An integrative review was chosen because it draws together findings from different research designs, such as qualitative and quantitative studies, as well as clinical experts (Soares et al., 2014; Whittemore & Knafl, 2005). An advantage of this type of review is the inclusion of opposing findings to provide a more rounded response to a clinical question. Soares et al. (2014) highlighted that conducting an integrative review requires rigour when analysing and synthesising the data gathered. Bias may occur during the analysis and synthesis phase of the review due to the reviewer choosing articles they prefer and encountering difficulties

when bringing together the different methodologies. It is this potential for bias that is a disadvantage of the integrative review (Crawford & Rondinelli, 2013). This potential bias was overcome in this review by applying well defined inclusion and exclusion criteria to the selection process. The integrative review was restricted to studies published from January 2012 to March 2017 to ensure relevancy to current practice. The inclusion criteria were:

- studies conducted predominantly in an acute hospital setting
- written in the English language.

The exclusion criteria were studies:

- predominantly within a community, nursing home or primary care setting
- focused solely on neonates, operating theatre staff or the patients' perspective
- in an outpatient care setting.

A search was conducted of the following health related electronic databases: CINAHL, Medline, Science Direct, Wiley Online and ProQuest. The key search terms used were patient safety culture and patient safety climate. The initial search identified 1791 articles and a further four were identified through manual searches of grey literature, such as government reports and theses (See Figure 2.1). The search criteria were further refined to hospital settings. The resultant titles and abstracts were read and duplicates were removed from the review. Each reference was coded onto a spreadsheet to record the type of article, the country the study was conducted, the survey tool used, the study setting, population and research findings as described by Crawford and Rondinelli (2013). Using this process unsuitable articles were removed with 30 research studies meeting the inclusion criteria. The quality of these 30 articles were assessed critically using a non-structured approach and included in the integrative review process (University of South Australia, 2018). The included studies used a mixture of qualitative and quantitative methodology and are displayed in Table 2.1 (located at the end of the chapter). Before analysing the 30 studies, it is pertinent to describe the development of PSC and the reasons it is important to healthcare organisations.
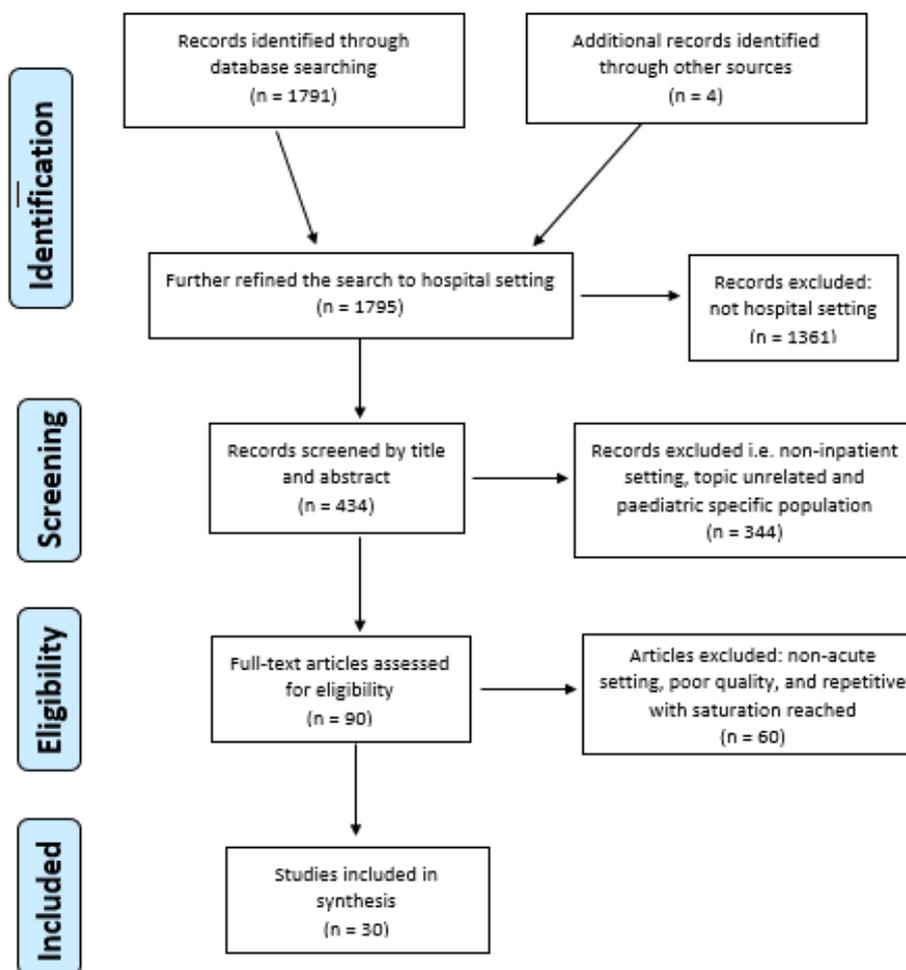
Figure 2.1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart for screening and selection of studies

2.4 Historical perspective of patient safety culture

Reports into health care to improve patient safety have made numerous recommendations, one of which is to change the culture of healthcare organisations (Kohn et al., 2000; Leape et al., 1991; R. Wilson et al., 1995). In response to these recommendations, some of which came from Australia, the World Health Assembly resolved to coordinate and facilitate patient safety improvements worldwide, as they recognised many countries were facing similar issues (WHO, 2002). The World Health Organization (WHO) responded by launching a patient safety program in 2004 (WHO, 2014). The program introduced initiatives such as patient-centred care, patient safety research and fostering a culture of safety. The latter were included because It is noted that PSC is intrinsically linked to work culture (Westrum, 2004).

When staff work in a culture of blame, mistakes are denied and the organisation misses the opportunity to learn from the mistakes (AHRQ, 2017a). A no blame or non-punitive culture is an environment where the reporting of errors is encouraged and mistakes are not punished (AHRQ, 2017a). However, this needs to be balanced with accountability in recognition that not all mistakes should go unpunished. Marx (2001) described how mistakes could be categorised into four categories: human error, negligent conduct, reckless conduct and intentional rule violation. This has been termed a just culture where the treatment of errors is according to the staff member's intention (Marx, 2001). A just culture allows healthcare organisations to determine how they might deal with clinical errors, thus striking a balance between mistakes and accountability (AHRQ, 2017a). An organisation's management of errors is a reflection of their safety culture (AHRQ, 2017a).

The relationship between an organisation's expectations and safe work practices is being explored in healthcare (Waterson, 2014). Studies have focused on how the leadership team promote patient safety because the leaders signal to staff what the organisation values. These values then shape a unit's culture (Westrum, 2004). Westrum (2004) developed a model which was based on how the leaders processed information and communicated this to their workforce. The three cultures model is described as:

- a pathological culture where the leader is power orientated and the leader is the focus
- a bureaucratic culture which is rule orientated and the unit or department is the focus
- a generative culture which is performance orientated and the focus is on the organisation's goals (Westrum, 2004).

The generative leadership style provides for the sharing of information and open communication that supports the organisation's safety culture (Westrum, 2004). It is noted that the organisation must first have safety as a priority for the generative leadership style to achieve this safety culture (Weaver, Weeks, Pham, & Pronovost, 2014). A generative leader can positively influence staff perception of patient safety (Weaver et al., 2014). Staff perception of PSC is, therefore, the focus of many evidence based surveys.

Internationally the most frequently used surveys are the Patient Safety Climate in Healthcare Organizations (PSCHO), the Safety Attitudes Questionnaire (SAQ), the Modified Stanford Instrument (MSI) and the Hospital Survey on Patient Safety Culture™ (HSOPSC™) developed by the Agency for Healthcare Research and Quality (AHRQ) (Waterson, 2014).

Not all measures of PSC have been agreed upon. These four most frequently used survey tools use different composites and sometimes differing names for the same measure to assess safety culture (Waterson, 2014).

Some examples of the composites of PSC which have been measured are teamwork, communication, management support for safety, error reporting and response to error reporting (AHRQ, 2016; Ginsburg et al., 2009; Sexton et al., 2006; Singer et al., 2012). As an indication of the importance of leadership to providing a positive PSC, the perception of management is the only measure included in all four survey tools. The HSOPSC™ includes the most measures with 12 composites being assessed. The MSI includes the least number of composites with only five, whereas the PSCHO and the SAQ include nine and six composites respectively. Despite having the least number of composites, all five of the MSI measures are comparable with the HSOPSC™. Both tools measure management at the hospital and unit level, learning behaviours, the blame free culture and an overall perception of safety. The MSI composite of safety learning behaviours is comparable to the HSOPSC™ composite of organisational learning and continuous improvement, although a different name is used. Learning behaviour, is not included on the SAQ, but can be considered an important PSC measure and for this reason is also included on the PSCHO.

Many of the survey tools have similar scale items but the items are grouped into different PSC composites. This use of different PSC composite names can make comparing research findings challenging. Despite the different number of composites, these tools are of similar length with between 38 and 64 scale items each. The difference between tools has been recognised in the literature and explored with a comparison of the HSOPSC™ and the SAQ (Etchegaray & Thomas, 2012). Following administration of both survey tools to the same participants, the tools were found to be reliable and to have similar predictive validity, where correlations between PSC measures and outcomes measures are demonstrated. When reviewing the literature, seven composites have been cited most frequently: management support for safety, leadership, communication, organisational safety systems, blame free response to adverse event reporting, work pressures and teamwork (Waterson, 2014). These seven core composites are all included in the HSOPSC™ making it a suitable tool to use. The development of PSC survey tools has required PSC to be defined.

PSC has been described as the shared attitudes, beliefs, values and the perceptions of safety issues within an organisation (Sorra, Gray, Streagle, et al., 2016). PSC includes a safety climate, which is the perceived value placed on safety by the organisation (Work Cover Queensland, 2017). Although the different terms, culture and climate, have been defined the terms are often used interchangeably in the literature. As an example, Agnew et al. (2013) conducted a study using the Scottish version of the AHRQ Hospital Survey on Patient Safety Culture™ yet reported on safety climate. This is but one example of safety culture and safety climate being used interchangeably in the literature.

Although there has been a reduction in patient harm since the 1990s, more work is required because the rate of preventable harm is still too high (ACSQHC, 2017a; PSSU, 2016). Studying a hospital's PSC is one factor used in the goal to eliminate preventable harm to patients and staff. The focus of the current study is safety culture in the acute hospital setting.

2.5 Integrated review of the current state of patient safety culture

In this section, the current literature on PSC is reviewed. A total of 30 articles have been evaluated for PSC within acute health services, as per Figure 2.1. To be included in this review the reported study must have included one or more acute hospitals, departments within an acute hospital, mental health hospitals, emergency departments (EDs) or intensive care units (ICUs). The literature review discusses four PSC themes: health professionals' perception of PSC; the perception of PSC at the unit and at the hospital level; adverse event reporting; and interventions that have been implemented to improve PSC.

2.5.1 Health professionals' perception of patient safety culture

In this section, the health professionals' perception of PSC from a global perspective is reviewed. The developers of two of the most commonly used PSC surveys, the HSOPSC™ and the SAQ, define areas of PSC strength as having percentage positive responses greater than or equal to 75% (Sexton et al., 2006; Sorra & Nieva, 2004). The surveys gather a combined percent positive response for PSC and group the responses into composite measures of PSC. Based on this definition, currently there is room for improvement in the perception of PSC with many studies reporting combined percent positive responses less than 75% (Abdi, Delgoshaei, Ravaghi, Abbasi, & Heyrani, 2015; Aboul-Fotouh, Ismail, Ez Elarab, & Wassif, 2012; AbuAlRub & Abu Alhijaa, 2014; Agnew et al., 2013; Ballangrud, Hedelin, & Hall-Lord, 2012; Burström, Letterstål, Engström, Berglund, & Enlund, 2014; Güneş, Gürlek, & Sönmez, 2016; Hamdan & Saleem, 2013; Kristensen,

Badsberg, et al., 2015; Marsteller et al., 2015; Saleh, Darawad, & Al-Hussami, 2015). The composite of teamwork within their unit is perceived most positively by health professionals (AbuAlRub & Abu Alhijaa, 2014; Agnew et al., 2013; Ballangrud et al., 2012; Burström et al., 2014; Güneş et al., 2016; Hamdan & Saleem, 2013; Marsteller et al., 2015; Saleh et al., 2015; Shu et al., 2015; Thomas & Galla, 2013). Further, hospital management support for patient safety was perceived negatively in many studies (Aboul-Fotouh et al., 2012; Agnew et al., 2013; Ballangrud et al., 2012; Chaboyer et al., 2013; Fujita, Seto, Kitazawa, Matsumoto, & Hasegawa, 2014; Güneş et al., 2016; Kristensen, Badsberg, et al., 2015; Saleh et al., 2015; Turunen, Partanen, Kvist, Miettinen, & Vehviläinen-Julkunen, 2013). In contrast, when hospital management were perceived positively the responses were highly positive with studies reporting percentage positive responses between 73% and 90% (Aboshaiqah & Baker, 2013; AbuAlRub & Abu Alhijaa, 2014; Shu et al., 2015; Zhou, Bundorf, Gu, He, & Xue, 2015). The positive perception in the AbuAlRub and Abu Alhijaa (2014) study may have been influenced by the study population consisting entirely of nurse leaders. With their leadership roles, the nurses were likely to interact with hospital executive making them more aware of the patient safety systems in place (Turunen et al., 2013). This was not a factor in the other studies whose populations consisted of a mixture of managers and non-managerial healthcare workers.

The perception of PSC between health professionals has been compared so that improvement interventions can be targeted, as required. Studies have found that medical officers reported more positive perceptions of PSC than nurses (Abdi et al., 2015; Aboul-Fotouh et al., 2012; Burström et al., 2014; Chaboyer et al., 2013; Gallego et al., 2012; Kristensen, Hammer, et al., 2015; Marsteller et al., 2015). A review of international studies found that findings were similar within the countries surveyed. An Egyptian study included medical officers, nurses and non-direct patient contact paramedical personnel (Aboul-Fotouh et al., 2012). The HSOPSC™ survey tool was used and measures communication openness, feedback and communication about error, frequency of events reported, handovers and transitions, management support for safety, non-punitive response to error, organisational learning and continuous improvement, overall perceptions of safety, staffing, manager expectations and actions promoting safety, teamwork across units and teamwork within units. Of the three professional groups, paramedical personnel reported most positively and medical officers had a more positive overall perception of patient safety than nurses. Handovers and transitions were the only composite that nurses reported the most positive. Medical officers were also more positive than nurses on all PSC

composites of the SAQ in a single ICU study in Iran. There was a significant difference between the perception of two composites - teamwork and job satisfaction (Abdi et al., 2015). An area of concern for nurses was the poor communication with medical officers affecting the unit teamwork. In contrast, the medical officers, who rated teamwork highly on the SAQ, commented on the quality of the teamwork with the nurses. This small study with 42 (91%) respondents was unusual in that it involved more medical officers (57%) than nurses (43%). This makes it less representative of most hospital settings where nurses are the largest health professional group. The study findings were strengthened by the research methodology which was a mixed method and included 20 semi-structured interviews. Similarly, in an extensive European study using an abbreviated version of the SAQ to measure teamwork and safety climate, medical officers had a significantly more positive perception of teamwork within their unit than nurses. Nurses and medical officers had similar perceptions of the safety climate (Kristensen, Hammer, et al., 2015). A study conducted in Sweden reviewed PSC in two hospitals' emergency departments before and after the implementation of a quality improvement project (Burström et al., 2014). The study included medical officers and nurses working in either a university hospital or a county hospital. The medical officers at both hospitals reported a more positive perception of PSC than did the nurses. Interestingly, after the intervention nurses from both hospitals recorded more positively on only one composite, the frequency of event reporting. A United States (US) study involving five cardiac surgery units reported that the surgeons were the most positive on patient safety than the health professionals they worked with, namely: nurses, perfusionists, surgical support staff and anaesthetists (Marsteller et al., 2015). Although surgeons were most positive, the ranking by each professional group was the same for each PSC composite. Thus, teamwork was rated first or second highest by each professional group and non-punitive response to error was rated the lowest or second lowest.

In Australia, there have been similar results to those reported internationally with medical officers reporting more positive perceptions of PSC. In South Australia, Gallego et al. (2012) used the SAQ tool to survey all healthcare workers in the State public health services. The SAQ tool includes a composite on stress recognition, and medical officers, pharmacists, nurses and midwives were found to have higher stress recognition than the other healthcare workers. Medical officers recorded the highest stress recognition scores of all workers. The focus of the Gallego et al. (2012) study was on differences in PSC according to the service type and staff demographics so was lacking details on the individual

professional group responses. In a study conducted in 10 Australian ICUs, medical officers reported more positively on PSC than nurses (Chaboyer et al., 2013). Medical officers had a significantly more positive attitude towards teamwork, job satisfaction, working conditions and safety climate than nurses. Both nurses and medical officers recorded most positive perceptions to teamwork within their ICU and were least positive on their perception of hospital management's support for safety.

Two large studies reported the opposite finding with nurses having a more positive PSC than medical officers. In Denmark, a baseline assessment of 15 clinical units from five hospitals was performed (Kristensen, Badsberg, et al., 2015). Nurses reported higher percent positive responses than medical officers on four of the six PSC composites using the SAQ. Only stress recognition and perception of unit management were perceived more positively by medical officers, although none of the results reached statistical significance. Similarly, nurses in China reported a more positive perception of PSC than medical officers using the PSCHO survey tool (Zhou et al., 2015). The PSCHO tool comprises 12 composites: senior leadership, resources for safety, facility characteristics, workgroup leadership, workgroup norms, workgroup recognition, learning, psychological safety, fear of blame, fear of shame, outcomes and problem responsiveness (Singer et al., 2012). The study involved nurses, medical officers, managers and a mixed group comprising medical technicians and non-managerial workers. Across all groups, the most negative responses were for fear of blame, fear of shame and outcomes. The outcomes composite involves witnessing a co-worker (39%) or yourself (34%) doing something unsafe for patient care in the past 12 months. Such high percentages for this outcome composite is of concern with the potential for patient harm. Nurses reported more negatively on fear of blame than the other staff groups. This probably leads to a reluctance to report clinical errors.

The studies reviewed in this section found variations in the perception of PSC by the different health professional groups. Medical officers tended to have a more positive perception of PSC than nurses and perceived a more positive teamwork environment. Most health professionals perceived their hospital management support for patient safety negatively. This finding is unaffected by the country being studied. However, when hospital management is perceived to be promoting patient safety and quality, the responses are highly positive.

2.5.2 Patient safety culture perception at the unit and hospital level

In this section, health professionals' perception of PSC at the unit and hospital level was reviewed. The hospital PSC can be described as the organisation's pattern of responses to challenges and how information flows (Westrum, 2004). There is evidence that hospitals' organisational responses and their expectations regarding safety contribute to safe work practices by staff (Westrum, 2004). The unit PSC is a subculture of the hospital's and is influenced by the manager's expectations and safety priorities (Westrum, 2004). Managers promoting hospitals' clinical governance strategies is therefore essential for patient safety so that the unit subcultures hold the same core values as the organisation in which they function (Robbins, Judge, Millett, & Boyle, 2013). Although this link between the hospital and the unit is reported, health professionals perceived patient safety to be a priority within their immediate work area, but were still not convinced of the hospital's support for PSC (Agnew et al., 2013; Fujita et al., 2014; Kristensen, Badsberg, et al., 2015). In a multiple site study in Japan, Fujita et al. (2014) reported upon PSC at the unit level for healthcare staff. Variations in attitudes towards PSC according to the type of unit were noted. The most positive PSC was reported in a combined unit of obstetrics, gynaecology, perinatal care, or neonatal ICU. Fujita et al. (2014) found the least positive perception of PSC was reported in rehabilitation and long-term care. The composite of teamwork was the strongest predictor of whether a unit reported a positive PSC. Similar to other studies, staff's perception of PSC was more positive of their unit than the hospital; although units with a more positive PSC had a more positive perception of the hospital level PSC.

Studies have also reported on the importance of teamwork and its relationship to PSC. In Scotland, healthcare staff reported more positively on the unit PSC than the hospital level PSC (Agnew et al., 2013). Using a modified version of the HSOPSC™ the most positive response was for teamwork within the units, whereas teamwork at the hospital level received the least positive response. These responses indicate that staff work well together within a unit, but the teamwork does not extend to other units within the hospital. In the Danish study mentioned in the previous section, 15 units from five hospitals were surveyed using the SAQ (Kristensen, Badsberg, et al., 2015). Differences in PSC perception were more marked within the individual units than between the hospitals with the least positive responses from all units being for hospital management support for safety.

In Australia, the differences in PSC perception were explored across the South Australian public health system (Gallego et al., 2012). Differences in staff perception were found at the macro-level with staff in community settings having the most positive PSC

perception and staff in mental health settings having the least positive. Staff in acute hospital settings were also among the least positive. The clustering of results within settings could not be explained by the staff demographics, which seemed to indicate an organisational culture effect. Executive staff and senior managers within each setting reported the most positive perceptions. This finding of more positive perception of PSC by managers is common (Kristensen, Badsberg, et al., 2015; Kristensen, Hammer, et al., 2015; Turunen et al., 2013). Hospital management having a positive PSC is important because it reinforces that patient safety is a priority for the organisation (Aboshaiqah & Baker, 2013). Staff's perception of patient safety was also improved when there is a flow of safety communication from management to bedside clinicians (Burström et al., 2014). This communication and promotion of patient safety by management are positively correlated with bedside clinicians having a positive perception of PSC (Saleh et al., 2015).

These reviewed studies indicate a positive perception of the PSC at the local level in comparison to that perceived of the wider organisational culture. The findings were similar across all professions. Negative perceptions of hospital management's support for patient safety have been cited which also impacts on the perception of the wider hospital culture (Aboul-Fotouh et al., 2012; Agnew et al., 2013; Ballangrud et al., 2012; Chaboyer et al., 2013; Fujita et al., 2014; Güneş et al., 2016; Kristensen, Badsberg, et al., 2015; Saleh et al., 2015; Turunen et al., 2013). The finding of bedside clinicians not sharing the positive attitudes of the managers indicates a disconnect between unit's efforts at patient safety and the hospital's efforts.

2.5.3 Adverse event reporting and patient safety culture

In this section, the reporting of adverse events and near misses is discussed because reporting is an essential variable of the PSC (AHRQ, 2017a; PSSU, 2017). A near miss is an event that could have caused harm but did not (PSSU, 2017). Although most health professionals know the benefits of reporting adverse events, there is a reluctance to report due to the fear of negative consequences (Abdi et al., 2015). The benefits of reporting near misses appear to be less well known. The impact of the PSC on adverse event reporting has been explored (Aboshaiqah & Baker, 2013; Ballangrud et al., 2012; Hamaideh, 2016; Kagan & Barnoy, 2013; Marques da Silva de Paiva et al., 2014; Zaheer, Ginsburg, You-Ta, & Grace, 2015). Five of these studies only surveyed nurses, limiting the generalisability across health professionals (Aboshaiqah & Baker, 2013; Ballangrud et al., 2012; Hamaideh, 2016; Kagan & Barnoy, 2013; Marques da Silva de Paiva et al., 2014). A Norwegian study of ten ICUs found that there was a reluctance to report errors with almost

50% of nurses not having reported any errors in the past 12 months (Ballangrud et al., 2012). The nurses also responded negatively to the frequency of event reporting with an 82% negative response. A different finding from that study was the high percent positive responses to having a non-punitive response to clinical errors and their manager's expectations regarding safety. Despite having their manager's support and the perception of working in a non-punitive environment many of the nurses did not report clinical errors. This may indicate a lack of priority was given to error reporting. It was also noted that an electronic reporting system had only been introduced for a short time so nurses may have been unfamiliar with the reporting process.

The frequency of reporting clinical errors was also found to be low by nurses in Saudi Arabia (Aboshaiqah & Baker, 2013; Hamaideh, 2016). Using the HSOPSC™ they found up to 45% of clinical errors were not reported in an acute hospital (Aboshaiqah & Baker, 2013) and up to 60% of clinical errors were not reported in a mental health setting (Hamaideh, 2016). Despite the low priority given to reporting clinical errors the nurses in both studies reported strongly positive perceptions of their organisation's learning and continuous improvement. The nurses indicated that the hospitals responded punitively to clinical error and the low frequency of clinical error reporting may be associated with this perception of working in a punitive environment. In contrast to the Saudi Arabian responses above, a study in Brazil discovered that nurses felt compelled to report clinical errors (Marques da Silva de Paiva et al., 2014). The nurses reported that they worked in a collaborative relationship with their hospital and felt supported by management. This culture of reporting events reportedly led to changes that prevented further clinical errors.

Ease of reporting clinical errors has been positively associated with PSC for Canadian nurses, medical officers and pharmacists, and Israeli nurses (Kagan & Barnoy, 2013; Zaheer et al., 2015). Nurses in Israel who perceived they worked within a positive PSC reported clinical errors but also reported lower clinical error occurrence rates (Kagan & Barnoy, 2013). It is acknowledged that the lower rate of clinical errors may have other unexplained reasons that were not identified in the findings. In Canada, having an easy to use reporting system and leadership support for patient safety was shown to be positively related to ease of reporting for health professionals (Zaheer et al., 2015). Having a reporting system demonstrates the hospital's commitment to safety and this encompasses having a system that is easy to use (Zaheer et al., 2015).

2.5.4 Interventions to improve patient safety culture

In this section, interventions that have been used to improve PSC are discussed. There is evidence that the organisational expectations regarding safety contribute to safe work practices (Westrum, 2004, 2014). Therefore, interventions to improve PSC should be promoted by the hospital executive highlighting the patient safety aspect of the intervention (Braithwaite & Travaglia, 2008). Some of the interventions implemented globally to improve PSC are: executive walk-rounds, electronic medication prescribing systems, safety education and quality improvement projects (AbuAlRub & Abu Alhijaa, 2014; Brilli et al., 2013; Burström et al., 2014; Davies, Pucher, Ibrahim, & Stubbs, 2017; Lee et al., 2012; Martin et al., 2014; Muething et al., 2012; Schwendimann et al., 2013; Thomas & Galla, 2013).

The role of leadership in the development of a positive PSC has been used with the introduction of hospital executive walk-rounds (Martin et al., 2014; Schwendimann et al., 2013). Walk-rounds are an opportunity for leaders to be informed of patient safety issues at the unit level by engaging in conversations with bedside clinicians. However, there have been mixed responses to their introduction. In the US, a positive correlation was found between walk-rounds and clinician safety behaviours (Schwendimann et al., 2013). In England, a qualitative study with interviews of 82 executive leaders and clinicians found positive responses to the traditional walk-round, but concerns were expressed about using the walk-rounds to conduct audits (Martin et al., 2014). When the executive used the walk-round for their own agenda, such as audits, clinicians became suspicious and the original intent of identifying safety issues was lost.

This loss of intent was also reported in another English study with the implementation of an electronic prescribing system to reduce medication errors and to determine whether this affected pharmacists' and nurses' PSC (Davies et al., 2017). The resultant negative perception of PSC was likely related to a second survey being conducted only six weeks after implementation of the new system. Survey participant fatigue and unresolved implementation problems meant the intent of improving the perception of safety was not captured. It has been noted that it can take more than a year to record a significant change with any intervention (Burström et al., 2014). This interventional change can be enhanced with education.

Studies have reported how safety education has been used to improve PSC with mostly positive results (AbuAlRub & Abu Alhijaa, 2014; Brilli et al., 2013). Before and after a

safety education intervention, senior nurses in Jordan reported percentage positive responses greater than 70% on four of the HSOPSC™ composites: organisational learning and continuous improvement, teamwork within units, manager expectations regarding safety and feedback and communication about clinical errors (AbuAlRub & Abu Alhijaa, 2014). Following the safety education, the perceptions of a non-punitive response to clinical error and the frequency of event reporting improved. The only negative was a slight decrease in two pre-intervention areas of strength for manager expectations regarding safety and feedback and communication about clinical errors. Neither decrease was of statistical significance, but is of concern nonetheless. In the US, a significant improvement in PSC scores was found for all healthcare workers following a multifaceted education program (Brilli et al., 2013). The hospital wide education included clinical error prevention, harm detection and hospital acquired infection prevention. The improvement in overall perception of patient safety and associated improved patient outcomes was partially attributed to the multidisciplinary nature of the intervention. It appears that education is a quality improvement intervention that can enhance PSC.

Quality improvement projects have been implemented to enhance patient safety and staff's perception of PSC with positive results (Burström et al., 2014; Lee et al., 2012; Muething et al., 2012; Thomas & Galla, 2013). In Sweden, a quality improvement project was conducted in two emergency departments (EDs) (Burström et al., 2014). The quality improvement project involved changing the patient flow through the EDs with trauma centres in a university hospital and a county hospital. Differences in the study sites were that the university hospital treated more unstable patients and had more beds than the county hospital. PSC surveys were administered to medical officers, nurses and nursing assistants before and after the quality improvement project. After the project, all staff had a more positive perception of their ED's patient safety grade, but medical officers showed the most significant increase in positive perceptions. A limitation is that the surveys did not include all the same staff for each time period, so it is uncertain whether improvements in PSC are fully attributable to the project or due to unrelated staff factors.

In the US, improvement projects to reduce clinical errors and improve PSC were undertaken (Muething et al., 2012; Thomas & Galla, 2013). In one study, senior hospital leaders provided oversight of a project to reduce the number of serious safety events that included safety education, interventions for high-risk areas such as operating theatres and communication about safety improvements. After an initial drop in PSC within the first

year, a significant improvement was recorded for subsequent years. This reduction in PSC may have been due to the post-implementation survey being conducted too soon after the intervention, as was found in the Davies et al. (2017) electronic prescribing system study. In a second US study, a teamwork and communication skills project were piloted at a general hospital (Thomas & Galla, 2013). This multifaceted, interdisciplinary intervention relied on leadership from executive and change teams at the unit level. To ensure sustainability the organisation aligned the training with the organisation's vision. Following implementation of the intervention three PSC composites became areas of strength, recording percent positive responses of 75% or more: teamwork within units, manager expectations promoting safety and organisational learning. Following the success of the pilot hospital, the project was implemented throughout the health service. In Australia, a quality improvement project focussing on communication was conducted within one hospital. This study was robust because it used two further hospitals as control sites (Lee et al., 2012). PSC perception surveys were conducted at the intervention hospital and then the control sites, before and after the intervention. PSC perceptions improved on many items, such as the non-punitive response to clinical errors, with significant differences noted at the intervention hospital, but there were no differences noted at the control sites. This study also employed multidisciplinary interventions on a hospital-wide scale, similar to the multifaceted program described in the education intervention study by Brilli et al. (2013).

2.6 Discussion

The reviewed studies were from 25 countries. Only three studies were conducted in Australia. Gallego et al. (2012) surveyed all services in the South Australian public health system, including some community services. Although this was not wholly acute care, the big sample used provided a large amount of useful data. In almost 80% of the studies reviewed, medical officers reported more positively on PSC than the other health professionals. There has been a shift in perception with an earlier literature review finding nurses were the most positive towards PSC (Willmott & Mould, 2017). There are some explanations as to why this is, such as changes to the level of the initial patient safety and quality training and ongoing safety incentives (Bowman, Neeman, & Sehgal, 2013; Walton & Elliott, 2006). However, these rationales are not conclusive.

Despite the work undertaken on PSC since the seminal report by the Institute of Medicine in 2000, many hospital staff still perceived their unit culture was more focused on safety than their organisation's culture (Agnew et al., 2013; Fujita et al., 2014; Kristensen,

Badsberg, et al., 2015; Kristensen, Hammer, et al., 2015). It may be that staff see themselves as part of their unit culture so are involved in keeping patients safe, but feel distanced from the hospital's PSC efforts. The hospital PSC, set by the executive, should be the dominant culture, but these core values do not seem to be shared by the unit subcultures. This disconnect needs further exploration because managers usually report more positive perceptions of the PSC than bedside clinicians. Managers, as the unit leaders, affect how the clinicians perceive patient safety. However, it is unclear whether the managers promote the organisation's strategies to ensure the units' and the hospital's expected behaviours are consistent. Health professionals with a positive PSC are more likely to report adverse events. Hospitals with a positive organisational culture are more likely to learn from the reporting of these events and the patients are likely to benefit from improved outcomes.

Interventions to improve PSC have been implemented with mixed success. The hospital executive visiting the wards to speak about patient safety issues has been beneficial in identifying issues, but only if the intended purpose is adhered to (Martin, 2014). When hospital executive deviates from the script and conducts their own inspections, it creates suspicion with the clinicians. Interventions such as electronic medication prescribing systems are likely to improve medication safety, but no improvement in PSC was demonstrated with its introduction (Davies et al., 2017). Involving clinicians in the implementation process and allowing sufficient time for any changes to become part of the work flow before repeating a survey could improve the system's implementation. Education is also an important aspect to consider in successful quality improvement implementation.

The reviewed safety education varied in its structure, from a single session presented to nurses in Jordan (AbuAlRub & Abu Alhijaa, 2014) to a hospital wide, multifaceted approach in the US (Brilli et al., 2013). The single session in Jordan had mixed results on the nurses' perception of PSC whereas improvements in PSC were noted with the multifaceted, interdisciplinary approach. This may suggest that more than one educational intervention is required to change staff's understanding.

Quality improvement projects affect healthcare workers so that they choose behaviours that enhance patient safety (Fleming, 2005). Successful implementation has been demonstrated and the multidisciplinary focus, involving more than one health

professional group or all hospital healthcare workers, may have accounted for the projects' success (Brilli et al., 2013; Lee et al., 2012; Muething et al., 2012; Thomas & Galla, 2013).

2.7 Conclusion

The evaluation of the reviewed studies concluded that it is clear that PSC is an important measure to reduce health care clinical errors. As demonstrated by the reviewed literature, many researchers have used the HSOPSC™, developed by the AHRQ, to determine their organisation's current PSC. Most of the reviewed studies used a quantitative, cross-sectional design. The use of mixed methods or a having a qualitative component adds to the data by giving insights that the quantitative data lacks.

This study will add to the current literature by offering a perspective of PSC by health professionals in Australia. The researcher was the lead author in the peer reviewed article *Health professionals' perception of patient safety culture in acute hospitals: An integrative review* published in the Australian Health Review (Willmott & Mould, 2017). The article is attached at Appendix C. The research methodology will be discussed in chapter three.

Table 2.1 Summary of the 30 included studies

PSC, patient safety culture; MDT, multidisciplinary teamwork; HSOPSC™, Hospital Survey on Patient Safety Culture; SAQ, Safety Attitudes Questionnaire; Stanford/PSCI, Patient Safety Center of Inquiry; PSCHO, Patient Safety Climate in Healthcare Organizations; RN4CAST, Nurse Forecasting in Europe; MSI-2006, Modified Stanford Instrument; ICUs, intensive care units; RNs, registered nurses; QMS, quality management system; AHRQ, Agency for Healthcare Research and Quality

Author/Year/ Country of Origin	Purpose of study	Study design, data collection method and tool	Setting and sample	Findings
Abdi et al. (2015) Iran	To assess nurses' and medical officers' perception of PSC and to elicit strategies to promote PSC	Mixed methods study, paper-based questionnaire and 20 semi-structured interviews. SAQ	ICU 42 staff (91%) comprising 24 medical officers and 18 nurses	Medical officers were more positive than nurses on all six PSC measures with two reaching significance – teamwork and job satisfaction. Three main themes emerged from the interviews: nurses criticised the teamwork attitude of senior medical officers, communication breakdowns led to patient care delays and safety problems exist in regard to error reporting and following guidelines. Implications for clinical practice are the need to provide teamwork and communication training to all staff and managers should implement a blame-free environment to encourage the reporting of errors.
Aboul-Fotouh et al. (2012) Egypt	To assess the perception of PSC of healthcare providers and factors affecting it	Quantitative study, paper-based questionnaire. HSOPSC™	Acute hospital. 510 (69%), medical officers, nurses, pharmacists, technicians and labourers	Only one of the composites scored highly positive – organisational learning. Significantly higher scores for age >35yrs, longer time in specialty and having no direct contact with patients. Lowest positive perception for non-punitive response to error and frequency of event reporting. Implications for clinical practice are the need to address all aspects of PSC, especially how adverse events are reported.

AbuAlRub & Abu Alhijaa. (2014) Jordan	To assess the effect of patient safety education on senior nurses' perception of PSC and the rate of reported adverse events, patient falls and pressure injuries	Quantitative before-after study, paper-based questionnaire. HSOPSC™	Specialised hospital. 57 senior RNs (57%)	Following the patient safety education, senior nurses reported more positively on two PSC composites, namely non-punitive response to error and frequency of event reporting. The number of adverse events, patient falls and pressure injuries also declined significantly. Implications for clinical practice are that using patient safety education may improve the blame free and reporting culture and decrease the number of adverse events.
Agnew et al. (2013) Scotland	To test whether PSC was associated with worker safety behaviours, and worker and patient injuries.	Quantitative study, paper-based questionnaire. Scottish Hospital Safety Questionnaire, includes HSOPSC™ items	Acute hospitals. 1866 healthcare professionals -nurses (53%), allied health (22%), nursing or healthcare assistants (13%), medical and dental consultants (12%).	PSC was significantly associated with worker safety behaviours. A weaker, but still significant association was shown with PSC and worker and patient injuries. The strongest predictor of safety compliance was staffing levels. Implications for clinical practice are that fostering a positive PSC can support worker safety.
Ballangrud et al. (2012) Norway	To investigate PSC and potential predictors of the overall perception of patient safety and clinical error reporting.	Quantitative study, paper-based questionnaire. HSOPSC™	ICUs – coronary care, general and mixed. 220 RNs.	Nurses were more positive on PSC at the unit level than the hospital level. The type of unit was a predictor of the overall perception of patient safety with the general ICUs reporting most positively and mixed ICUs reporting fewer clinical errors. Implications for clinical practice are that improvements are required for incident reporting, feedback and communication about clinical errors, and organisational learning.

Burström et al. (2014) Sweden	To assess the effect of a quality improvement project on PSC	Quantitative before-after study, paper-based questionnaire. HSOPSC™	Two EDs – university hospital and a county hospital. 626 (73%) medical officers and nurses.	Following the intervention, the perception of teamwork improved at both hospitals. The biggest improvement in PSC was recorded at the county hospital with the most improvement recorded by medical officers at both sites. Ward patient safety grade was perceived lower at both hospitals after the intervention. Implications for clinical practice are the need to involve frontline staff in changes rather than implementing a top-down approach.
Güneş et al. (2016) Turkey	To describe nurses' perception of PSC	Quantitative study, paper-based questionnaire. HSOPSC™	Acute hospitals. 554 (74%) nurses	Most positive on teamwork within units and least positive on the frequency of event reporting and non-punitive response to clinical errors. Nurses with more experience reported more positively on all PSC composites. 80% of nurses had never reported a clinical error. Implications for clinical practice are the need to address the poor clinical error reporting rate and provide education and policies on patient safety.
Hamdan & Saleem (2013) Palestine	To assess the current PSC	Quantitative study, paper-based questionnaire. HSOPSC™	Acute hospitals. 1460 (51%) clinical and non-clinical staff. Included 69.2% nurses and medical officers and 30.8% pharmacists, support staff and administrators	Staff were most positive about teamwork within units and organisational learning, and least positive to non-punitive response to error and frequency of event reporting. Implications for clinical practice are the need to perform a baseline PSC measure so that areas for improvement may be highlighted.
Kristensen, Hammer, et al. (2015)	To compare differences in teamwork and safety climate	Quantitative study, electronic questionnaires and surveys on the hospital QMS.	Acute hospitals. Nurses and medical officers. 3622 clinical	More clinical leaders had a positive perception of teamwork and safety climate than bedside clinicians. There was a positive association between implementing a QMS and the perception of teamwork and safety climate.

Seven European countries	between clinical leaders and bedside clinicians and to investigate the associations of QMSs with teamwork and safety climate	SAQ - modified	leaders and 4903 bedside clinicians	The implications for clinical practice are that initiatives to improve teamwork and safety climate should be tailored differently to clinical leaders than bedside clinicians and having a QMS can support teamwork and safety climate.
Kristensen, Badsberg, et al. (2015) Denmark	To describe the PSC in 15 Danish hospital units	Quantitative study, paper-based questionnaire. SAQ	Acute hospitals. 544 (63%) staff - 55 (10%) medical officers, 405 (74%) nurses and 84 (16%) assistants, therapists and administration staff	Nurses more positive than medical officers although not a significant difference. Staff with more experience reported more positively and clinical leaders were more positive than bedside clinicians. Teamwork climate most positive and management least positive for all staff. Implications for clinical practice are the identification of differences between subgroups may aid in the planning for improvement strategies.
Marsteller et al. (2015) US	To measure PSC in cardiac surgery and compare with the AHRQ database	Quantitative study, paper-based questionnaire. HSOPSC™	Cardiac surgery units. 158 (80%) surgeons, nurses, anaesthetists, perfusionists and surgical support staff	Teamwork within units had the highest percent positive response and non-punitive response to error had the lowest. In comparison to the AHRQ (2010) surgical database, the cardiac surgery team were more positive on four PSC composites but lower on the frequency of event reporting. Surgeons and support staff perceived more positive PSC than did nurses, perfusionists and anaesthetists. Implications for clinical practice is the need to address the differences in PSC between the professional groups.
Shu et al. (2015) China	To compare the strengths and weaknesses of surgical units	Quantitative study, paper-based questionnaire. HSOPSC™	Acute hospital. 2230 staff of which 76% were nurses and medical officers,	Surgical unit staff were more positive than non-surgical unit staff on their ward patient safety grade and event reporting but less positive on communication openness. Three PSC composites: communication openness, feedback and

			23.5% on surgical units and 76.5% from non-surgical units	communication about clinical error and manager expectation, affected the frequency of events reported. Implications for clinical practice are that when addressing hospital safety problems, a focus on the individual units may provide more benefit than a whole of hospital approach.
with other hospital units				
Zhou et al. (2015) China	To explore the perceptions of PSC and the differences between healthcare workers in China and the US	Quantitative study, paper-based questionnaire. PSCHO	Acute hospitals. 1272 healthcare workers - 47 managers, 505 medical officers, 534 nurses and 186 medical technicians and non-managerial workers.	Hospital managers had a more positive overall perception of safety than other healthcare workers. Mostly positive perceptions of PSC amongst Chinese workers were similar to US workers. However, for Chinese workers, fear of shame and fear of blame were the most reported. 42% of staff in China thought to ask for help was a sign of incompetence and telling others about a mistake was embarrassing. Implications for clinical practice are that barriers to reporting and providing a safe patient environment need to be identified so that they can be addressed.
Chaboyer et al. (2013) Australia	To test the hypotheses that PSC differed between nurses and medical officers, and nurse leaders and bedside nurses.	Quantitative study, paper-based questionnaire. SAQ	ICUs. 672 nurses (76.3%) and medical officers (13.2%) with 10.4% not identifying their profession	Medical officers were more positive than nurses on four of the six PSC measures – job satisfaction, teamwork, safety climate, and working conditions. Bedside nurses were more positive than nurse leaders on all six PSC measures with two, working conditions and perception of hospital management, rated significantly lower by nurse leaders. Implications for clinical practice are the need to measure a baseline PSC so that targeted strategies can be implemented to address specific PSC measures.
Gallego et al. (2012) Australia	To assess PSC across the different health units and if any differences	Quantitative study, electronic questionnaire. SAQ	State public health system. 14 054 (50%) healthcare workers.	Community services had the most positive perception of PSC and mental health services the least positive. Differences could not be accounted for by participants' demographic details. There was a clustering of results by service type suggesting different organisational cultures.

	according profession, role, age and type of patient care			Implications for clinical practice are the need to address organisational culture, starting with the leadership style.
Fujita et al. (2014) Japan	To investigate PSC at the unit level.	Quantitative study, paper-based questionnaire. HSOPSC™	12 acute, three mixed care and three long-term care hospitals. 8700 healthcare workers - nurses (46.4%), administration workers (14.4%), medical officers (9.2%) and other roles such as allied health and technicians (30%)	A finding of variations in the PSC depending on the type of unit. The combined unit types of obstetrics, gynaecology, perinatal ward or neonatal ICU were significantly more likely to be classified as high PSC units. The composite of teamwork within hospital units was the biggest influence as to whether a unit was classified as a high or low PSC unit. Implications for clinical practice are that assessing unit PSC can reveal areas for improvement. Improvement measures can be tailored to the individual units as not all units within a hospital share the same PSC.
Turunen et al. (2013) Finland	To explore and compare nurse managers' and RNs' perceptions of PSC.	Quantitative study, electronic questionnaires. HSOPSC™	Acute hospitals. 109 nurse managers and 723 RNs	Nurse managers had a more positive overall perception of safety than RNs. Nurse managers reported more positively on communication about clinical errors and thought adverse events were reported more frequently than did RNs. Nurse managers were more positive about management support for patient safety than RNs and a majority of nurse managers agreed hospital management showed that patient safety is a top priority. Implications for clinical practice are the need to close the gap in PSC between nurse managers and RNs by sharing training and accountability for patient safety.

Aboshaiqah and Baker. (2013) Saudi Arabia	To identify factors contributing to RNs' perception of PSC	Quantitative study, paper-based questionnaire. HSOPSC™	Acute hospital. 498 (83%) RNs.	A correlation was found between the RNs' demographics and the perception of PSC. Areas of strength were management support for patient safety and organisational learning. Half of the RNs had not reported a clinical error in the past 6 months. Implications for clinical practice are the need to recognise factors that affect PSC when implementing strategies for improvement.
Saleh et al. (2015) Jordan	To explore RNs' perception of PSC and the relationship of PSC with patient outcomes	Quantitative study, paper-based questionnaire. HSOPSC™	Acute hospitals. 242 (61%) RNs.	None of the 12 PSC composites received percent positive responses greater than 50% indicating a negative perception of PSC. Teamwork within units had the most positive response rates although much lower than similar studies. Staffing received the lowest percent of positive responses at 30.4%. Positive correlations were found between PSC and event reporting, and PSC and management support for safety. Communication openness was positively correlated with overall perceptions of safety, the frequency of event reporting and ward patient safety grade. Implications for clinical practice are that by addressing communication flow, other areas of PSC may be addressed.
Hamaideh. (2016) Saudi Arabia	To assess PSC of mental health nurses and factors affecting PSC in psychiatric settings	Quantitative study, paper-based questionnaire. HSOPSC™	Psychiatric hospitals. 224 (56%) nurses.	Teamwork within units was the only PSC composite to be considered an area of strength. The frequency of event reporting correlated positively with non-punitive response to clinical error, manager expectations promoting safety, communication openness, hospital management support for safety, teamwork across hospital units and hospital handovers. Implications for clinical practice are that measuring a baseline PSC allows identification of areas for improvement and addressing various aspects of PSC can improve the frequency of event reporting.

Kagan and Barnoy. (2013) Israel	To investigate the association between PSC and the incidence and rate of clinical errors by Israeli RNs	Quantitative study, paper-based questionnaire. Stanford/PSCI	Hospitals (90%) and healthcare services. 247 RNs.	PSC was positively and significantly related to the clinical error reporting rate. Most nurses encountered clinical errors from a daily to a weekly basis, yet half reported their own clinical errors rarely or sometimes. Implications for clinical practice are that a positive PSC can encourage clinical error reporting by staff.
Marques da Silva de Paiva et al. (2014) Brazil	To determine the reasons nursing staff report errors	Qualitative study, open interviews.	Acute hospital. 17 nurses and 14 technicians/assistant nurses	Nurses felt encouraged to report clinical errors as they were part of the team providing safer patient care and supported by management Implications for clinical practice is that by providing a blame-free, supportive environment error reporting is encouraged.
Zaheer et al. (2015) Canada	To explore the association between bedside clinicians' PSC and unit norms of openness, ease of reporting and participative leadership	Quantitative study, paper-based questionnaire. MSI-2006	Acute hospitals. 2495 (17%) RNs (81%), medical officers (13%) and pharmacists (6%)	PSC was positively correlated with unit norms of openness, ease of reporting and participative leadership. Older healthcare professionals and those with higher education had a more positive perception of leadership support for safety. Implications for clinical practice are the need to involve bedside clinicians when implementing interventions, such as a new reporting system, and for hospitals to provide leadership training to its senior leaders and managers.
Davies et al. (2017) England	To assess the impact of an electronic prescribing system on PSC and effects on different professional groups	Quantitative study, electronic questionnaire. SAQ	Acute hospital, surgical services. 82 (34.5%) nurses and pharmacists	Problems with implementation of the electronic prescribing system and a follow-up survey conducted too soon saw a reduction in PSC. There was a perception of increased risk of error with the new system. No significant decrease in adverse events was reported. Implications for clinical practice are the need for more support and better training when implementing a new system. When conducting repeat surveys, it is important to allow time for the new practice to be embedded.

Lee et al. (2012) Australia	The implementation of communication and patient safety training to reduce patient harm	Quantitative before-after study, paper-based questionnaire. 83 item validated questionnaire	Acute hospital. 350 medical officers, nurses, allied health, administrators and operational staff	Interdisciplinary team training was used with positive feedback from staff. Significant improvements in some PSC composites after the training e.g. clinical communication. The qualitative data provided examples of staff perception of improvements in patient safety. Implications for clinical practice are that involving all levels of staff in training promotes teamwork. Learning is enhanced by the engagement of local champions.
Muething et al. (2012) US	To implement cultural and system changes to reduce adverse events	Quantitative before-after study, paper-based questionnaire. HSOPSC™	Paediatric hospital. Medical officers, nurses and others. 12000+ staff over 5 years	The implementation of multifaceted interventions to reduce adverse events, promote lessons learnt, restructure clinical governance and introduce a new root-cause analysis process saw a sustained reduction in serious adverse events. After an initial drop in PSC, an improvement was recorded over the next 4 years. Implications for clinical practice are the use of multifaceted interventions may prove better than single interventions to change behaviour. Conducting PSC perception surveys annually allows changes to be tracked over time.
Martin et al. (2014) England	To explore how walk-rounds are used in practice and whether variations in implementation affect safety and culture	Qualitative study, semi-structured interviews.	Acute hospitals. 82 executive staff, administrators, clinicians, purchasers and policy-makers	Unit managers espoused the benefits of executive visits to clinical areas. Concerns were expressed when executive used visits to the ward to conduct their own surveillance. Modifications to the executive walk-round caused suspicion with frontline clinicians. Implications for clinical practice are the need for executive visits to follow the script so that the open and trusting safety culture engendered by the visits is not lost.
Schwendimann et al. (2013) US	To assess the association between walk-rounds and PSC	Quantitative study, paper-based questionnaire. Modified SAQ	Acute hospital. 19053 nurses (46.9%), medical officers (7%),	Units where 60% or more staff reported exposure to at least one walk-round reported a more positive PSC, significantly higher feedback about actions from walk-rounds and significantly higher risk reduction.

			therapists (7%), support staff (25.1%), technicians (12.3%) and pharmacists (1.8%)	Implications for clinical practice are that walk-rounds give clinical staff the opportunity to share safety concerns with executive and to receive feedback on safety and quality improvements. Executive staff are able to identify system errors and apply corrective actions in a timely manner. Addressing system issues fosters a just culture where the individual is not blamed for system errors.
Thomas and Galla. (2013) US	To build a culture of safety through teamwork and communication training.	Quantitative before-after study, paper-based questionnaire. HSOPSC™	Acute hospital. All staff	Interdisciplinary training was crucial to the success of the teamwork and communication skills training. When training attendance was not interdisciplinary this was perceived as a negative by staff. The staffing composite had a significantly increased positive rating after the team training although staff numbers had not changed. Implications for clinical practice are the need to provide executive support and involve all levels of staff when providing training for any new program. Refresher training is required to maintain the knowledge.
Brilli et al. (2013) US	To evaluate the effectiveness of a hospital-wide quality improvement program on reducing preventable harm	Quantitative before-after study, paper-based questionnaire. SAQ	Paediatric hospital. All staff, 87% response before and 85% after the intervention	Implementing a multidisciplinary quality improvement program saw a significant reduction in hospital acquired infections and a sustained increase in clinical error reporting. PSC perception increased significantly following the program. Implications for clinical practice are the use of multifaceted multidisciplinary interventions increases uptake. Having executive support and clinical teams promoting the processes maintains the focus on patient safety and quality.

Chapter 3 - Research Methodology

3.1 Overview

In this chapter, the research methodology is presented which consisted of a descriptive cross-sectional design. It is noted that a cross-sectional design allowed for the collection of data at one point in time. This research methodology enabled the collection of quantitative and qualitative data. The chapter is divided into six sections. The first section describes the quantitative research design that was chosen following the literature review. Section two describes the research sample, participant selection process and a description of the respondents. In section three a description of the research instrument, the Hospital Survey on Patient Safety Culture™ (HSOPSC™), developed by the Agency for Healthcare Research and Quality (AHRQ) is provided. The research methodology, as recommended by the AHRQ, is discussed. Section four presents details on the data collection method and section five provides a description of the methods used to analyse the data. The final section describes the ethical considerations for this study.

3.2 Research design

Given the limited understanding of patient safety culture (PSC) in Australia it was decided that a validated survey tool was required to ensure that the concept was measured. This study therefore, used a descriptive, cross-sectional approach, a non-experimental research design, supported by a small component of qualitative data to evaluate the health professionals' perception of patient safety. The descriptive, cross-sectional design was chosen to observe and describe the phenomenon of PSC at a single point in time (Polit & Beck, 2014). This is a useful study design when repeat studies are planned to observe trends in PSC over time. Two key findings of the literature review influenced the research design of the study. Firstly, questionnaires have been used most frequently to assess an organisation's current PSC (Waterson, 2014) and secondly, an element of qualitative data was added to provide depth to previous findings. The benefits of using questionnaires are that they allow a large amount of data to be collected in a short time span (Polit & Beck, 2014). The surveys are relatively cheap to conduct, provide responses that are uninfluenced by the researcher and their anonymity promotes honest answers (Polit & Beck, 2014). Paper surveys were chosen because the developers of the HSOPSC™ recommends them due to the current lower response rates with electronic surveys and the time and cost for developing an electronic version of the survey (Famolaro

et al., 2016). There was also limited access to work computers and previous electronic surveys at the study site had poor response rates.

3.3 Research setting

The research study was conducted in a 290-bed general hospital in Western Australia. The hospital provides secondary level care to emergency and elective patients with medical, surgical, paediatric, obstetric and adult mental health specialties (East Metropolitan Health Service, 2017). Patients requiring higher levels of care are transferred to one of the nearby tertiary hospitals. The inpatient units were categorised into five work areas to represent the staff who worked across wards, but within a specialty. Critical care is comprised of the intensive care unit, acute medical unit and the emergency department; medical is comprised of two medical wards and a rehabilitation ward; surgical includes a surgical ward and the day surgery unit; maternal and child health includes the maternity unit and a paediatric ward; and mental health is comprised of three adult mental health wards. This general hospital setting allowed the recruitment of participants who met the study inclusion criteria.

3.4 Research sample

A purposeful sample of health professionals was used so that the recruitment of participants who were employed in the hospital was obtained. This is important to ensure that the recruited participants had knowledge and understanding of the safety and quality culture in the hospital (Kandola, Banner, O'Keefe-McCarthy, & Jassal, 2014). The sample consisted of nurses, midwives, medical officers and other health professionals working in the inpatient wards and the emergency department. The sampling frame was chosen to represent areas providing patient care in an interdisciplinary setting. The nurses, midwives and nurse practitioners were assigned as a single nursing group for analysis. The researcher acknowledges that nursing and midwifery are different disciplines, however, for the study purposes the assigning of the two disciplines into a nursing group allowed for analysis of the phenomenon under investigation. The medical officers group were interns, residents, registrars and consultants. The other health professionals were psychologists, dietitians, social workers, physiotherapists, occupational therapists, speech therapists, therapy assistants and pharmacists. The sample comprised of 573 nurses, 83 medical officers and 84 other health professionals. All participants were employed on a full-time, part-time or casual basis by the hospital. Agency staff were not invited to participate as they did not meet the selection criteria and because of their temporary employment arrangements they

may not have sufficient knowledge of the PSC. Staff on leave were also excluded from the study because the questionnaires were only available in the chosen clinical areas for a specified time. Therefore, in brief, the inclusion and exclusion criteria were:

Inclusion criteria:

- health professionals working on the 12 inpatient wards or the emergency department
- health professionals employed by the hospital as a nurse, midwife, medical officer or other health professional.

Exclusion criteria:

- agency health professional staff
- health professionals on leave.

3.5 Research tool

Permission to use the HSOPSC™ was obtained from the AHRQ before commencing the study (see Appendix D). The HSOPSC™ is a validated and reliable survey tool with 42 scale items measuring staff perception of patient safety on the individual unit and within the wider hospital. Cronbach's alpha values have been reported with previous use of the tool ranging between 0.63 and 0.84 (Sorra & Nieva, 2004). The scale items are grouped into 12 PSC composites. These are:

- communication openness: comprising three scale items measuring how freely staff speak up about patient safety issues and question others with more authority
- feedback and communication about error: comprising three scale items measuring the degree to which staff are informed about clinical errors, provided feedback about changes implemented and discuss ways to prevent clinical errors
- handover of patient information and transitions between hospital units; comprising four scale items measuring the quality of clinical handovers
- unit manager expectations and actions promoting safety: comprising four scale items measuring the level of engagement in patient safety procedures by their immediate manager and acceptance of suggestions for improvement

- hospital management support for safety: comprising three scale items measuring the priority placed on patient safety by hospital management and executive
- the frequency of events reported: comprising three scale items measuring how often different severities of clinical errors are reported
- non-punitive response to errors: comprising three scale items measuring the reaction to reporting a clinical error
- organisational learning and continuous improvement: comprising three scale items measuring how changes are implemented to improve patient safety and if the changes are evaluated
- an overall perception of safety: comprising four scale items evaluating the effectiveness of procedures and the systems used to prevent mistakes
- staffing: comprising four scale items measuring the adequacy of staffing to handle the workload and working hours that are appropriate to provide safe patient care
- teamwork across hospital units: comprising four scale items measuring how well staff from different hospital units work together to provide the best patient care
- teamwork within the wards and units: comprising four scale items measuring how well staff in their units work together as a team.

The HSOPSC™, although a tool from the United States, has been used in 71 countries globally and in hospital settings of similar characteristics to the current study's general hospital setting (AHRQ, 2016). The advantages of this tool are that it is validated, reliable and easy to administer. Because the HSOPSC™ has been used extensively (Waterson, 2014) and the AHRQ provides a database for comparing results, this made it an ideal survey tool to use. For these reasons, the HSOPSC™ was chosen for the current study.

The tool uses a 5-point Likert scale with a neutral middle point to express either agreement (strongly disagree, disagree, agree, strongly agree) or frequency (never, rarely, sometimes, most of the time, always) for each scale item. Some scale items are negatively worded so that a response of disagree or never indicates a positive response. Two outcome variables ask staff to rate their work area on patient safety and to record the number of events they have personally reported over the past 12 months. Respondents are asked anonymous demographic information at the end of the questionnaire about their area of work, tenure at the hospital, hours of work and years of experience in their profession. The

respondents are also asked to identify whether they have direct interaction with patients. Lastly a free text section invites participants to comment on any aspect of patient safety, including clinical errors or event reporting in their hospital.

Before administering the survey, it was reviewed by a panel of three, including the researcher, as recommended in the literature (Czaja & Blair, 2014). The panel was selected based on their patient safety and quality experience and their experience in administering surveys. Following this review, the HSOPSC™ was linguistically adjusted to the Australian context, for example, handoffs is a term used in the United States and was changed to handovers. All the changed items were reviewed by a panel of health clinicians to establish appropriateness and face validity of the questionnaire. The establishment of face validity is conducted to ensure the data collection tool measures PSC (Czaja & Blair, 2014). The health clinicians who were invited to participate in the face validity exercise were from a Western Australian general hospital with similar context to the study site. The final questionnaire was then prepared for distribution to the selected clinical areas.

3.6 Data collection

Data collection was performed as per the HSOPSC™ user's guide (Sorra, Gray, Streagle, et al., 2016). To increase the response rate, two weeks before data collection began notices were placed in the hospital electronic newsletter which is distributed to staff email addresses. The notice clearly stated which areas and staff the survey was targeting, health professionals working on inpatient wards and the emergency department. The notice highlighted that the survey had endorsement from the hospital executive. At the request of the nursing executive, the researcher attended a senior nurse meeting. In addition, the researcher met with the medical administration officer. At both meetings, the researcher explained the purpose of the survey and requested that they encourage their staff to participate. Finally, notices were sent to the line manager for each professional group that a meeting could not be arranged, asking for their support. The anonymity of the survey was stressed through each communication mode so participants were encouraged to complete the questionnaire as accurately as possible.

Paper questionnaires and information sheets were hand delivered by the researcher, to the nurse manager or senior nurse of each of the inpatient wards and the emergency department for distribution to all health professionals working on their ward who were not agency staff. Information sheets provided an explanation of the purpose of the study. The information sheets explained that confidentiality was paramount and that

no identifying information would be used therefore guaranteeing anonymity. Also, because the questionnaire was anonymous the information sheet explained that withdrawal was not possible once the completed questionnaire had been submitted. The survey was available for a two-week period from the 2nd to 19th May 2016. A collection box was placed in each ward or department for completed questionnaires. To reduce social desirability bias, which is when participants respond with socially acceptable responses, the questionnaires were kept in a private staff area to ensure privacy during completion (Polit & Beck, 2014). Returning the questionnaire gave implied consent for participation in the study. See Appendix B for the HSOPSC™ questionnaire and Appendix E for the participant information sheet.

After one week of data collection, follow-up reminders of the survey were arranged: an email was sent to hospital email addresses; notices were placed in work areas; the questionnaires and information sheets were placed in the medical consultants' internal mailboxes; personalised emails were sent to the clinical nurse managers and clinical nurse specialists; and verbal reminders were provided by the researcher. These general reminders were provided because non-responders could not be contacted individually. This is because, to ensure participant anonymity, no personal identifiers were placed on the questionnaires. An invitation was sent to each ward's and department's staff development nurses offering an information session on the survey with the opportunity to complete a survey during the session. Although only one information session was provided, the reminders increased the number of returned questionnaires from staff. After the second week of data collection the email notice was resent, notices were placed in the medical officers' lounge and more verbal reminders were provided by the researcher attending each ward and department in person. All returned questionnaires were then reviewed to ensure they had been completed and could be used for analysis. A total of 269 questionnaires were returned and 266 contained enough completed scale items for useful analysis. A power analysis calculation determined a minimum sample size of 254 was required at the 95% confidence level (Siegle, n.d.; SurveyMonkey, 2017).

3.7 Data analysis plan

Data were entered in Statistical Package for Social Sciences (SPSS 24) with negatively worded scale items recoded into the positive, using the data transformation function, prior to analysis. Disagreement with a negatively worded scale item indicates a positive response. Therefore, disagreeing responses were changed to agreement and agreeing responses were changed to disagreement. The data plan was followed as per the

HSOPSC™ user's guide with the percent positive responses reported (Sorra, Gray, Streagle, et al., 2016). The percent positive responses were calculated from the frequency of responses of agree and strongly agree or most of the time and always to the 42 scale items. These percent positive responses were then grouped into the 12 PSC composites. For example, to calculate the composite for Overall Perceptions of Safety the percent positive responses for the four related scale items of: It is just by chance that more serious mistakes don't happen around here; Patient safety is never sacrificed to get more work done; We have patient safety problems in this unit; and Our procedures and systems are good at preventing errors from happening, were calculated. The resultant scale item percentages were added together and divided by four to provide a percent positive response for the Overall Perception of Safety composite (see example in Table 3.1). Most survey items had some missing responses and these were excluded from the denominator when calculating the percentages (Sorra, Gray, Streagle, et al., 2016).

Table 3.1 Example calculation of percent positive responses for items and composites

Items measuring Overall Perceptions of Safety	Number of items of Strongly Agree or Agree responses	Total number of responses to item (excluding missing responses)	Percent positive response to item
Item A10 – recoded. It is just by chance that more serious mistakes don't happen around here.	150	200	150/200=75%
Item A15 – positively worded. Patient safety is never sacrificed to get more work done.	140	190	140/190=73.7%
Item A17 – recoded. We have patient safety problems in this unit.	150	195	150/195=76.9%
Item A18 - positively worded. Our procedures and systems are good at preventing errors from happening.	170	200	170/200=85%
Average percent positive responses for the four items = 75% + 73.7% + 76.9% + 85% = 310.6/4 = 77.6%			

Descriptive statistics displaying the frequencies, percentages, means and standard deviations are presented on the participants' attitudinal scores. This allowed for an overview of the returned data and identification of data entry errors. Statistical analysis was undertaken using one-way analysis of variance (ANOVA) on the mean attitudinal scores of the three health professional groups to determine statistically significant differences among the groups at the 95% confidence level.

To determine PSC at the unit level, the percent positive responses to the seven unit level composites were calculated. This was compared with the percent positive responses to the three hospital level composites. To determine if there is a relationship between patient safety perception and the frequency of adverse event reporting Pearson's correlation coefficient was calculated. A relationship was deemed to be moderate for correlation coefficients greater than 0.4 and less than this was deemed a weak relationship

(Campbell & Swinscow, 2009; Coakes, 2013). The internal consistency, to determine that the scale items are measuring PSC and nothing else, was calculated for the 12 composites by Cronbach's alpha coefficient (Polit & Beck, 2014). A high Cronbach's alpha value within each PSC composite indicates that there is relatively high internal consistency. The Cronbach's alpha values for each of the 12 composites ranged from 0.54 to 0.79. The individual results for each of the composites is presented in the results chapter. Demographic information on the participants' level of experience, tenure at the hospital, years on their current ward and hours of work are presented as frequencies and percentages.

The comments from the free text section were entered verbatim into an Excel spreadsheet. Content analysis of this qualitative data required the development of a coding framework. The coding framework was developed based on the PSC composites of the HSOPSC™. The qualitative data were then coded according to the framework, grouped into themes and presented as a sum of each theme (Streubert & Carpenter, 2011). A total of eight themes emerged from the analysis and are discussed in chapter four.

3.8 Ethical issues

Prior to collecting any participant data ethical approval was obtained from both the South Metropolitan Health Service and Curtin University Human Research Ethics Committees. The ethics approvals are attached in Appendix F and G. Participation was voluntary with only demographic data that contain no individual identifiers collected. Ethical issues of collecting questionnaires, such as confidentiality, consent and privacy were taken into consideration before and during the data collection (NHMRC, ARC, & UA, 2007). Thus, no personal identifiers were placed on the questionnaires and the collection boxes were kept in a private staff area where the questionnaires were available for completion. A participant information sheet, explaining the reason for the study and an assurance of confidentiality, was provided. Contact information for the principal investigator and the Curtin University co-investigator were included. Consent was implied by completion of the questionnaire without the requirement to complete a consent form. Data storage was maintained as per the NHMRC guidelines for storing in a locked office that only the researcher had access to (NHMRC et al., 2007).

3.9 Chapter summary

The research design, data collection and data analysis have been outlined in this chapter. The planned statistical analysis of the data has been described. Recruitment of health professionals has been explained and why the methods were chosen. The next chapter presents the results, it highlights any differences between health professionals and includes qualitative data from the free text section of the questionnaire.

Chapter 4 - Results

4.1 Overview

This chapter presents the analysis of the survey questionnaire and the qualitative themes that emerged from the free text section. The findings of the study are presented with relevance to the research questions, but the analysis does not draw conclusions by comparing the results with previous patient safety culture (PSC) research. The chapter is divided into the following sections:

- Hospital profile
- Demographics of the sample
- Responses to the questionnaire

Permission to use the Hospital Survey on Patient Safety Culture™ (HSOPSC™) questionnaire (see Appendix B) was obtained from the Agency for Healthcare Research and Quality (AHRQ) (see Appendix D). The survey tool contains 42 scale items that are grouped into 12 composites to determine respondents' perception of patient safety in their immediate work unit and across the hospital. Composites are a measure of PSC comprised of the level of agreement to three or four related scale items. In addition, two questions ask the respondents to rate their ward on patient safety and quality care and to record the number of adverse events or clinical errors they have reported in the past 12 months. The collected quantitative data was analysed using the Statistical Package for Social Sciences (SPSS 24) and included descriptive statistics, one-way analysis of variance (ANOVA) and Pearson's correlation coefficient. The data was presented as a frequency distribution because these basic statistics provided an overview of the results and the direction of strengths. The data was cleaned by examining the frequency tables to identify any data entry errors, the entering of out-of-range values, missing variables and respondents who responded with the same answer for all items (Osborne, 2013). Results are presented for each of the 12 PSC composites as the percentage of respondents with a positive attitude. In addition, the means and standard deviations were examined and are contained in Appendix H. Detailed statistical analysis was subsequently undertaken using ANOVA to establish statistical significance at the 95% confidence level. While this chapter presents the quantitative results, the dominant qualitative themes from the free text comments are also presented. Chapter five will discuss the findings of this study in the context of the published research literature and with the AHRQ 2016 comparative database.

4.2 Hospital profile

The surveyed hospital had 290 beds and provided a range of clinical services including medical, surgical, paediatric, obstetric and adult mental health. In addition, the hospital has an emergency department and a non-tertiary intensive care unit. The emergency department sees over 60, 000 presentations annually (WA Health, 2016b). The number of presentations is consistent with the average for public general hospitals in the metropolitan area (WA Health, 2016b). Consistent with hospital specialty classifications, the emergency department, intensive care unit and acute medical unit were classified in the critical care specialty. The survey was targeted to five clinical specialty areas. The percentage of beds for each of the clinical specialties is shown in Figure 4.1. The specialties comprised of medical (101), critical care (51), adult mental health (41), maternal and child health (33), and surgical (64).
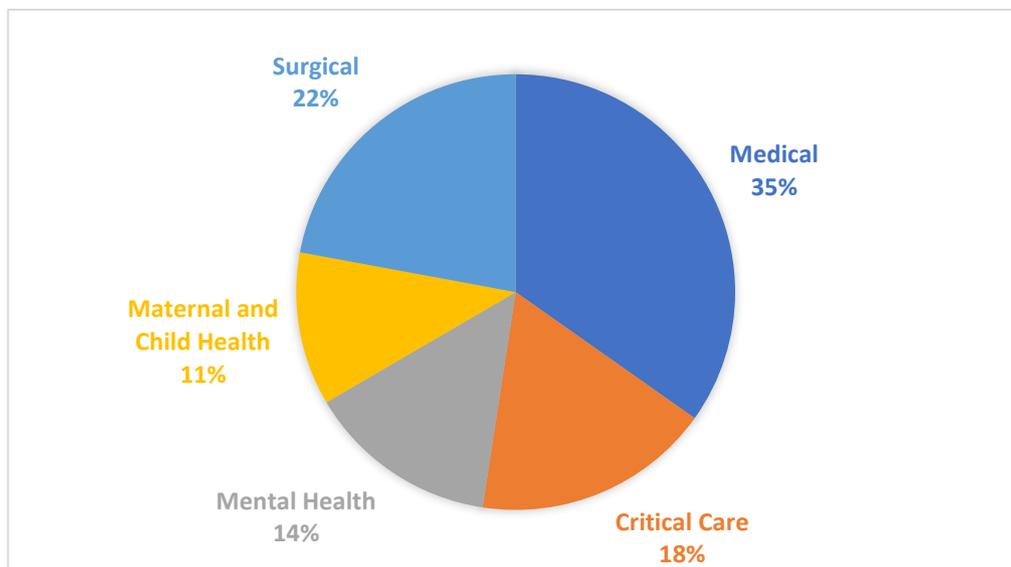
Figure 4.1 Bed number proportion by specialty area

4.3 Demographics of the sample

The demographic information included the respondents' professional group, the hours worked each fortnight, the number of years they had worked at the study site, the number of years they had worked on their current ward, the number of years of experience in their current specialty and whether they had direct contact with patients.

The employment grouping of the respondents, represented in Figure 4.2, indicated that the majority were nurses (74.4%, n=198), followed by medical officers (13.2%, n=35) and then other health professionals (12.4%, n=33). Two (0.75%) staff did not provide any responses to the five demographic questions. The nursing group comprised of registered

nurses, clinical nurses, senior registered nurses, midwives, clinical midwives, senior registered midwives, nurse practitioners, enrolled nurses and assistants in nursing. The medical officer group comprised of consultants, registrars, residents and interns. The other health professionals group comprised of dietitians, physiotherapists, occupational therapists, speech therapists, psychologists, social workers, therapy assistants, pharmacists and staff who did not specify their profession. Each responding health professional group comprised 34 - 42% of their population. This means that of the 740 staff, 573 were nurses and 198 responded (34.6%), 83 were medical officers and 35 responded (42.2%) and 84 were other health professionals and 33 responded (39.3%). Nurses (58.7%) represent the largest occupational group of Australian registered health professionals and medical officers (16.3%) comprise the next largest group (Australian Health Practitioner Regulation Agency, 2016). This also makes the study sample of similar composition to Australian practicing health professional groups.
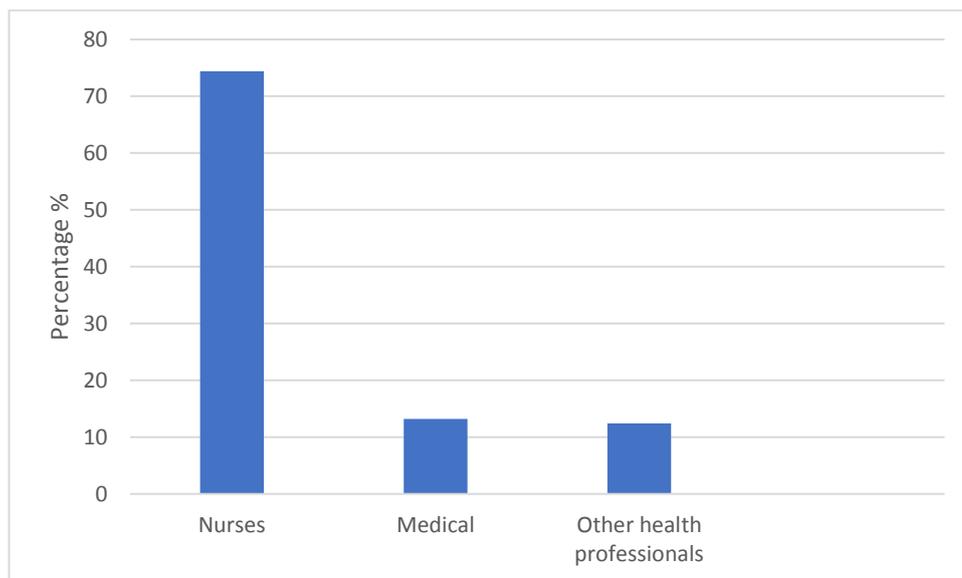
Figure 4.2 Number of responding health professionals

The responding staff (98.9%) indicated that they worked in roles that involved direct interaction or contact with patients. As shown in Figure 4.3, nearly 80% of the respondents had worked on their current ward for more than one year and most (51.5%, n=137) had worked on the same ward between 1 to 5 years. Almost half (48.9%, n=130) had worked at the hospital between 1 to 5 years. Most respondents (66.6%, n=177) were working 60 hours or more per fortnight.
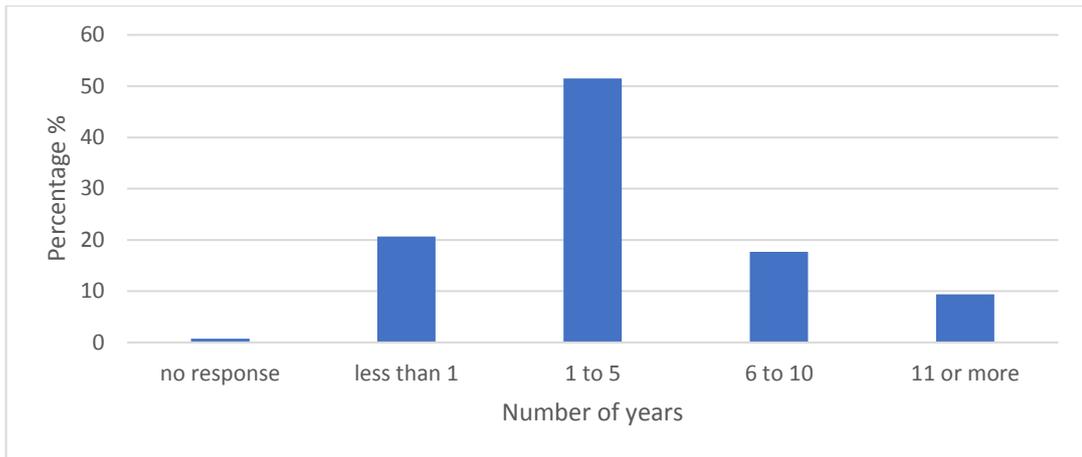
Figure 4.3 Number of years on current ward

The respondents were mostly experienced health professionals. The majority (49.6%, n=131) indicated they had six or more years' experience in their current specialty. Figure 4.4 shows the percentage of respondents who had worked in their current specialty for the number of years categorised.
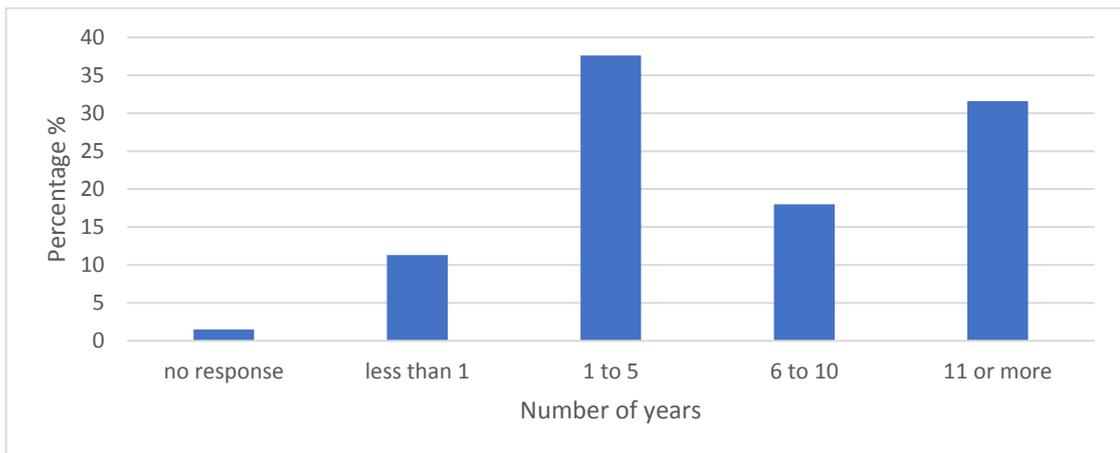
Figure 4.4 Number of years in current speciality

4.4 Response rates

A total of 740 health professionals at the study site met the inclusion criteria. The inclusion criteria stated that the health professional must be currently employed, not on annual leave and work in an inpatient ward or the emergency department. The areas and the response rates are displayed in Table 4.1 below.

Table 4.1 Respondents' work areas

Clinical specialty	Bed numbers (%)	Valid response rate (%)
Medical	101 (35%)	94 (35.3%)
Critical Care	51 (18%)	77 (28.9%)
Mental Health	41 (14%)	36 (13.5%)
Maternal and Child Health	33 (11%)	30 (11.3%)
Surgical	64 (22%)	29 (11.0%)
Total	**290**	**266**

The overall return rate for the survey was 269 (36.4%) questionnaires. Three (1%) of the returned questionnaires were not included in the quantitative analysis, due to insufficient completion, making a valid return rate for the quantitative data of 36% or 266 questionnaires. This return rate was considered acceptable for survey questionnaires. Rea and Parker (2014) state from a population size of 1000 an acceptable return rate to be 278, plus or minus 5%. Therefore, the return rate of 266 for this study was acceptable. Fifty-six survey respondents completed the free text comments representing a valid return rate of 21% for the qualitative data.

The percentage of respondents from each work area was similar to the percentage of beds for three of the work areas. The exceptions were the critical care area was overrepresented (18% versus 28.9%) and the surgical area was underrepresented (11% versus 22%).

4.5 Internal consistency

The analysis of the questionnaire yielded a large amount of statistical information regarding PSC and each of the components will be presented individually.

Firstly, negatively worded items were recoded to calculate the percent positive response. Then the internal consistency of each PSC composite was assessed. The Cronbach's alpha ranged between 0.54 and 0.79. Eight composites exceeded the 0.70 value recommended as acceptable internal consistency (Nunnally, 1978). Table 4.2 displays the alpha coefficients for the composites. The lowest alpha was for the staffing composite at 0.54. Overall, the survey demonstrated satisfactory internal consistency across all composites.

Table 4.2 Cronbach's alpha within the 12 PSC composites

PSC composite	Cronbach's alpha	Number of items per scale
Teamwork within units	0.74	4
Manager expectations and actions promoting patient safety	0.72	4
Organisational learning – continuous improvement	0.66	3
Management support for patient safety	0.76	3
Overall perceptions of patient safety	0.68	4
Feedback & communication about error	0.78	3
Communication openness	0.59	3
Frequency of events reported	0.79	3
Teamwork across hospital units	0.73	4
Staffing	0.54	4
Handovers and transitions	0.72	4
Non-punitive response to errors	0.72	3

4.6 Comparison of patient safety culture by health profession

The percent positive scores for the 12 PSC composites was 59% positive for all health professionals indicating there is potential for improvement. Responses above 74% are considered an area of strength (Sorra & Nieva, 2004). Responses between 50% to 74% have the potential for improvement and responses below 50% are considered an area of concern (Sorra & Nieva, 2004). All respondents indicated they have a positive perception of patient safety with acknowledgement that there is potential for improvement. By health professional group the percent positive scores for the 12 PSC composites were:

- Nurses 59.0%
- Medical officers 61.5%
- Other health professionals 58.5%.

Medical officers were found to have the highest percent positive responses for seven (58%) of the 12 PSC composites. The four composites that were at least 5% higher for medical officers were:

- manager expectations and actions promoting safety
- hospital management support for patient safety
- overall perceptions of patient safety
- communication openness

Medical officers and nurses had similar perceptions of the frequency of event reporting with medical officers only 0.6% more positive.

The other health professionals group were the most positive for the following two composites: teamwork within units and staffing levels. Feedback and communication about errors was perceived similarly by medical officers and the other health professionals group, but nurses responded at least six percent less positive than the rest. Nurses reported the highest percent positive responses on only one composite, hospital handovers. This composite was perceived negatively by all health professionals having positive responses less than 50%. All the health professions had similar negative perceptions of one composite, non-punitive response to errors.

Differences in health professionals' perception of the PSC composites were observed. A comparison of the mean patient safety perception by one-way ANOVA between the health professional groups revealed a significant difference between their perception of their manager's expectations and action promoting safety, $F_{(2, 252)} = 3.89$, $p = .02$. Between the groups, medical officers were most positive towards their manager's expectations and actions promoting safety (M = 16.0, SD = 2.2) and the other health professionals group reported more positively (M = 15.7, SD = 1.93) than nurses (M = 14.7, SD = 3.1). Table 4.3 provides a comparison of the PSC composites by health profession. A comparison of the mean patient safety perception by one-way ANOVA for health professionals with six or more years of experience with those with less than six years of experience revealed no significant difference.

Table 4.3 Comparison of composites and PSC responses by health professional group

Patient Safety Culture composite	Nurses – Percent positive response	Medical officers – Percent positive response	Other health professionals - Percent positive response
Teamwork within units	86.9%	82.9%	90.2%
Manager expectations and actions promoting patient safety	70.2%	82.7%	77.2%
Organisational learning – continuous improvement	73.2%	74.3%	70.7%
Communication openness	60.4%	73.1%	55.6%
Frequency of events reported	60.0%	60.6%	53.0%
Feedback and communication about error	57.5%	63.7%	64.3%
Overall perceptions of patient safety	55.4%	63.2%	58.0%
Hospital management support for patient safety	57.1%	64.8%	53.3%
Teamwork across units	50.1%	51.4%	50.8%
Staffing	47.5%	46.0%	50.8%
Non-punitive response to errors	47.6%	45.6%	47.4%
Handovers and transitions	42.6%	37.9%	31.2%
Mean Percent Positive PSC Score	**59.0%**	**61.5%**	**58.5%**

The highest percent positive responses were three items related to the clinical unit (see Table 4.4). With positive responses above 88% these were: people support one another in this ward (92.0%), people treat each other with respect (89.1%) and when a lot

of work needs to be done quickly we work together as a team to get the work done
(88.8%).

Table 4.4 Items with the most positive responses

Item	Disagree/ Strongly disagree	Neutral	Agree/ Strongly agree
People support one another in this ward	4.6%	3.4%	92.0%
In this ward, people treat each other with respect	3.0%	7.9%	89.1%
When a lot of work needs to be done quickly we work together as a team to get the work done	4.1%	7.1%	88.8%

The items with the lowest percent positive responses were three reverse worded items (see Table 4.5). With positive responses below 36% they were: things fall between the cracks when transferring patients from one unit to another (22.7%), problems often occur in the exchange of information across hospital units (32.8%) and hospital units do not coordinate well with each other (35.4%). These scale items belong to the composites of hospital handovers (39.1%) and teamwork across hospital units (49.4%) that also had among the lowest percent positive responses. See Appendix H for the full analysis.

Table 4.5 Items with the least positive responses

Item	Disagree/ Strongly disagree	Neutral	Agree/ Strongly agree
Things fall between the cracks when transferring patients from one unit to another (reverse worded)	54.2%	23.1%	22.7%
Problems often occur in the exchange of information across hospital units (reverse worded)	32.3%	35.0%	32.8%
Hospital units do not coordinate well with each other (reverse worded)	42.4%	22.3%	35.4%

Health professionals were asked to rate their ward on patient safety using a five-point Likert scale ranging from excellent to failing. Eight (3%) health professionals, comprising of six nurses and two medical officers, did not respond to this question. For the remaining health professionals, the majority rated their ward's patient safety as very good or excellent (n=183, 71%). No-one gave their ward a failing grade but 5% (13) perceived patient safety on their ward as poor. See Figure 4.5 for the combined responses of health professionals' perception of patient safety on their ward.
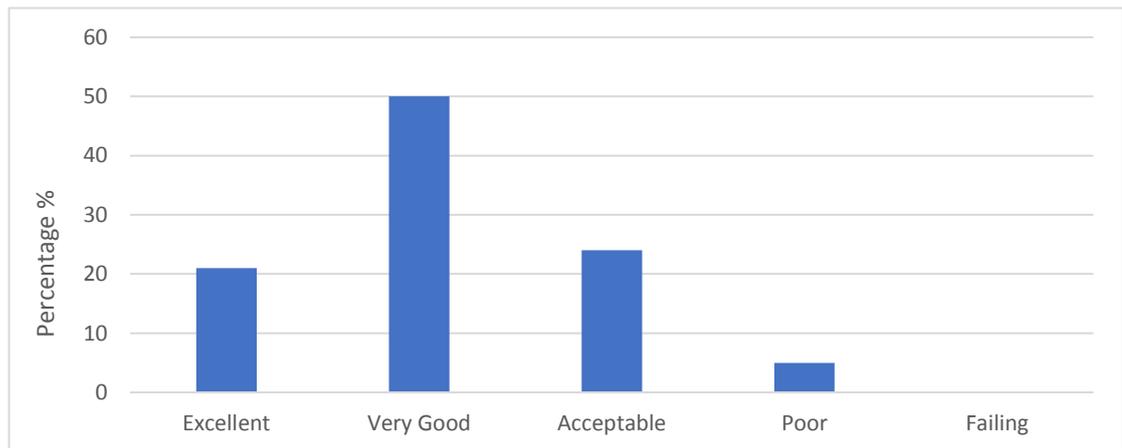

Figure 4.5 Health professionals' grading of ward patient safety

The percentage of health professionals who rated their ward's patient safety as very good or excellent was:

- Nurses – 69.2% (137, n=192)
- Medical officers – 69.7% (23, n=33)
- Other health professionals – 69.7% (23, n=33).

One-way ANOVA revealed no significant difference between the health professional groups and their perception of patient safety on their ward.

4.7 Comparison between unit level and hospital level patient safety culture

The percentage of positive responses for the unit level composites was markedly higher than the hospital level composites. Table 4.6 provides a comparison of the positive responses to the unit level and hospital level composites.

Table 4.6 Percentage of positive responses for unit level and hospital level composites

Unit level PSC composites	Percent positive response
Manager expectations and actions promoting safety	72.8%
Organisational learning - continuous improvement	72.3%
Teamwork within units	86.5%
Communication openness	61.5%
Feedback and communication about error	59.2%
Non-punitive response to error	47.5%
Staffing	46.9%
Hospital level PSC composites	**Percent positive response**
Hospital management support for patient safety	56.1%
Teamwork across hospital units	49.4%
Hospital handovers and transitions	39.1%

For the seven unit level PSC composites, the percent positive responses ranged from 46.9% to 86.5% with a mean of 63.8% positive. In contrast, for the three hospital level PSC composites, the percent positive responses were much lower ranging from 39.1% to 56.1% with a mean of 48.2% positive. The perception of the immediate manager promoting safety were markedly higher than the perception of the support for patient safety by hospital management (72.8% versus 56.1%). Likewise, for teamwork which were markedly more positive at the unit level than across hospital units (86.5% versus 49.4%). The teamwork composites are each comprised of four items. Teamwork within units determines the extent to which staff working on the wards and units support each other, treat each other with respect and work together as a team, e.g. When one area in this ward gets really busy, others help out. The hospital teamwork determines the extent to which hospital units cooperate and coordinate with each other to provide best patient care, e.g. Hospital units work well together to provide the best care for patients.

As discussed in point 4.6 above, 71% of health professionals rated their ward patient safety grade as very good or excellent. This safety rating of their immediate work area is 12% higher than their rating of the combined unit level and hospital level PSC (59%).

4.8 Patient safety culture and adverse event reporting

Participants were asked how many adverse event or clinical error reports they had submitted in the past 12 months. Figure 4.6 shows the percentage of reports submitted by the health professionals.
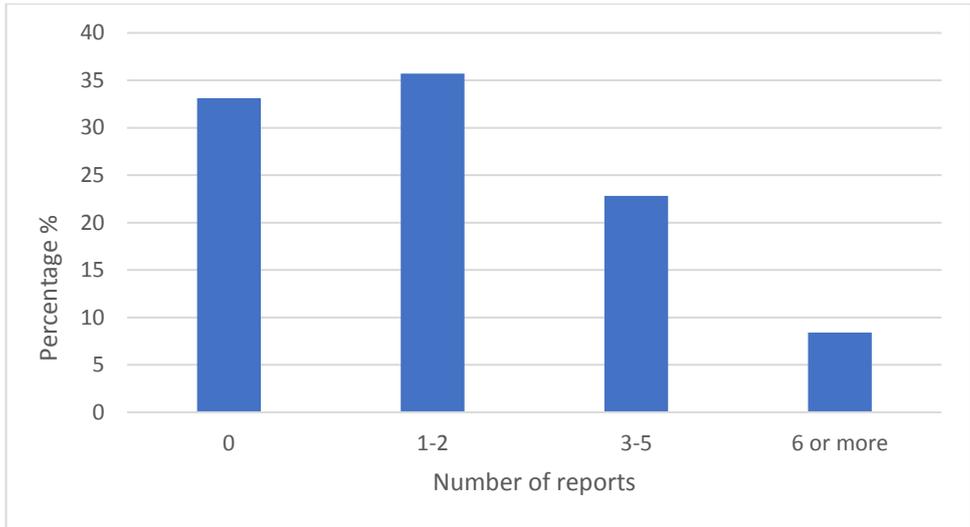
Figure 4.6 Number of events reported in the past 12 months

One nurse and two other health professionals did not indicate the number of events they had reported. For the remaining respondents, many health professionals (n=87, 33.1%) had not submitted any adverse event reports in the past 12 months and an almost equal number (n=94, 35.7%) had submitted one to two reports. Sixty (22.8%) health professionals had submitted three to five reports and 33 (8.4%) had submitted six or more reports.

The percent positive response to adverse event or clinical error reporting was calculated by the number of respondents who had reported at least one adverse event in the past 12 months. Table 4.7 shows that 66.9% of health professionals were positive about event reporting.

Table 4.7 Number of events reported

Item	Number of event reports of 1 or more	Total number of respondents	Percent positive response
In the past 12 months, how many event reports have you filled out and submitted?	176	263	66.9%

Figure 4.7 provides a breakdown of how many adverse event reports each health professional group had submitted in the past 12 months. The majority (38.9%) of nurses had submitted one to two reports. For the other health professionals group 29.0% had submitted one to two reports and only 22.9% of medical officers had submitted one to two reports. This represents 22.2% of nurses, 58.1% of other health professionals and 71.4% of

medical officers who had not submitted a report in the past 12 months. The largest percentage of positive respondents were nurses as indicated by the 77.8% who had submitted at least one adverse event or clinical error report.
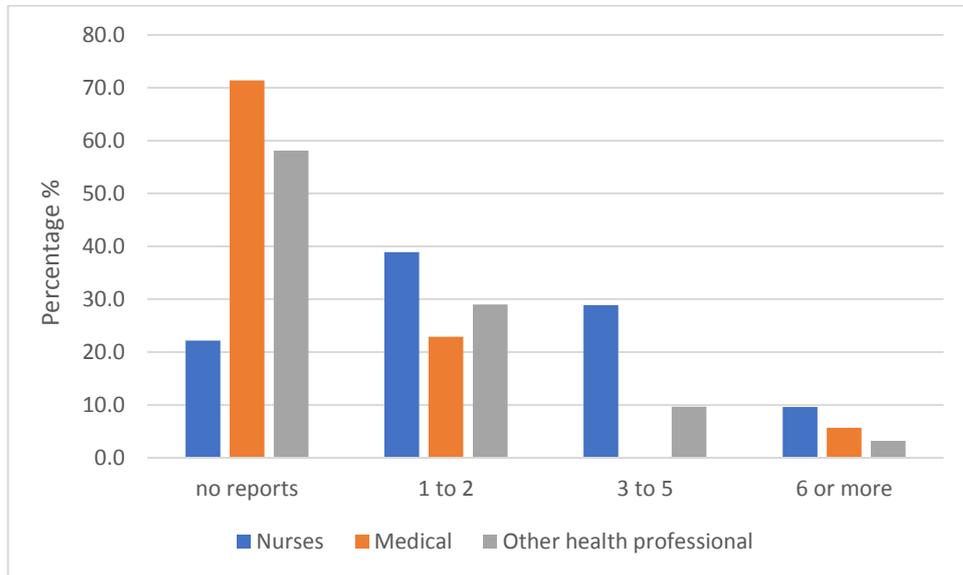

Figure 4.7 Number of events reported by health professional group in past 12 months

To determine health professionals' perception of the frequency of adverse event reporting the following three scale items were used in relation to clinical errors:

- that were caught and corrected before harming the patient
- that had no potential to cause harm
- that could harm a patient.

As demonstrated by Table 4.8, nearly 60% of respondents indicated they reported the three scale items most of the time or always. The full analysis of the frequency of event reporting is in Appendix H. The respondents indicated that clinical errors that could harm the patient were most likely to be reported. However, over 23% of health professionals would still not report these. Clinical errors that were corrected before affecting the patient were least likely to be reported. Table 4.3 shows that nurses and medical officers had similar perceptions of how often adverse events were reported, 60.0% and 60.6% respectively. The other health professionals group were the least positive (53.0%) but a comparison by one-way ANOVA revealed no significant difference between the mean perceptions.

Table 4.8 Frequency of event reporting

Item	Most of the time or Always
When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	47.0%
When a mistake is made, but has no potential to harm the patient, how often is this reported?	58.5%
When a mistake is made that could harm the patient, but does not, how often is this reported?	72.7%
Total percent positive response	**59.4%**

The relationship between the frequency of adverse event reporting and patient safety perception was calculated by Pearson's correlation coefficient. All PSC composites were positively correlated with the frequency of adverse event reporting, although some relationships were weakly correlated. A relationship was deemed to be moderate for correlation coefficients greater than 0.4 (Coakes, 2013). The combined perception of PSC (r=0.449, p<.01) was positively correlated with the frequency of adverse event reporting. The individual PSC composite with the strongest correlation was a moderate positive correlation with feedback and communication about clinical error (r=0.43, p <.01).

4.9 Comparison of the 12 patient safety culture composites with the AHRQ comparative database

A comparison of responses to the 12 PSC composites with the AHRQ 2016 comparative database for hospitals, herein called the comparative database, with 200-299 beds is made below. The comparative database includes responses from hospital staff in clinical and administrative roles. Demographically, the study sample was of similar composition to the comparative database clinical respondents. For both samples, nurses were the top respondents and most respondents indicated they worked more than 40 hours per fortnight. The samples comprised more experienced health professionals with at least six years working in their current specialty. Submissions to the comparative database included more categories of work areas, including operating theatres, therefore the percentage of respondents within each of the five work areas was considerably more at the study site. At the study site, the work area with the highest response rate was the medical unit with 35 percent of respondents. In the comparative database, the largest respondent group belonged to an area classified as Other, with 29 percent of respondents. By

comparison, in the comparative database, the medical unit was the second largest respondent group with 12 percent of respondents.

The overall difference in results is presented in Table 4.9 and shows six composites with large differences. A five percentage point difference between study results and the comparative database is considered significant (Famolaro et al., 2016). Two composites performed higher at the study site: teamwork within units and non-punitive response to errors. Teamwork within the units is an area of strength at the study site and in the comparative database. The 86.5% positive response at the study site to this composite is 6.5% higher than the comparative database. Non-punitive response to error also rated higher at the study site at 5.5% higher. On the negative side, there was a 12.9% lower percent positive response for hospital management support for patient safety at the study site. This was the largest percentage difference recorded. Teamwork across hospital units (7.6%), feedback and communication about clinical errors (6.8%) and overall perceptions of safety (5.1%) also had lower percent positive responses at the study site, but less marked.

Table 4.9 Comparison of percent positive responses for the PSC composites with AHRQ 2016 database

Patient safety culture composite	Percent positive response Study site	AHRQ 2016 database 200-299 beds	Overall difference
Teamwork within units	86.5%	80.0%	6.5%
Manager expectations and actions promoting safety	72.8%	77.0%	-4.2%
Organisational learning - continuous improvement	72.3%	71.0%	1.3%
Communication openness	61.5%	62.0%	-0.5%
Frequency of events reported	59.4%	64.0%	-4.6%
Feedback and communication about error	59.2%	66.0%	-6.8%
Overall perceptions of patient safety	56.9%	62.0%	-5.1%
Hospital management support for patient safety	56.1%	69.0%	-12.9%
Teamwork across hospital units	49.4%	57.0%	-7.6%
Non-punitive response to error	47.5%	42.0%	5.5%
Staffing	46.9%	50.0%	-3.1%
Hospital handovers and transitions	39.1%	43.0%	-3.9%
Mean percent positive PSC	**59.0%**	**62.0%**	**-3.0%**

The frequency of event reporting was higher in the comparative database although just below the five percent significance level. Within this composite there were similar perceptions of the reporting of clinical errors that could harm the patient with 73% indicating they would report these. More respondents in the comparative database (60%) would report a near miss than respondents at the study site (47%). Nurses were more positive than medical officers on the frequency of event reporting in the comparative database, and similar to the current study, more nurses than medical officers had reported an adverse event or clinical error in the past 12 months.

Regardless of their level of experience, health professionals rated their ward as very good or excellent on patient safety. A comparison of health professionals with less than six years' in their current specialty with health professionals with six or more years' experience revealed no significant difference in their perception (69% versus 68% respectively). This is

unlike the comparative database results which reported respondents with less experience were more positive on their ward's patient safety grading. Table 4.10 shows the comparison between health professionals at the study site and the comparative database on ward patient safety.

Table 4.10 Comparison of ward patient safety grade with AHRQ 2016 database

Ward patient safety grade	Percent positive response Study site	AHRQ 2016 database 200-299 beds	Overall difference
Excellent or Very Good	71%	72%	-1%
Excellent	21%	30%	-9%
Very Good	50%	42%	8%
Acceptable	24%	21%	3%
Poor	5%	5%	0
Failing	0%	2%	2%

As can be seen in Table 4.11, the percentage of respondents who indicated they had reported at least one adverse event or clinical error in the past 12 months was 20% higher at the study site. The reporting of adverse events was also higher at the study site in all except one category, 11 to 20 events, compared with the comparative database. An equal percentage of respondents had reported 21 or more events.

Table 4.11 Comparison of number of events reported with AHRQ 2016 database

Number of events reported by respondents	Study site	AHRQ database 2016 with 200-299 beds	Difference
None	33.0%	53.0%	20.0%
1 to 2	35.7%	27.0%	8.7%
3 to 5	22.8%	12.0%	10.8%
6 to 10	6.8%	4.0%	2.8%
11 to 20	1.0%	2.0%	1.0%
21 or more	1.0%	1.0%	0

4.10 Qualitative analysis

This section describes the free text responses that allowed the health professionals to provide greater detail about their perception of patient safety. Included in this was clinical error and incident reporting that they felt may not have been captured within the

questions. Fifty-six health professionals of the 269 survey respondents (20.8%) provided 72 comments. Two questionnaires that were excluded from the quantitative responses reported above, due to insufficient completion of the scale items, have been included in the qualitative responses because comments were provided.

The qualitative respondents closely represent the overall respondents with comments from nursing (71.4%), medical (8.9%) and other health professionals (19.6%). The comments are grouped into eight broad themes of leadership support for safety, clinical error reporting, non-punitive response to clinical error, patient and staff safety, clinical handovers, teamwork, staffing, and non-specific comments. More negative (80.6%) than positive comments were received.

4.10.1 Leadership support for safety

Leadership support for safety had the most feedback with 18 (32.1%) comments provided. There was a perceived lack of management support with concerns expressed that management was not aware of the unit level patient safety issues. All comments received in relation to management's support for patient safety were negative. An example was the following statement:

> *Management needs to have more contact with what happens on the floor. What's on paper does not mean it actually occurs*

A lack of control over ward based patient safety initiatives was expressed. Respondents commented on not feeling supported by management in their efforts to keep patients safe. This was expressed by one respondent as:

> *If a problem is identified by ward staff and suggestions put forward to make it safer, this is almost always ignored by senior management*

Whilst the executive management and unit management were not always perceived as showing their support, the lower level leaders were perceived more positively. A mental health unit nurse commented that:

> *Immediate supervisor, CNS (Clinical Nurse Specialist), takes patient care seriously*

4.10.2 Patient and staff safety

Patient and staff safety was another area of high concern. Health professionals from the mental health unit expressed dissatisfaction at the priority placed on staff safety.

There were concerns about how some mental health patients treat the staff. This concern was expressed in the following statement:

When an aggressive patient (history of staff assault) was admitted… we were told to use our Aggression Management Training

Whereas health professionals from the maternal and child health units expressed dissatisfaction with patient safety. Maternity staff expressed the need for secured wards to provide added security for mothers and babies. One of the nurses wrote the following statement:

Poor patient safety, unlocked maternity ward, high potential for code black alpha

Paediatric unit staff also expressed a need for a secured ward to protect the children. This was particularly of concern for those times when children did not have a carer present. A medical officer provided the following comment:

Our ward has open access to adult ward. This is a security risk

Concern was also expressed that patient safety may be compromised due to staff not following procedures. This was expressed as:

Some staff do not follow patient safety procedures or provide (a) safe work place environment

Three respondents reported positively on patient and staff safety. These positive comments were in relation to the priority placed on safety on the general wards and in the mental health areas. An example of a positive comment was the following statement:

Patient safety is very important in Mental Health and of highest priority

There was also acknowledgement that patient safety discussions occurred at the ward level and that preparations were made for the implementation of high risk procedures. A nurse from the medical unit highlighted this focus on patient safety with the following:

Areas are always identified clearly and awareness raised of new/problematic tasks

4.10.3 Staffing

In the staffing theme, only negative comments were received. Some of these related to the recent loss of job roles that support patient and/or staff safety. There was a perception that staffing levels did not match patient acuity. Despite the negative comments staff expressed the importance of patient safety and how hard they were working on

maintaining a safe environment. The focus on safety was clarified by the following statement:

> *We do our best to maintain patient safety at all times…. with less AIN (Assistant in Nursing) assist but increased acuity*

The concerns about staffing were related back to patient and staff safety. When staff were allocated too many high acuity patients the respondents felt they were not able to provide safe, quality patient care. The burden this placed on the staff members was expressed as a high risk for burn out. A nurse wrote:

> *Patient loads are often too heavy for 1 nurse to take on, specifically those requiring full nursing care mixed with dementia patients who need continuous monitoring. It's an accident waiting to happen*

The perception of not having enough staff to handle the workload is summed up by one comment:

> *(We are) often short staffed, putting safety of patients and staff at risk*

4.10.4 Teamwork

The health professionals reported problems with teamwork at the organisational level. There was the perception that the hospital was functioning as separate units that did not coordinate well with each other. Comments highlighted a lack of coordination and cooperation when patients are transferred between units. There was a concern that inadequate communication with the receiving unit impeded the continuity of safe patient care. This was highlighted by the following comment:

> *(The hospital) is one unit not a group of separate wards-areas. The hospital needs to work together not as separate units*

For some, interdisciplinary teamwork was perceived as being compromised. Divisions between the health professional groups were identified and the perception of not being treated with respect. A member of the allied health profession wrote:

> *Certain people can be quite rude to allied health. When a person is not being nice the propensity to ask questions reduces and thus, finding out vital information for patient care may be compromised*

Positive comments expressed satisfaction that staff at the unit level were working well together. This was exemplified by a comment from a midwife:

The team on the floor works well and ensures patient safety

4.10.5 Clinical handovers

Five negative comments were provided on clinical handovers. The comments were from nursing staff, medical officers and allied health professionals. Four of the comments regarding clinical handovers related to the transferring of patients between hospital units. The timing of patient transfer was viewed as being important. When patients were transferred during the nursing shift change important patient care information may be lost. Clinical handovers may be rushed or not delivered to the oncoming allocated nurse. A nurse summed this up with the following comment:

Shift changes are problematic for patients e.g. patients returning to ward during handover

Communication between the different medical teams caring for a patient was identified as a barrier when transferring across units. The identified theme was a lack of cooperation between the units and the inability to effectively communicate their patient safety concerns. A medical officer commented on this concern with the statement:

My biggest worry about patient safety is the changeover from medicine and ED

One nurse expressed concern about the clinical handovers and the possibility of important patient information being missed when the ward coordinator handed over the entire ward's patients to the relieving shift.

I feel important information can be overlooked with coordinators doing complete ward handovers rather than allocated nurses

4.10.6 Non-punitive response to clinical error

Conflicting opinions were provided on the non-punitive environment at the study site. The desirability of having a no blame culture was recognised. One nurse expressed this positively, commenting that:

No blame policy is the way at (the hospital)

Like many of the comments, concern for patient safety and quality care was at the forefront of staff's concerns. Although the ability to report clinical errors without being

punished was wanted, this was reported as not always happening. In contrast to the nurse's positive comment that the hospital had a no blame policy, a medical officer wrote:

Should be patient focus and stop blaming culture

4.10.7 Clinical error reporting

Health professionals reported positively on the hospital's electronic error reporting system but felt that further improvements could still be made to make the reporting of clinical errors and incidents easier. The usability of the reporting system was commented on with the following:

Current reporting system is easier than previous paper system but needs to be improved to make reporting easier

Among some health professionals there was the perception that they were not encouraged to report all clinical errors and because of this errors that did not harm the patient were not always reported. In contrast one health professional commented on the supportive clinical error reporting environment, writing that:

On this ward we are encouraged to fill out CIMS forms when incidents occur

Two health professionals reported a lack of feedback about clinical errors. When an adverse event did occur, they did not feel involved in the consultation. The proposed changes were perceived as being forced upon them. This lack of feedback was criticised as a lost opportunity to raise staff awareness. A medical officer expressed this as:

Lack of communication about serious adverse events.

4.10.8 Non-specific comments

In this category, one respondent wrote clarification that the ward manager was not their manager. Another respondent reported that changes were in place that they expected would improve the safety and quality of patient care within their unit. Three staff from the other health professionals group, although having answered all the questions, reported that they did not feel the survey related to them. This feeling was clarified by the following statement:

Most of this survey appears to relate more to nursing staff

4.11 Chapter summary

The results presented in this chapter demonstrate the complexities of health professionals' views regarding patient safety. Comparisons with the comparative database show there are differences in PSC and event reporting across different healthcare sites. These differences do not appear to be affected by years of experience or hours worked. The individual comments add some clarity to the data, but PSC appears to be affected by many factors.

In chapter five, the results are discussed and compared with the current Australian and international PSC literature.

Chapter 5 - Discussion

5.1 Overview

This chapter discusses the analysis of the data and the relevance of the results. The overall purpose of the study was to gain an understanding of patient safety culture (PSC) in a general hospital setting in an Australian context. To gain this understanding the Hospital Survey on Patient Safety Culture™ (HSOPSC™) was utilised as this tool allowed for the quantification of the general hospital staff's perception of the current PSC. Acceptability for use of the HSOPSC™ in the Australian setting is discussed.

There is a focus on comparisons with the Agency for Healthcare Research and Quality (AHRQ) 2016 comparative database because currently, there is no Australian database available. Discussion of each of the research questions and, where appropriate, comparisons and an evaluation of the findings with other related research findings are presented. This approach of comparison and evaluation demonstrates the current status of PSC within the study site and any contrasts the hospital has to the national and international literature.

The leadership and communication theory of Westrum (2004) formed the theoretical framework for this study. The basis of this theory is that how leaders process information and communicate this to their workforce determines the safety culture. The findings of this study confirm the importance of leadership in shaping the PSC.

The chapter revisits the hospital's employee profile and compares this to the health professional profile within Australia. The chapter then discusses the findings and highlights interventions for improvement. In discussing the findings of this research, it is important to establish how they were linked to the research questions. The three research questions, as stated in chapter one, were:

- What are health professionals' views on safety and quality and are there differences between nurses, medical officers and other health professionals at the study site?
- Do health professionals perceive differences between unit level and hospital performance on safety and quality measures?
- Is there a correlation between health professionals' patient safety culture and perception of the frequency of adverse event reporting?

The chapter concludes with a discussion about the limitations of the study.

5.1.1 Hospital profile

The charactistics of the study site's health professional workforce are discussed. The characteristics are similar to other general hospitals in Western Australia (East Metropolitan Health Service, 2017). The demographic information suggests the study site has a stable workforce. This is supported by the 85% of respondents who indicated that they had worked at the hospital for more than one year and of this, 36% who had worked continuously for more than five years at this hospital. Respondents were also an experienced workforce with most having at least six years' experience in their current specialty. The majority were working close to full-time at a minimum of 60 hours a fortnight. The finding of having a stable workforce supports patient safety because the workforce retains knowledge of hospital procedures. Safety compliance increases because staff model their behaviour on their colleagues applying best practice (Jimmieson et al., 2016; Thompson, Cullum, McCaughan, Sheldon, & Raynor, 2004). When there is staff with long tenure at the hospital, this knowledge and safety behaviour is retained within the organisation.

5.1.2 Use of the HSOPSC™ tool

The HSOPSC™ tool was chosen because it has been used extensively to measure safety culture within hospitals (Waterson, 2014). To illustrate its utility this survey tool has been used in 71 countries globally (AHRQ, 2016). The tool was found to be acceptable for use in Australia with minor linguistic modifications. Internal consistency calculations demonstrated acceptable Cronbach's alpha values, confirming the suitability of the tool with the modifications that were made. The finding of the staffing composite having the lowest Cronbach's alpha (0.54) is consistent with previous use of the tool (Etchegaray & Thomas, 2012; Shu et al., 2015; Sorra & Nieva, 2004). The staffing composite is still a useful measure of PSC to monitor changes, especially following an improvement intervention. As an example, following a teamwork and communication intervention in a study conducted in the United States (US) by Thomas and Galla (2013), an increase in the perception of staffing levels was found. This was despite no increase in staff numbers.

5.1.3 Summary of main findings

A detailed discussion of each of the research questions and main findings are contained in the following sections. The source of data for the three research questions was the quantitative scale items of the HSOPSC™ and the free text comments made by the participants. There was a general feeling of discontent at the study site with over 80% of comments provided by the health professionals being negative.

Similar to the recent PSC literature, health professionals at the study site were slightly positive on their perception of patient safety. A statistically significant finding from this study was that the health professionals held different views of their manager's expectations and action in promoting safety. Medical officers were more positive about their managers than the other health professionals group and nurses were the least positive. The importance of leadership has been reported extensively in the patient safety literature demonstrating a strong correlation with patient outcomes (Agnew et al., 2013; Brilli et al., 2013; Muething et al., 2012; Schwendimann et al., 2013). This finding was supported by five secondary results of:

- teamwork within the units was an area of strength
- adverse event reporting in the past 12 months was much higher at the study site in comparison to the AHRQ 2016 comparative database, herein called the comparative database
- a moderate positive correlation was found between the frequency of adverse event reporting and receiving feedback and communication about clinical error
- a moderate positive correlation was found between the frequency of adverse event reporting and the health professionals' combined PSC perception
- overall the respondents had a poor perception of the hospital management's support for patient safety and this was much lower than the comparative database.

The findings will be discussed in relation to the research questions in the following sections.

5.2 Health professionals' perception of patient safety culture

The first research question was to determine health professionals' views on safety and quality and whether there were differences between nurses, medical officers and other health professionals at the study site. The study respondents were representative of the health professionals employed at the hospital. That is, the percentage of nurses (77.5%), medical officers (10.5%) and other health professionals (12.0%) at the study site was comparable to the percentage who participated in the survey, nurses (74.4%), medical officers (13.2%) and other health professionals (12.4%). As such the views of the respondents were more likely to be representative of the study population.

At 59% positive, the health professionals shared a perception of patient safety and quality with room for improvement, as described by AHRQ (Famolaro et al., 2016). The perception is similar to results reported in the literature with many studies' findings indicating there is room for improvement (Abdi et al., 2015; Aboul-Fotouh et al., 2012; AbuAlRub & Abu Alhijaa, 2014; Agnew et al., 2013; Ballangrud et al., 2012; Burström et al., 2014; Güneş et al., 2016; Hamdan & Saleem, 2013; Kristensen, Badsberg, et al., 2015; Marsteller et al., 2015; Saleh et al., 2015). This positive perception is also comparable to similar sized hospitals, with between 200 to 299 beds, in the AHRQ 2016 comparative database. The reported PSC perception for these hospitals was 62% positive (Famolaro et al., 2016). The study site's low positive perception is universal, with only small differences reported by health professional group. Unlike the findings from some studies, where health professionals with more experience had a more positive perception of PSC, there was no significant difference in PSC perception found according to duration in the profession (Aboshaiqah & Baker, 2013; Aboul-Fotouh et al., 2012; Kristensen, Badsberg, et al., 2015). A possible reason for the shared perception is that the majority of the health professionals, having been employed at the hospital for more than five years, will have shared the experience of implementing the National Safety and Quality in Health Service Standards (National Standards). These National Standards are provided to improve the quality of care and as a measure for accreditation (ACSQHC, 2012). When the Australian Commission on Safety and Quality in Health Care (ACSQHC) developed the National Standards, participants' roles in the provision of safety and quality systems were allocated (ACSQHC, 2012). These roles are divided into broad groups of clinical and management without differentiation between the health professional disciplines (ACSQHC, 2012). Training and compliance with the National Standards is required by all staff and this standardising of safety and quality expectations may have led to their shared perception. However, this hypothesis cannot be explored further because of a lack of comparable Australian studies.

The low positive perception at the study site and reported in the literature indicates more work on PSC is required. Globally, healthcare organisations are devoting time to measuring PSC and implementing measures to improve patient safety. There are two recent examples of this focus on culture. One example was reported on by the National Health Service in the United Kingdom, stipulating an ongoing, organisation-wide approach is required in the quest for a culture of quality improvement (Jabbal, 2017). The other example was reported on by the ACSQHC in Australia. The ACSQHC is researching a PSC tool that can be used nationally as part of the accreditation process (Hodgen, Ellis, Churruca, &

Bierbaum, 2017). These and other measures are being introduced to demonstrate to healthcare workers that patient safety is a priority. The result should be an improvement in patient safety and the provision of quality care.

Although the health professionals' combined PSC perception was similar, there were differences noted within the individual composites of patient safety. A significant difference was reported with medical officers' perception of their immediate manager. Medical officers perceived management more positively both at the unit level and the hospital level. Their perception included confidence in the clinical safety systems in place to prevent errors and to be more positive on staff's ability to speak up about patient safety issues, including questioning those in authority. The finding of medical officers in this study having a more positive PSC is consistent with reporting in the literature since 2012 (Abdi et al., 2015; Aboul-Fotouh et al., 2012; Burström et al., 2014; Chaboyer et al., 2013; Gallego et al., 2012; Kristensen, Hammer, et al., 2015; Marsteller et al., 2015). Prior to 2012, nurses were regularly reported to have a more positive PSC than medical officers but since that date medical officers have emerged as the more positive (Willmott & Mould, 2018). Nurses have a longer history of patient safety education and quality improvement activities with evidence of quality improvement publications since the 1990s (Senior, Elliott-Boutle, Bergin, Addicoat, & Hall, 1995). Publication of the Australian Patient Safety Education Framework in 2005 which recommended the inclusion of patient safety and quality education in Australian medical officer training may be the reason for their improvement in perception (Walton & Elliott, 2006). Safety and quality education provides an understanding of the competencies required to provide safe, quality patient care in an interdisciplinary environment (Walton & Elliott, 2006). A greater focus on patient safety and quality activities within the hospitals will have been an outcome of this improved understanding. Medical officers' higher status within the interdisciplinary team means they have the ability to influence decisions that affect the quality of patient care provided (Burström et al., 2014). Enjoying a higher status within the organisation means that they are more able to speak up about patient safety issues (Leape et al., 2012). This involvement in decisions and communicating safety issues is also likely to increase their positive perception of PSC (Leape et al., 2012).

Teamwork has consistently been reported as an important measure of PSC (Waterson, 2014). Teamwork within the units was identified as a strength at the study site. Many aspects of patient safety rely on the unit's interprofessional relationships. Most health professionals within the individual units felt supported, treated each other with

respect and worked together as a team. Studies from various countries and healthcare systems have found a similar perception of strong teamwork within the staff's immediate work area (AbuAlRub & Abu Alhijaa, 2014; Agnew et al., 2013; Ballangrud et al., 2012; Burström et al., 2014; Güneş et al., 2016; Hamdan & Saleem, 2013; Marsteller et al., 2015; Shu et al., 2015). These studies from Scotland, Sweden, Norway, Jordan, China, Palestine and the US have different healthcare systems where the patients are fee paying or covered by a National healthcare scheme and the employment status of the healthcare professionals differs from employees of the hospital to contract employees who provide services. Despite these differences the healthcare professionals reported a strong teamwork environment. Improvements to PSC may be easier to implement at the unit level with strong interprofessional relationships allowing staff to support one another through any changes (AHRQ, 2017a). Contrary to this strength there were a small number of comments from the other health professionals group negatively portraying teamwork at the unit level. One health professional commented that poor interdisciplinary teamwork resulted in a lack of respect which interferes with effective communication. Similar poor communication between the disciplines was reported in an Australian study conducted in intensive care units (Chaboyer et al., 2013). In that study, teamwork was also found to be a strength, but qualitative comments revealed issues with communication between medical officers and nurses. At the study site, the health professionals who reported negative teamwork issues worked on the same ward. This may indicate the problem is isolated to that ward and is an issue that needs to be addressed at the individual ward level, rather than a whole of hospital approach.

In this study four composites were perceived negatively by all health professional groups. All four composites had positive responses less than 50%. These composites were hospital handovers, non-punitive response to clinical errors, staffing and teamwork between hospital units. The lowest positive perception was related to hospital handovers for all respondents. The scale items regarding hospital handovers relate to the transfer of patient care between hospital units and the communication of patient care during ward shift changes. A clinical handover is the transfer of professional accountability for some or all aspects of patient care and conducted effectively they are essential to the provision of safe patient care (ACSQHC, 2012, 2017c). Many near misses and adverse events are attributed to inadequate clinical handovers (PSSU, 2016). However, there was a large difference between nurses' perception of hospital handovers and that of medical officers and the other health professionals. This is a similar finding to other multidisciplinary studies

(Aboul-Fotouh et al., 2012; Burström et al., 2014) and to the comparative database (Famolaro et al., 2016). Although largely negative at 42.6% positive, nurses have traditionally participated in clinical handovers and this historical practice and regular exposure may have led to a more positive perception than that of their colleagues.

Respondents indicated that they worked in a punitive environment. They felt that if they made a mistake it would be recorded in their personnel file and they could be punished. The result however, is better than the comparative database where staff were even more negative about the consequences of a clinical error. This negative perception at the study site and in the comparative database has also been reported in the literature in an Egyptian acute hospital multidisciplinary study (Aboul-Fotouh et al., 2012). Although health professionals at the study site recorded negative perceptions of the punitive environment, they were more positive than the Egyptian health professionals regarding the frequency of event reporting (Aboul-Fotouh et al., 2012). The finding of negative perceptions to the punitive environment corresponding with a low perception of the frequency of event reporting has been reported (Hamdan & Saleem, 2013). It has been reported that safety education interventions can improve the punitive culture (AbuAlRub & Abu Alhijaa, 2014). In Jordan, safety education interventions focusing on senior nurses increased both their positive perception of the punitive environment and the frequency of event reporting. The interventions used are courses readily available on the Institute of Healthcare Improvement website. These online courses can be used for individual learning or group training with an educator presenting the material (Institute for Healthcare Improvement, 2015). These and other patient safety courses are also recommended interventions by the AHRQ to improve PSC (AHRQ, 2017b).

Any health professional who interacts with a patient has the responsibility to ensure patient safety (ACSQHC, 2012, 2017c). The comments from the other health professionals group, for example, m*ost of this survey appears to relate more to nursing staff,* suggests that patient safety is not perceived as being a team effort. This lack of patient safety ownership must be addressed because having engaged staff is key to successful implementation of any safety measures (Robbins et al., 2013; D. Wilson, 2013).

5.3 Patient safety culture perception at the unit and hospital level

The second research question addresses how nurses, medical officers and other health professionals perceive safety and quality measure differences between unit level and hospital performance. The scale items ask respondents to rate PSC within their unit and

within the organisation. Health professionals reported more positively of PSC within their unit than PSC at the hospital-level. Two composites, teamwork and management, are measured at the unit level and across the hospital. Direct comparisons between these composites demonstrated a large difference with health professionals markedly more positive of the unit teamwork and their immediate manager than within the organisation.

At the study site, the unit managers are perceived to be creating a culture of patient safety. This was evidenced by this composite receiving the second highest positive response rate and constructive comments about their immediate managers. This view was summarised by simple statements such as, *Rehabilitation ward managers are amazing* (Rehabilitation ward nurse). However, analysis of the quantitative results indicated that there was room for improvement in hospital management's support for patient safety. The perception that hospital management is not putting patient safety first emerged as the area of most concern from the qualitative comments. A common theme was senior management's lack of awareness of the complexity of patient care. For example, *if it's cheaper we'll do it and patient safety doesn't seem to be considered by upper management who aren't on the floor to see the ramifications* (Emergency department nurse). Within the National Standards it clearly indicates that hospital management are responsible for establishing the patient safety and quality framework (ACSQHC, 2012, 2017c). Health professionals at the study site perceive a lack of support from hospital management which is contrary to the partnership prescribed by the National Standards to promote patient safety. This partnership is crucial to effective clinical governance systems which are responsible for continuous improvement within an organisation (ACSQHC, 2012, 2017c).

Teamwork within the units received the highest positive responses, 37% higher than the perception of hospital teamwork. At the unit level it was noted that *staff on the ward coordinate the necessary care as a team to provide quality care and patient safety* (Mental health ward nurse). The health professionals reported problems at the organisational level with a perception that the hospital was functioning as separate units that did not coordinate well with each other to provide quality patient care. This was expressed as; *the hospital needs to work together not as separate units* (Intensive care unit health professional). Qualitative comments and the largely negative quantitative responses for both hospital teamwork and hospital handovers indicated a problem with collaboration and communication between the hospital units. Problems with teamwork and communication between hospital units is a causative factor for clinical errors (Smits et al., 2012). Comments provided on clinical handovers such as, *patient care needs are not*

transferred between wards, came from nursing staff, medical officers and allied health professionals. This indicates that problems with handing over patient care are experienced by all health professional groups. The introduction of the structured ISOBAR tool (Identify, Situation, Observation, Background, Agree to a plan, Readback) for clinical handovers has highlighted the importance for all health professionals to be communicating patient care needs (ACSQHC, 2012). Effective communication is vital because patients transfer between different areas within a hospital. This interdependence of patient care means hospital units need to communicate well with each other and work as one hospital team (Deming, 2017). The perception that individual units are working in isolation instead of integrated parts of the whole hospital has also been reported in the literature with hospital handovers and hospital teamwork receiving the least positive responses in multidisciplinary studies (Agnew et al., 2013; Fujita et al., 2014). In these studies, large differences in teamwork were also reported, indicating that the communication and collaboration issues are not unique to the study site. Similarly, in single discipline studies hospital handovers were perceived negatively by most nurses (Aboshaiqah & Baker, 2013; AbuAlRub & Abu Alhijaa, 2014).

In comparison to the hospital performance, where the priority of patient safety was less evident, within the units there was a more positive perception of patient safety and quality measures. Not only did most health professionals indicate higher positive responses to the unit level composites, 71% rated their ward as very good or excellent on patient safety. This higher rating of their immediate work area reinforces the finding that health professionals feel a disconnect with patient safety initiatives across the hospital. This ward patient safety rating is similar to the AHRQ comparative database result (72%). Therefore, almost 30% of health professionals don't feel that their ward or unit is performing at an acceptable level to keep their patients safe and to provide quality care. This indicates more could be done to provide a safe patient environment on the wards. Nurses rated their ward patient safety 0.5% lower than medical officers and the other health professionals group. This finding was not statistically significant. Many medical officers and other health professionals belong to a department with responsibility for patients on more than one ward. It is feasible that working between wards could reduce their knowledge of ward based patient safety initiatives. However, this was not the case in this study. The lack of difference in perception is therefore unexplained and discussion of this shared perception was not found in the patient safety literature. No significant difference was found between their years of experience and health professionals' rating on their ward patient safety grade. This is different to the findings of the AHRQ comparative database where staff with

less experience rated their ward higher for patient safety. This is consistent with the finding of a shared PSC perception at the study site with few statistically significant differences observed.

This finding of staff rating their unit's efforts at patient safety and quality much higher than the hospital's efforts, is consistent with previous studies conducted in Scotland, Japan and Denmark (Agnew et al., 2013; Fujita et al., 2014; Kristensen, Badsberg, et al., 2015). This higher rating of their immediate work area reinforces the finding that health professionals feel a disconnect with or may not be aware of hospital-wide patient safety initiatives. These positive perceptions within the units however, were not shared by all. A few respondents expressed concerns regarding unlocked maternity and paediatric wards where *anyone can enter and walk into the rooms* (Paediatric ward medical officer). Staff safety was also a concern in the mental health areas. Concerns were expressed that management were not always providing a safe work environment, especially when admitting patients with a history of aggressive behaviour.

A bureaucratic culture, which is described by Westrum (2004) as a culture where staff focus on the unit goals rather than the organisation's, appears to be the dominant culture at the study site. The results indicate the communication style and how information is shared by management needs reviewing. The low positive responses to the hospital level composites of hospital management, teamwork across the hospital units and hospital handovers, suggest that information flow could be improved at the study site. Having a strong organisational culture is important because when safety and quality is a priority for an organisation then its workers are continuously learning and improving their work (Aboumatar et al., 2017). It has been demonstrated that patient outcomes improve when an organisation has a positive PSC (AbuAlRub & Abu Alhijaa, 2014; Agnew et al., 2013).

The clinical units appear to be working independently with the managers implementing hospital safety and quality policies to different degrees. It has been reported that in order to address disconnects between hospital and unit level efforts at patient safety and quality care, executive walk-rounds have been implemented (Martin et al., 2014; Schwendimann et al., 2013). Sexton et al. (2017) reported that executive walk-rounds provide an opportunity for management to demonstrate to frontline clinicians their interest in patient safety and allow clinicians a forum to express their safety and quality concerns. Communication interventions have also been used to improve perceptions of PSC (Lee et al., 2012; Thomas & Galla, 2013). The Lee et al. (2012) study conducted in Australia involves

10.5 hours of communication and patient safety training. Although a time expensive exercise, the feedback from participants was positive and examples of improved communication were demonstrated. It has been shown that by engaging the health professionals' immediate managers to act as communication lines between the organisation's management and clinicians the hospital is more likely to affect change (Gutberg & Berta, 2017).

5.4 Patient safety culture and adverse event reporting

The final research question was to determine if there was a correlation between health professionals' PSC and their perception of the frequency of adverse event reporting. The frequency of adverse event reporting is determined by how often different severities of clinical errors are reported. Two main findings arose from analysis of the scale items in relation to the frequency of adverse event reporting: there was a moderate positive correlation between health professionals receiving feedback and communication about clinical errors; and there was a moderate positive correlation between the health professionals' combined perception of PSC. These findings indicate that health professionals with a more positive PSC are more likely to report adverse events and that receiving feedback about clinical errors and the changes implemented increases the reporting rate. The reporting of clinical errors, with or without injury caused to the patient, is expected practice in Australia (Runciman, 2002). Reporting adverse events allows a review of processes to prevent further incidences (Runciman, 2002). This was highlighted by recent failures in Australia, particularly Queensland Health, where patient safety was compromised due to organisational cultures that did not encourage the reporting of clinical errors (Casali & Day, 2010; Russell & Dawda, 2014). In one of these reported case studies, staff stopped reporting clinical errors because of the lack of action from the organisation's management (Casali & Day, 2010). It was reported that a negative relationship occurred with the lack of communication about actions to prevent further clinical errors leading to staff reducing their frequency of adverse event reporting.

The finding of a correlation between the frequency of adverse event reporting and receiving feedback about clinical errors has also been reported in previous studies (Ballangrud et al., 2012; Etchegaray & Thomas, 2012). According to Westrum (2004) the leadership style and how information is processed and communicated to their workforce determines the safety culture. Providing feedback about clinical errors closes the continuous improvement loop and allows the organisation to make improvements from the reported clinical errors. This positive relationship reinforces the need for effective

communication and suggests that by informing health professionals about clinical errors that occur and providing feedback about implemented changes, the reporting rate will increase.

A correlation between a positive PSC and the frequency of adverse event reporting was also found at the study site. Demonstrated benefits to organisations having a positive PSC have been recognised with a positive PSC influencing staff to report clinical errors (Kagan & Barnoy, 2013; Richter, Scheck McAlearney, & Pennell, 2015). The findings of this study indicate there is room for improvement in both the perception of PSC (59% positive) and the frequency of adverse event reporting (59% positive). Considering this positive relationship, measures employed to improve PSC at the hospital should have the added benefit of improving the frequency of adverse event and clinical error reporting.

At the study site, most nurses (77.8%) had reported an adverse event in the past 12 months. The low reporting by medical officers (28.6%) and the other health professionals (41.9%) is consistent with many respondents indicating that they work in a punitive environment. This low reporting rate is likely to indicate an under-reporting of adverse events. These two areas of encouraging error reporting and promoting a non-punitive culture need to be addressed. Ways to address these areas have been explored in the literature (AbuAlRub & Abu Alhijaa, 2014; Kristensen, Hammer, et al., 2015). Patient safety education and the existence of quality management activities, such as quality policies, procedures to prevent errors, quality oversight by hospital executive and providing feedback to staff, were reported to improve these two areas. Having support from management and working in a collaborative environment promoted the reporting of clinical errors in a Brazilian study (Marques da Silva de Paiva et al., 2014). Health professionals at the study site do not perceive they work in a collaborative relationship with the hospital executive, as evidenced by 44% responding negatively to hospital management support for safety. A focus on encouraging reporting, especially to the non-nursing staff is required. Removing barriers to reporting, such as focusing on systems errors rather than blaming individuals may improve this result (Marx, 2001; Vincent & Amalberti, 2016).

A higher percentage of health professionals had submitted an adverse event report in the past 12 months in comparison to respondents in the comparative database. This 20% higher reporting rate compared with the comparative database is a positive finding from this study. An error reporting system has been available in WA Health since 2001 and to make the reporting and investigation of clinical errors easier this was changed to an

electronic system in 2014 (PSSU, 2015). The study respondents, with their long tenure at the hospital, will presumably be familiar with the electronic reporting system and as mentioned in the qualitative comments, the reporting system is deemed easy to use. Being familiar with the reporting system and having one that is easy to use is likely to increase the reporting rate (Kagan & Barnoy, 2013; Zaheer et al., 2015). A possible reason for the lower reporting rate in the comparative database is the inclusion of non-clinical staff. Staff who work in non-clinical roles or do not have direct interaction with patients are less likely to report an adverse event (Famolaro et al., 2016).

Despite the higher reporting rate, the finding of negative perceptions to the frequency of reporting clinical errors of varying severity indicates action is required at the study site. Clinical errors that were corrected before affecting the patient were least likely to be reported, with 53% of health professionals indicating they would not report these. Clinical errors that could harm the patient were most likely to be reported with 72.7% indicating they would report these errors. This is a similar finding to a Saudi Arabian nurses study where clinical errors that had no potential to harm the patient were not reported (Aboshaiqah & Baker, 2013). It appears that most staff would prefer to correct their own mistakes without having to admit to an error (Kagan & Barnoy, 2013).

A focus on reporting clinical errors that could harm the patient may miss the learning opportunities that can arise from reporting and analysing near misses. Investigating these near misses provides an opportunity to discover how the mistake was recognised and the measures taken to keep the patient safe (Vincent & Amalberti, 2016). In the current study, the other health professionals group were the least positive about the frequency of error reporting (53%) and this was reflected in the small number (41.9%) who had reported an adverse event in the past 12 months. In contrast, medical officers reported the most positive perceptions of clinical error reporting (60.6%) but the percentage who had reported an adverse event was the lowest of the three groups, (28.6%). Likewise, in the comparative database, the number of medical officers who had reported an adverse event or clinical error in the past 12 months was low (34%) (Famolaro et al., 2016). Both reporting rates are low for medical officers, but this 5.4% difference represents a significant deficit in the study site's reporting culture. A possible reason is that medical officers do not see reporting as part of their role and expect others are doing the reporting (Leape et al., 2012; Vincent & Amalberti, 2016). A fear of litigation and that their colleagues will think less of them if they admit to a mistake has also been reported to negatively affect the reporting of clinical errors (Kagan & Barnoy, 2013; Zhou et al., 2015). Despite the efforts within Australia

and internationally to increase medical officers' error reporting rate, such as including patient safety and quality care modules into medical training and providing electronic reporting systems, it seems at the study site the reporting of clinical errors is still not a priority for medical officers (National Patient Safety Foundation, 2015; Walton & Elliott, 2006). More work may be needed to address this deficit in reporting.

5.5 Limitations

There were several limitations to the study. It was a single site study and therefore results may not be generalised to other settings. The HSOPSC™ uses self-reporting to determine the health professionals' perception of patient safety and quality. There is the possibility of social desirability response bias with a tendency to report more positively if respondents think their answers may be traced back to them (Polit & Beck, 2014). When collecting data on the number of adverse events reported the answers might be less accurate as the question relies on staff's memory. To overcome this bias and inaccuracy, it was emphasised in all communications that the responses were anonymous and would not be traced back to individuals. Despite providing alerts about the upcoming survey, sending two reminders and the researcher attending the hospital units in person, a response rate of only 36% was achieved. Although an acceptable rate, this is lower than the 50% rate achieved in recent Australian studies (Chaboyer et al., 2013; Gallego et al., 2012) and the comparative database (Famolaro et al., 2016). Other possible reasons for this lower than expected response rate were a pending change in the hospital's management structure, one ward relocating within the hospital at the end of the survey period and a few recent surveys in one of the units. Although the response rate was lower than expected the respondents were representative of the eligible population in this research study.

Another limitation was that the researcher was an external worker to the hospital and surveys are usually conducted through the hospital Safety and Quality Department. Although the email notices highlighted that the survey had an endorsement from the hospital executive no time was allocated to complete the survey. Allowing staff to complete the survey during work hours, as recommended by the AHRQ, would have demonstrated executive support and the return rate would most likely have been higher (Sorra, Gray, Streagle, et al., 2016).

5.6 Chapter summary

The aim of this study was to gain an understanding of PSC at the study site. This chapter compared findings with the PSC literature. Similar results to the research literature were found with the health professionals reporting a low positive perception of PSC. Medical officers reported positively on more PSC composites than nurses and the other health professionals group. Teamwork at the unit level was an area of strength. The much more positive perception of unit level PSC reflects an individuality of the clinical units not working towards the organisational goals. The finding of negative perceptions to hospital handovers, the punitive environment, staffing levels and hospital teamwork at the study site are also reported negatively in the literature.

A comparison of the results was made with the AHRQ 2016 comparative database. Over half of the PSC composites were perceived similarly at the study site to the perception reported in the comparative database. For the composites where differences were found, the study site was mostly less positive than the comparative database. The largest negative difference was found for the perception of hospital management. The largest positive difference was for health professionals' perception of teamwork within their immediate work area. The outcome variable for the number of adverse events and clinical errors reported in the past 12 months was much higher at the study site. Health professionals at the study site rated their ward similarly positive on patient safety when compared with respondents in the comparative database.

Chapter 6 will provide a conclusion to the study with the key points reiterated. Conclusions are made about each of the research questions and their contributions to the PSC literature. Recommendations for improvement to PSC will be made based on the study findings.

Chapter 6 – Conclusion and Recommendations

6.1 Overview

This chapter concludes the study by discussing the implications of the research findings and providing recommendations for the healthcare executive and healthcare managers. Recommendations are also made for future research in the study of patient safety culture (PSC). The findings provide a baseline understanding of the study site's PSC and identify areas for improvement. The study clearly identified that the perception of PSC has room for improvement. The study found a disconnect between the perception of PSC within health professionals' immediate work area in comparison to the hospital level efforts in patient safety. Teamwork within the units was identified as an area of strength. This disconnect identifies the need for visible leadership which has emerged as an essential factor for health professionals' engagement in the organisational PSC. The study found that health professionals perceived a lack of committed leadership by the hospital executive. However, they were more favourable of their immediate manager and this was significantly more so for medical officers than nursing and the other health professionals group. The perception of the hospital executive's lack of engagement in PSC is one area that will need to have urgent attention. There was also a perception of working in a punitive work environment, where clinicians were punished for reporting clinical errors, and this corresponded with a low perception of how often clinical errors were being reported. Nurses reported more adverse events than their health professional colleagues.

The Hospital Survey on Patient Safety Culture™ (HSOPSC™), with minor linguistic adjustments to suit terms used in the Australian clinical environment, was found to provide informative data on the level of PSC at the study site. The tool can therefore be considered useful in the Australian setting as evidenced by acceptable Cronbach's alpha values.

6.2 Conclusion

The aim of this study was to determine health professionals' perception of patient safety and quality in a Western Australian general hospital. This was achieved by administering the HSOPSC™ to a sample of nurses, midwives, medical officers, allied health and other health professionals. The overall outcome for this group of health professionals indicated a shared positive perception of PSC, however there was room for improvement. For the 12 PSC composites, the health professional groups responded similarly, either mostly positive or mostly negative. Although percent positive differences were noted

between the health professional groups, the perception of their manager was the only composite where the differences were found to be statistically significant. The significant difference between the health professionals' perception of their unit manager highlights the importance of generative leaders promoting a culture of safety and communicating with their staff. Generative leaders are characterised by their sharing of information and open communication that supports the organisation's safety culture (Westrum, 2004).

The finding of this study was that health professionals were more engaged in patient safety at the unit level. Teamwork within the clinical units was reported highly positive, with staff supporting each other and working together as a team. Health professionals working in a cohesive team with effective communication were better able to provide safe patient care. This positive perception however, may be influenced by social factors. Staff working together can form a strong social network which alters their perception of their provision of collaborative teamwork and quality patient care. Health professionals attend work with the aim of providing the best care possible and avoiding patient harm. Health professionals having some control over the unit decisions and their immediate surroundings may also increase the perception that they are providing safe, quality patient care. This caring attitude was reflected in the responses received and comments about patient safety always being a priority. The unit managers were usually more familiar to their staff than the hospital managers. The positive responses to their immediate manager may be a reflection of a collegial interaction influencing their perception of their manager's actions to promote patient safety.

This study found that at the hospital level staff feel they were unable to control decisions and there is less engagement in PSC. Hospital management's support for patient safety was identified as an issue. This may be because health professionals on the clinical units rely on hospital management to provide adequate staffing levels and other resources. When staffing and resources are provided at a level lower than anticipated by the unit staff, a perception of hospital management disinterested in patient safety may be portrayed. In the current study this was evidenced by the comments regarding inadequate staffing levels and the loss of some roles that provided staff education or supported patient care. Although health professionals on the individual wards were working well together problems were identified with the level of collaboration between the hospital units. When staff were required to work with staff from other hospital units, the communication and cooperation required for effective teamwork were not there. This poor teamwork between the hospital units caused problems when transferring patients between the hospital units.

Traditionally in hospitals, wards have worked in isolation rather than collaborating. There is often a lack of understanding of the workings of other clinical units. This lack of understanding, coupled with poor communication, can create tension between the hospital units when transferring patients. These differing needs can be perceived as other hospital units not caring about patient safety.

In this study a low clinical error reporting rate was found amongst medical officers and the other health professionals group, many of whom had not reported any adverse events in the previous 12 months. This finding was supported by a lack of clinical error reporting globally by medical officers (Abdi et al., 2015; Leape et al., 2012). This is in contrast with most nurses having reported at least one adverse event however, they were not highly positive of the reporting culture. Nurses provide 24-hour care and are the largest population of health professionals within each of the study hospital's units. Nurses having more contact with patients provides a greater opportunity to see clinical errors made by their colleagues or made by themselves. This may partly account for the higher reporting rate.

Another consideration is the ease of reporting. Having an electronic reporting system and promotion of clinical error reporting by nurse leaders makes it an expected part of care. As was found in this study, health professionals who received feedback about clinical errors and had a positive PSC were more positive to the reporting of clinical errors. Having managerial support for reporting has been shown to affect the reporting rate in other studies, although this study's findings did not conclude this relationship. One reason for medical officers and the other health professionals group not reporting clinical errors is that they may not see reporting as their responsibility. Another consideration is the fear of being punished or, especially for medical officers, the fear of litigation (Leape et al., 2009). In this study many of the health professionals responded that they felt they would be punished for making a mistake. Changes to this punitive culture may encourage the reporting of clinical errors by all health professionals. The next step from reporting is the hospital having staff who are prepared to do something about clinical errors. Improvements can only happen when staff are engaged and safety can be considered a priority when everyone looks for solutions.

The results of this study were compared with the Agency for Healthcare Research and Quality (AHRQ) 2016 comparative database and similarities and differences were found. In comparison to respondents in the comparative database, there was a perception

at the study site that clinical errors were not reported. However, more staff had reported an adverse event at the study site within the past 12 months, mostly nurses. Staff indicated that the hospital management is not providing sufficient feedback and communication about clinical errors. This inadequate feedback about clinical errors and any implemented changes to address the errors may give health professionals the impression that the organisation does not have a reporting culture. Many medical officers at the study site and in the comparative database had not reported an adverse event. A negative finding was the health professionals' less positive perception of hospital management than the comparative database respondents. This difference was large with health professionals reporting almost 13% less positively on hospital management than reported in the comparative database. The leadership at the study site were not sharing their vision for patient safety and quality care with the clinical staff. A possible explanation for the much poorer perception is that the hospital was going through governance changes at the time of the survey. Decisions were being made at the executive level that were either not being well communicated or were not being well received by the clinical staff. This opinion was formed by the researcher because comments were provided in the free text section regarding changes to staff roles and ward movements as negatively affecting patient or staff safety.

This assessment of the study hospital's PSC will allow the hospital executives, managers and clinicians to focus on cultural issues that lead to a reduction in patient harm and to quality improvements. This focus will lead to improved effectiveness by achieving quality patient outcomes, but may also improve efficiency by staff undertaking productive clinical work. This focus on cultural issues is an important pillar of clinical governance. Clinical governance, the implementation of safety measures, participation in accreditation and the reporting of clinical incidences have a common factor; they require staff engagement for success. Having staff with a positive PSC, is therefore, the key to making change within an organisation because positive staff were more likely to engage in safe practices, such as reporting errors when they occur (D. Wilson, 2013).

Administering a PSC survey is itself an intervention because it raises awareness about patient safety issues (Rea & Parker, 2014). The study hospital has therefore made the first step to improve patient safety and quality care within their own organisation.

6.3 Recommendations

The following recommendations are made based on the findings from this study. The AHRQ recommends that hospitals focus on no more than two areas for improvement at one time (Sorra, Gray, Franklin, et al., 2016). The recommendations are divided into recommendations for hospital executive, managers and future research. These initiatives may help to improve PSC at the study hospital.

6.3.1 Recommendations for hospital executive

It is recommended that greater engagement in safety and quality initiatives by the hospital executive occur and they become more visible to the clinical workforce at the study hospital. Changing the negative perception of hospital management is a priority because the leadership set the safety and quality agenda. For clinicians to adopt safety behaviours a positive PSC needs to be promoted at every level of the organisation. Executive walk-rounds, that promote communication between executive and clinical staff, are one intervention that has reported success in studies globally (Martin et al., 2014; Schwendimann et al., 2013). This intervention would be worth considering by hospital executive.

It is recommended that the low reporting by the other health professionals group and medical officers be addressed. This recommendation is supported by the literature review which identified that health professionals with a positive PSC are more likely to report adverse events (Marques da Silva de Paiva et al., 2014). The finding from this study of a positive correlation between feedback about clinical errors and the frequency of adverse event reporting may give the hospital an area to focus upon. By improving communication about clinical errors that have occurred and actions implemented, the reporting of adverse events is likely to increase. Hospital executive could use the various communication channels available to promote quality and safety, such as hospital newsletters, ward safety champions or ward quality improvement boards. This will allow the hospital management team and clinicians to learn from the reported clinical errors and implement improvement strategies. The primary purpose of learning from clinical errors and adverse events is for the patients who are likely to benefit from improved outcomes.

Improvement interventions affect healthcare workers so that they choose behaviours that enhance patient safety (Fleming, 2005). No matter which PSC intervention is chosen by the hospital, the choice must be healthcare context directed so that changes are acceptable to the health professionals and beneficial to the patient (Jabbal, 2017;

Vincent & Amalberti, 2016). Following the improvement intervention, it is recommended that a repeat survey is conducted, allowing time for the change to have an impact. The repeat survey will allow comparisons to be made and evaluation of the effectiveness of the improvement intervention.

6.3.2 Recommendations for managers

It is recommended that the hospital invests in leadership development programs that include PSC, safety and quality, and leadership management. Investing in leadership development roles will develop the leaders so that they can devise more effective teams. Engaging the middle managers in promoting safety and reporting at the unit level will provide more effective communication to all staff (Gutberg & Berta, 2017). The positive perception health professionals at the hospital have of their manager could then be utilised to share the organisational goals.

6.3.3 Recommendations for future research

It is recommended that the Australian Commission on Safety and Quality in Health Care invest in the development of an Australian specific PSC survey tool. As discovered in the literature review, many tools are available to measure PSC. In the three Australian studies discussed in the literature review, two different tools were used and these were different to the tool chosen for this study. Having a standardised tool for use in the Australian healthcare setting would allow comparisons to be made for benchmarking of similar settings.

It is recommended that with the development of a standardised tool, an Australian database be developed so that benchmarking within the Australian healthcare context can occur. The introduction of an Australian benchmarking database, like the AHRQ comparative database, would facilitate these comparisons.

It is further recommended that this research be repeated using a larger sample across several healthcare sites to allow validation of the HSOPSC™ in the Australian context.

6.4 Research summary

Globally, PSC impacts on quality and safety in health care. This research has described PSC in a Western Australian general hospital. To gain this understanding the HSOPSC™ was used and was found to be a valid and reliable tool in the Australian setting. The findings will be used to focus interventions at the study site. Although this small-scale

study had similar findings to many international studies, more research is urgently required in Australia.

On a personal reflection, this study has broadened my knowledge of the components of PSC and the factors affecting it. A literature review conducted during the research has been published in the peer reviewed Australian Health Review journal. The results of this current study will be submitted to the same journal to highlight PSC in the Australian setting. It is anticipated this will contribute to a better understanding of PSC in the Australian healthcare context and lead to more Australian research.

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Appendices

Appendix A. Research questions addressed within the thesis

	Chapters					
Research questions	1	2	3	4	5	6
What are health professionals' views on safety and quality and are there differences between nurses, medical officers and other health professionals at the study site?		X		X	X	X
Do health professionals perceive differences between unit level and hospital performance on safety and quality measures?		X		X	X	X
Is there a correlation between health professionals' patient safety culture and perception of the frequency of adverse event reporting?		X		X	X	X

Hospital Survey on Patient Safety

Instructions

This survey asks for your opinions about patient safety issues, medical error, and event reporting in your hospital and will take about 10 to 15 minutes to complete.

If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

Please RETURN COMPLETED FORMS to the DROP BOX on your ward.

- An *"event"* is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.
- *"Patient safety"* is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.

SECTION A: Your Work Area

In this survey, think of your ward as the area of ▮▮▮▮ Hospital where you spend *most* of your work time or provide *most* of your clinical services.

What is your primary ward in ▮▮▮▮ Hospital? Select ONE answer.

☐ a. Intensive care unit

Or one service:

☐ b. Emergency Dept   ☐ h. Acute Medical Unit   ☐ n. Mental Health

☐ c. Surgical   ☐ i. Maternity (inpatient only)   ☐ o. Surgical

☐ d. Same Day Unit   ☐ j. Paediatrics   ☐ p. Medical

☐ e. Medical - ▮▮▮   ☐ k. ▮▮▮

☐ f. Medical - ▮▮▮   ☐ l. ▮▮▮

☐ g. Rehabilitation   ☐ m. ▮▮▮

Please indicate your agreement or disagreement with the following statements about your work area.

Think about your hospital ward...	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. People support one another in this ward	☐1	☐2	☐3	☐4	☐5
2. We have enough staff to handle the workload	☐1	☐2	☐3	☐4	☐5
3. When a lot of work needs to be done quickly, we work together as a team to get the work done	☐1	☐2	☐3	☐4	☐5
4. In this ward, people treat each other with respect	☐1	☐2	☐3	☐4	☐5

Think about your hospital ward…	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
5. Staff in this ward work longer hours than is best for patient care..........	☐1	☐2	☐3	☐4	☐5
6. We are actively doing things to improve patient safety	☐1	☐2	☐3	☐4	☐5
7. We use more agency/temporary staff than is best for patient care.........	☐1	☐2	☐3	☐4	☐5
8. Staff feel like their mistakes are held against them................................	☐1	☐2	☐3	☐4	☐5
9. Mistakes have led to positive changes here..	☐1	☐2	☐3	☐4	☐5
10. It is just by chance that more serious mistakes don't happen around here	☐1	☐2	☐3	☐4	☐5
11. When one area in this ward gets really busy, others help out...............	☐1	☐2	☐3	☐4	☐5
12. When an event is reported, it feels like the person is being written up, not the problem	☐1	☐2	☐3	☐4	☐5
13. After we make changes to improve patient safety, we evaluate their effectiveness	☐1	☐2	☐3	☐4	☐5
14. We work in "crisis mode" trying to do too much, too quickly	☐1	☐2	☐3	☐4	☐5
15. Patient safety is never sacrificed to get more work done......................	☐1	☐2	☐3	☐4	☐5
16. Staff worry that mistakes they make are kept in their personnel file	☐1	☐2	☐3	☐4	☐5
17. We have patient safety problems in this ward..	☐1	☐2	☐3	☐4	☐5
18. Our procedures and systems are good at preventing errors from happening...	☐1	☐2	☐3	☐4	☐5

SECTION B: Your Supervisor/Manager

Please indicate your agreement or disagreement with the following statements about your immediate supervisor/manager or person to whom you directly report.

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. My supervisor/manager says a good word when they see a job done according to established patient safety procedures	☐1	☐2	☐3	☐4	☐5
2. My supervisor/manager seriously considers staff suggestions for improving patient safety	☐1	☐2	☐3	☐4	☐5
3. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts	☐1	☐2	☐3	☐4	☐5
4. My supervisor/manager overlooks patient safety problems that happen over and over	☐1	☐2	☐3	☐4	☐5

SECTION C: Communications

How often do the following things happen in your ward?

Think about your hospital ward...	Never	Rarely	Some-times	Most of the time	Always
1. We are given feedback about changes put into place based on event reports	□₁	□₂	□₃	□₄	□₅
2. Staff will freely speak up if they see something that may negatively affect patient care	□₁	□₂	□₃	□₄	□₅
3. We are informed about errors that happen in this ward	□₁	□₂	□₃	□₄	□₅
4. Staff feel free to question the decisions or actions of those with more authority	□₁	□₂	□₃	□₄	□₅
5. In this ward, we discuss ways to prevent errors from happening again	□₁	□₂	□₃	□₄	□₅
6. Staff are afraid to ask questions when something does not seem right	□₁	□₂	□₃	□₄	□₅

SECTION D: Frequency of Events Reported

In your hospital ward, when the following mistakes happen, *how often are they reported?*

	Never	Rarely	Some-times	Most of the time	Always
1. When a mistake is made, but is *caught and corrected before affecting the patient*, how often is this reported?	□₁	□₂	□₃	□₄	□₅
2. When a mistake is made, but has *no potential to harm the patient*, how often is this reported?	□₁	□₂	□₃	□₄	□₅
3. When a mistake is made that *could harm the patient*, but does not, how often is this reported?	□₁	□₂	□₃	□₄	□₅

SECTION E: Patient Safety Grade

Please give your ward an overall grade on patient safety.

□	□	□	□	□
A	B	C	D	E
Excellent	Very Good	Acceptable	Poor	Failing

SECTION F: Your Hospital

Please indicate your agreement or disagreement with the following statements about ▮▮▮▮ Hospital.

Think about ▮▮▮▮ Hospital...	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. Hospital management provides a work climate that promotes patient safety	□₁	□₂	□₃	□₄	□₅
2. ▮▮▮▮ Hospital units do not coordinate well with each other	□₁	□₂	□₃	□₄	□₅
3. Things "fall between the cracks" when transferring patients from one unit to another	□₁	□₂	□₃	□₄	□₅

Think about ▮▮▮ Hospital...	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
4. There is good cooperation among hospital units that need to work together	☐₁	☐₂	☐₃	☐₄	☐₅
5. Important patient care information is often lost during shift changes	☐₁	☐₂	☐₃	☐₄	☐₅
6. It is often unpleasant to work with staff from other hospital units	☐₁	☐₂	☐₃	☐₄	☐₅
7. Problems often occur in the exchange of information across ▮▮▮ Hospital units	☐₁	☐₂	☐₃	☐₄	☐₅
8. The actions of hospital management show that patient safety is a top priority	☐₁	☐₂	☐₃	☐₄	☐₅
9. Hospital management seems interested in patient safety only after an adverse event happens................................	☐₁	☐₂	☐₃	☐₄	☐₅
10. Hospital units work well together to provide the best care for patients..	☐₁	☐₂	☐₃	☐₄	☐₅
11. Shift changes are problematic for patients in this hospital.................	☐₁	☐₂	☐₃	☐₄	☐₅

SECTION G: Number of Events Reported

In the past 12 months, how many event reports have you filled out and submitted?

☐ a. No event reports   ☐ d. 6 to 10 event reports

☐ b. 1 to 2 event reports   ☐ e. 11 to 20 event reports

☐ c. 3 to 5 event reports   ☐ f. 21 event reports or more

SECTION H: Background Information

This information will help in the analysis of the survey results.

1. How long have you worked in ▮▮▮ Hospital?

☐ a. Less than 1 year   ☐ d. 11 to 15 years

☐ b. 1 to 5 years   ☐ e. 16 to 20 years

☐ c. 6 to 10 years   ☐ f. 21 years or more

2. How long have you worked in your current hospital ward?

☐ a. Less than 1 year   ☐ d. 11 to 15 years

☐ b. 1 to 5 years   ☐ e. 16 to 20 years

☐ c. 6 to 10 years   ☐ f. 21 years or more

3. Typically, how many hours per fortnight do you work in this hospital?

☐ a. Less than 20 hours per fortnight   ☐ d. 60 to 80 hours per fortnight

☐ b. 20 to 40 hours per fortnight   ☐ e. 81 to 99 hours per fortnight

☐ c. 41 to 59 hours per fortnight   ☐ f. 100 hours per fortnight or more

SECTION H: Background Information (continued)

4. What is your staff position in this hospital? Select ONE answer that best describes your position.

☐ a. Registered/Clinical Nurse

☐ b. Senior Registered Nurse L3 or higher

☐ c. Nurse Practitioner

☐ d. Enrolled Nurse

☐ e. Assistant in Nursing

☐ f. Consultant Medical Officer

☐ g. Registrar Medical Officer

☐ h. Intern/Resident Medical Officer

☐ i. Psychologist

☐ j. Dietitian

☐ k. Pharmacist

☐ l. Physiotherapist

☐ m. Occupational therapist

☐ n. Speech therapist

☐ o. Social Worker

☐ p. Therapy Assistant

☐ q. Other, please specify

5. In your staff position, do you typically have direct interaction or contact with patients?

☐ a. YES, I typically have direct interaction or contact with patients.

☐ b. NO, I typically do NOT have direct interaction or contact with patients.

6. How long have you worked in your current specialty or profession?

☐ a. Less than 1 year

☐ b. 1 to 5 years

☐ c. 6 to 10 years

☐ d. 11 to 15 years

☐ e. 16 to 20 years

☐ f. 21 years or more

SECTION I: Your Comments

Please feel free to write any comments about patient safety, error, or event reporting in your hospital.

THANK YOU FOR COMPLETING THIS SURVEY.

107

Appendix C. Journal article

Health professionals' perception of patient safety culture in acute hospitals: an integrative review

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Abstract

Objective. Globally, the degree of patient harm occurring in healthcare was first publicised in the 1990s. Although many factors affect patient safety, in the US the Institute of Medicine identified hospital organisational culture as one factor contributing to a reduction in errors. This led to the development of many tools for measuring the safety culture of hospital staff. The aim of the present study was to review the literature on patient safety culture in acute hospitals to identify: (1) how patient safety is viewed by health professionals; (2) whether patient safety culture is perceived differently at the hospital versus ward level; and (3) whether clinicians and managers place the same importance on patient safety.

Methods. Following a search of electronic databases using OneSearch and a manual search of grey literature, an integrative review method identified 11 articles as being suitable to meet the review's aims. The search terms of patient safety culture, patient safety and safety climate were used. To ensure relevancy to current practice, the search was restricted to the period 2010–15.

Results. Hospital patient safety culture is not a shared vision, because health professional groups have different views. In the present study, 67% of articles examined found doctors to have a poorer perception of the patient safety culture than nurses and allied health professionals. All health professional groups reported a more positive view of their ward safety culture than that of the hospital safety culture. Furthermore, managers of the health professionals reported more positively on patient safety culture than bedside clinicians.

Conclusion. This review provides an international understanding of health professionals' views of patient safety. From an Australian context, the review highlights the need for further investigation, because there is a lack of recent Australian literature in the acute hospital setting relating to patient safety culture.

What is known about the topic? Globally, many research papers have reported upon the correlation between a positive patient safety culture and a reduction in healthcare errors.

What does this paper add? The present integrative review highlights that regardless of the country of origin, there are differences in the way that a hospital patient safety culture is perceived among different health professional groups, particularly between managers and bedside clinicians.

What are the implications for practitioners? Individual health professional groups, and managers and clinicians, have different views on the patient safety culture; therefore, training needs to involve everyone to create a shared vision for patient safety.

Introduction

The present integrative review, which is part of a research project, describes the attitudes of various health professional groups towards patient safety culture (PSC) in Australia and another 16 countries. The reported attitudes from these countries may be used to raise awareness and improve PSC within the Australian healthcare sector.

A PSC has been described as the shared attitudes, beliefs, values and perceptions of safety issues within an organisation.[1] PSC includes a safety climate, which is the perceived value placed on safety by the organisation.[2] The two related terms of culture and climate are used interchangeably in the literature, but the focus of the present review is safety culture. Although organisations may have different views, a positive PSC should mean that whenever people enter healthcare, they are protected from harm. This protection is sometimes lacking because there are numerous incidences of patients experiencing harm within healthcare services.[3]

PSC was first reviewed in response to reports into healthcare safety, including the Harvard Medical Practice Study[4] from the

US, the Quality in Australian Health Care Study[5] and the seminal report from the US To Err is Human.[6] These reports highlighted the degree of patient harm from healthcare and made recommendations to improve patient safety in hospitals. The Institute of Medicine in the US identified PSC as a factor to reduce errors. Assessing the existing PSC is the first step in identifying areas for improvement; thus, many evidence-based surveys have been developed to measure the dimensions that comprise a PSC, including the Patient Safety Climate in Healthcare Organizations (PSCHO),[7] the Safety Attitudes Questionnaire (SAQ),[8] the Modified Stanford Instrument[9] and surveys developed by the Agency for Healthcare Research and Quality (AHRQ).[1] Examples of the PSC dimensions that have been measured are teamwork, communication, management support for safety, and error reporting.[1,7–9]

The hospital PSC can be described as the organisation's pattern of response to problems and opportunities that arise.[10] There is evidence that these organisational responses and their expectations regarding safety contribute to safe work practices.[10] The ward PSC, which is a subculture of the hospital's PSC, is influenced by the manager's expectations and safety priorities.[10] Managers promoting the hospital's clinical governance strategies is essential for patient safety so that the ward subcultures hold the same core values as the organisation in which they function.[11]

The aims of the present study were to address the following questions: (1) what are health professionals' perceptions regarding patient safety and do these views differ among different health professionals; (2) is the perception of PSC different at the hospital versus ward level; and (3) do clinicians and managers place the same importance on PSC?

Methods

An integrative review was undertaken because this method draws together findings from different research designs, such as qualitative and quantitative studies, as well as clinical experts.[12,13] An advantage of this type of review is the inclusion of opposing findings to provide a more rounded response to a clinical question.[14] Soares et al.[12] highlighted that conducting an integrative review requires rigour when analysing and synthesising the data gathered. Bias may occur during the analysis and synthesis phases of the review due to the reviewer choosing articles they prefer and encountering difficulties when bringing together the different methodologies. This potential for bias is a disadvantage of the integrative review, but was overcome in the present review by applying well-defined inclusion and exclusion criteria to the selection process.[14]

The integrative review was restricted to papers published between 2010 and 2015 to ensure relevancy to current practice. To be eligible for inclusion in the review, studies had to have been conducted in an acute hospital setting and written in English. Studies within a community or primary care setting, focused solely on paediatric populations or performed in out-patient care settings were excluded.

Search strategy

An electronic database search was conducted using OneSearch, a search tool of library holdings without the need to search individual databases. The key search terms used were 'patient safety culture', 'patient safety' and 'safety climate', with a date range of 2010–15. The initial search identified 1657 references with a further 12 identified through manual searches of the grey literature (Fig. 1). The search was further refined to hospital settings and the resulting abstracts and titles read. Each was coded onto a spreadsheet to record the type of article, country, setting, population and findings as described by Crawford and Rondinelli.[14] After completing the filtering process, 11 studies met the inclusion criteria and were included in the integrated review.[15–20,22–26] Saturation was reached at this point, with further articles being repetitive of those already gathered. The reporting used quantitative methodology (Table 1).

The studies included in the review had rigorous methodologies, were from 17 different countries and used a cross-section of the available tools to measure PSC.

Data analysis

Quantitative studies were analysed, according to the review questions, to provide a rounded view of the current state of PSC research internationally.

Results

PSC perception among different health professionals

Perceptions of PSC by health professionals were compared in six studies.[15–20] Although three different tools were used in the six studies, similar PSC dimensions were measured, allowing comparisons to be made.

Campbell et al.[15] investigated the extent of variation in PSC across units within a US hospital, finding that nurses were more positive than doctors on the following dimensions: organisational learning; the frequency of event reporting; handovers and patient transitions; staffing; and non-punitive response to errors. For the other safety dimensions of the Campbell et al. study, namely supervisor support for safety, hospital management support for safety, teamwork within units, teamwork across hospital units, communication openness, communication about error and the overall perception of safety, nurses' and doctors' perceptions were comparable.

In a Lebanese study of healthcare workers' perceptions of patient safety, El-Jardali et al.[16] investigated differences in PSC between doctors, nurses, pharmacists and a mixed group that included dietitians, laboratory staff, radiology staff and hospital managers. El-Jardali et al.[16] reported that the mixed group had the most positive overall perception of patient safety and more frequently reported adverse events. The pharmacists perceived PSC more positively than did nurses, with doctors having the least positive perception of PSC. Doctors also reported adverse events less frequently.

A Chinese study found that, overall, nurses reported a more positive PSC than doctors.[17] In that study, the dimension in relation to fear of blame was the only aspect that doctors reported more positively than nurses.

In the US, Blegen et al.[18] focused on ward-based multidisciplinary teamwork and communication, finding that nurses perceived a more positive PSC than pharmacists and doctors. That study used a before–after intervention design involving training sessions on PSC. The sessions included identification of local
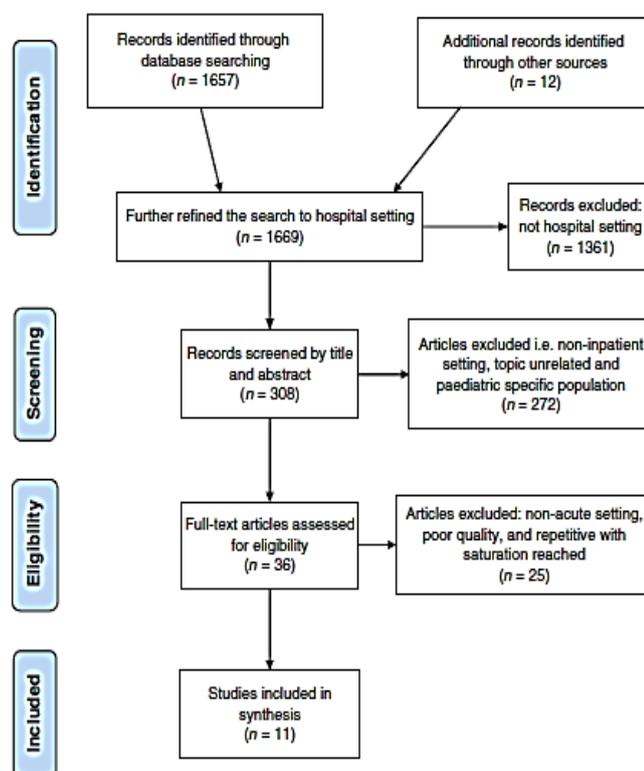
Fig. 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart for the screening and selection of studies.

safety issues, teamwork and communication presentations, and ward champions to reinforce the learning. Nurses reported more positively on teamwork and communication around reported errors after the intervention than either pharmacists or doctors.

In contrast to the above, two studies reported a more positive perception of PSC by doctors than nurses. The first of these studies was a large European study on teamwork and safety climate.[19] In that study, doctors had a significantly more positive perception of teamwork within their ward than nurses, whereas both groups had similarly positive perceptions of the safety climate. Nurses and doctors rated the teamwork within their ward more positively than safety.

The second study in which doctors reported more positively on PSC was an Australian study involving nurses and doctors from 10 intensive care units (ICUs).[20] Both nurses and doctors recorded most positive perceptions for teamwork within their unit and were least positive on hospital management responses to safety.[20] In that study, doctors had a significantly more positive attitude towards teamwork, job satisfaction, working conditions and safety climate than nurses.

Although all the aforementioned studies were conducted in acute hospitals, the settings varied from ICUs to acute medical units to the whole hospital. Comparisons among the different health professional groups of nurses and doctors were investigated, but two studies also included pharmacists, with pharmacists reporting a more positive perception of the PSC than

doctors in both studies.[16,18] In four of the six studies, nurses reported more positive perceptions of PSC than doctors.[15–18] Three of the studies that reported nurses having a more positive perception of PSC used the AHRQ hospital survey tool;[15,16,18] and one study used the PSCHO tool.[17] The two studies that reported doctors had a more positive perception than nurses used modified versions of the SAQ.[19,20]

Perception of patient safety culture at the hospital and ward levels

The culture of a hospital affects how services are delivered, which is likely to affect the safety and quality of care.[21] Within the hospital, there are often subcultures that define a department or geographical area (e.g. a surgical speciality or surgical ward).[11,21] Five studies were identified that compared the subculture within hospital-level PSC, with each reporting differences between the ward perception of PSC and the wider hospital level.[15,22–25]

Kagan and Barnoy[22] studied organisational culture and error reporting in Israel by reviewing whether the ward subculture was the same as the hospital culture for registered nurses (RNs). The RNs reported significantly more positive perceptions of their ward PSC than they did of the hospital-level PSC.

Similarly, in Norway, Ballangrud et al.[23] conducted a study of RNs in 10 ICUs to investigate the perception of PSC and to identify potential predictors for overall perception of safety and

Table 1.   Summary of the 11 studies included in the present review

PSC, patient safety culture; MDT, multidisciplinary teamwork; AHRQ, Agency for Healthcare Research and Quality; SAQ, Safety Attitudes Questionnaire; Stanford/PSCI, Patient Safety Center of Inquiry; PSCHCO, Patient Safety Climate in Healthcare Organizations; ICUs, intensive care units; RNs, registered nurses; QMS, quality management system

Reference	Country of origin	Purpose of study	Study design, data collection method and tool	Setting and sample	Findings
Campbell et al.[15]	US	To assess the variation in PSC across units within an academic medical centre	Quantitative study; paper-based questionnaire (AHRQ)	Acute hospital, 2163 nurses (80%) and doctors (20%)	Variations found between wards and health professions on safety perception. Operating and emergency units had the lowest overall positive ratings. Ward PSC was rated more positively than hospital PSC. Implications for clinical practice are that when addressing hospital safety problems, a focus on individual units may provide more benefit than a whole-of-hospital approach.
El-Jardali et al.[16]	Lebanon	To explore the association between PSC predictors and outcomes in relation to respondent and hospital characteristics	Quantitative study; paper-based questionnaire (AHRQ)	Private acute hospitals, 6807 healthcare workers, clinical and non-clinical	Event reporting, communication, patient safety leadership and management, staffing and accreditation were identified as major PSC predictors. Significant correlations were observed among the respondents, with nurses reporting more events and having a higher overall perception of safety than doctors. Hospital characteristics were a predictor of the patient safety grade and frequency of events reported, with smaller hospitals reporting more events and having a better overall perception of safety. Implications for clinical practice are the need to provide feedback and have open communication about errors so that adverse event reporting is encouraged.
Blegen et al.[18]	US	To improve unit-based safety culture through the implementation of an MDT and communication intervention	Quantitative study; before-after intervention, paper-based questionnaire (AHRQ)	Medical wards in three hospitals; doctors, nurses and pharmacists (454 staff before and 368 after the intervention)	Improvements were noted on five of 11 patient safety dimensions 1 year after the intervention. A marked improvement in communication openness was reported 1 year later, and an improvement in the overall perception of safety. With highly positive scores for teamwork at the 'before' stage, smaller improvements were noted on this dimension. Nurses reported more positively than both doctors and pharmacists. Implications for clinical practice are that a teamwork and communication intervention can improve staff perception of patient safety.
Chaboyer et al.[20]	Australia	To test the hypotheses that PSC differed between nurses and doctors, as well as between nurse leaders and bedside nurses	Quantitative study; paper-based questionnaire (SAQ)	ICUs, 672 nurses (76.3%) and doctors (13.2%), with 10.4% not identifying their profession	Doctors were more positive than nurses on four of the six PSC measures (job satisfaction, teamwork, safety climate and working conditions). Bedside nurses were more positive than nurse leaders on all six PSC measures with two (working conditions and perception of hospital management) rated significantly lower by nurse leaders. Implications for clinical practice are the need to measure a baseline PSC so that targeted strategies can be implemented to address specific dimensions.
Kagan and Barnoy[22]	Israel	To investigate the association between PSC and the incidence and rate of medical errors by Israeli nurses	Quantitative study; paper-based questionnaire (Stanford/PSCI)	Hospitals (90%) and healthcare services, 247 RNs	PSC was positively and significantly related to the medical error reporting rate. Most nurses encountered medical errors from a daily to a weekly basis, yet half reported their own errors rarely or sometimes. Implications for clinical practice are that a positive PSC can encourage error reporting by staff.

Study	Country	Aim	Method	Sample	Findings
Agnew et al.[25]	Scotland	To test whether PSC was associated with worker safety behaviours, and worker and patient injuries	Quantitative study; paper-based questionnaire. (Scottish Hospital Safety Questionnaire)	Acute hospitals, 1866 healthcare professionals (nurses (53%), allied health (22%), nursing or healthcare assistants (13%), medical and dental consultants (12%))	PSC was significantly associated with worker safety behaviours. A weaker, but still significant association was shown between PSC and worker and patient injuries. The strongest predictor of safety compliance was staffing levels. Implications for practice are that fostering a positive patient safety culture can support worker safety.
Ballangrud et al.[23]	Norway	To investigate PSC and potential predictors of the overall perception of patient safety grade and error reporting	Quantitative study; paper-based questionnaire (AHRQ)	ICUs: coronary care, general and mixed; 220 RNs	Nurses were more positive on PSC at the unit level than the hospital level. The type of unit was a predictor of the overall perception of patient safety, with the general ICUs reporting most positively and mixed ICUs reporting fewer errors. Implications for clinical practice are that improvements are required in incident reporting, feedback and communication about errors, as well as organisational learning.
Fujita et al.[24]	Japan	To investigate PSC at the unit level	Quantitative study; paper-based questionnaire (AHRQ)	12 acute, three mixed-care and three long-term care hospitals, 8700 healthcare workers (nurses (46.4%), administration workers (14.4%), doctors (9.2%) and other roles such as allied health and technicians (30%))	Finding of variations in the PSC depending on the type of unit. The combined unit types of obstetrics, gynaecology, perinatal ward or neonatal ICU were significantly more likely to be classified as high PSC units. The dimension of teamwork within hospital units was the biggest influence as to whether a unit was classified as a high or low PSC unit. Implications for clinical practice are that assessing unit PSC can reveal areas for improvement. Improvement measures can be tailored to the individual units because not all units within a hospital share the same PSC.
Kristensen et al.[19]	Seven European countries	To compare differences in teamwork and safety climate between clinical leaders and bedside clinicians, and to investigate the associations of QMSs with teamwork and safety climate	Quantitative study; electronic questionnaires and surveys on the hospital QMS (SAQ modified)	Acute hospitals, nurses and doctors, 3622 clinical leaders and 4903 bedside clinicians	More clinical leaders had a positive perception of teamwork and safety climate than bedside clinicians. There was a positive association between implementing a QMS and teamwork and safety climate. The implications for clinical practice are that initiatives to improve teamwork and safety climate should be tailored differently to clinical leaders than bedside clinicians, and having a QMS can support teamwork and safety climate.
Turunen et al.[26]	Finland	To explore and compare nurse managers' and registered nurses' perceptions of PSC	Quantitative study; electronic questionnaires (AHRQ)	Acute hospitals, 109 nurse managers and 723 RNs	Nurse managers had a more positive overall perception of safety than RNs. Nurse managers reported more positively on communication about errors and thought adverse events were reported more frequently than did RNs. Nurse managers were more positive about management support for patient safety than RNs, and a majority of nurse managers agreed that hospital management showed that patient safety is a top priority. Implications for clinical practice are the need to close the gap in PSC between nurse managers and RNs by sharing training and accountability for patient safety.

Table 1. (*Continued*)

Reference	Country of origin	Purpose of study	Study design, data collection method and tool	Setting and sample	Findings
Zhou et al.[17]	China	To explore the perceptions of PSC and differences between healthcare workers in China and the US	Quantitative study; paper-based questionnaire (PSCHCO)	Acute hospitals, 1272 healthcare workers (47 managers, 505 doctors, 534 nurses and 186 medical technicians and non-managerial workers)	Hospital managers had a more positive overall perception of safety than other healthcare workers. Mostly positive perceptions of PSC among Chinese workers were similar to those of US workers. However, for Chinese workers, fear of shame and fear of blame were the most reported; 42% of staff in China thought asking for help was a sign of incompetence and telling others about a mistake was embarrassing. Implications for clinical practice are that barriers to reporting and to providing a safe patient environment need to be identified so they can be addressed.

frequency of event reporting. The RNs reported a positive PSC for their wards, but less positively on the wider hospital PSC. The most negative responses found by Ballangrud et al.[23] were in relation to the hospital management's support for patient safety.

In a single site US study, Campbell et al.[15] compared the perception of PSC by nurses and doctors at the hospital and ward levels, finding that perceptions of PSC varied across the dimensions, but the least positive perceptions were for the hospital-level dimensions of teamwork across units, hospital handovers and feedback and communication about errors. Across wards, there were considerable variations in the perception of PSC, with the emergency department and operating theatre recording the least positive responses.

In a multiple-site study in Japan, Fujita et al.[24] examined PSC at the ward level for all healthcare staff, finding variations in attitudes towards PSC depending on the type of ward. The most positive PSC was reported by staff working in obstetrics, gynaecology, perinatal care or the neonatal ICU. Fujita et al.[24] found the least positive perception of PSC was reported by staff working in rehabilitation and long-term care. The dimension of teamwork was the strongest predictor of whether a ward reported a positive PSC. As reported in other studies, staff perception of ward PSC was more positive than for hospital PSC, although wards with a more positive PSC had a more positive perception of the hospital PSC.[24]

In Scotland, Agnew et al.[25] also reported that healthcare staff were more positive of ward PSC than hospital PSC. Agnew et al.[25] also found the hospital-level dimensions of teamwork across wards, hospital handovers and hospital management support for safety received the least positive responses. The most positive response was for teamwork within the wards.

The five studies above indicate a highly positive perception of the PSC at the local ward level than that perceived of the wider hospital culture.

Clinicians' and managers' perceptions of PSC

Many studies have reported that managers have a more positive perception of patient safety dimensions than other hospital workers.[17,19,26] Four studies compared clinicians' perceptions of PSC with those of managers.[17,19,20,26]

In Finland, Turunen et al.[26] compared differences in the way bedside nurses and their managers viewed the PSC, finding a significant difference because nurse managers reported more positively on all dimensions of patient safety. The largest difference was in the nurse managers' perceptions of hospital management support for patient safety.

In China, Zhou et al.[17] surveyed nurses, doctors and managers about PSC. The management group reported more positively than did bedside clinicians. The entire management group held non-clinical roles, which may have accounted for the difference in perception of PSC. Reasons for their more positive views could be that hospital managers in China are the main drivers of patient safety interventions and do not interact directly with patients.[17]

In a European multiple-site study, Kristensen et al.[19] found that nurse managers and medical managers reported more positively on both teamwork and PSC than did bedside clinicians.

113

Kristensen *et al.*[19] also found that hospitals having a quality management system in place was positively correlated with a more positive PSC. Quality management systems included quality improvement policies, hospital policies, auditing of care, evaluating results and training of professionals.

In contrast, in the Australian study of 10 ICUs, nurse leaders rated significantly lower on working conditions and perception of hospital management than did bedside nurses.[20] There were no significant differences between nurse leaders' and bedside nurses' perceptions of another four patient safety dimensions, namely job satisfaction, teamwork, safety climate and stress recognition. For nine of the 10 ICUs surveyed, the perception of hospital management was rated lowest of the variables by both nurse leaders and bedside nurses.

Discussion

In almost 70% of the studies reported, doctors reported more negatively on PSC than did other health professionals.[15-18] There are some explanations as to why this is, such as different workloads, the level of initial training and ongoing safety training.[15] However, these rationales are not conclusive.

Staff report more positively on PSC at the ward level than at the hospital level, with these findings similar across all professional groups. The hospital PSC, set by executive, should be the dominant culture, but the core values are not perceived as shared by the ward subcultures. This disconnect needs further exploration because managers usually report more positive perceptions of the PSC than bedside clinicians.[17,19,26] Managers having a positive PSC and supporting their staff in patient safety initiatives will affect how the clinicians perceive patient safety.[27] However, it is unclear whether the managers promote the organisation's clinical governance strategies to ensure the wards' and the hospital's expected behaviours are consistent.[11] Clinical governance is set at the executive level, but it needs support to achieve quality care.[28]

These differences in PSC perception between health professionals, managers and clinicians, and the ward and hospital level, need to be addressed so that patient safety becomes everyone's business.[6,11] Having a positive PSC is important because health professionals with a positive PSC are more likely to engage in safety behaviours, such as following procedures and reporting errors.[25] There have been improvements demonstrated with team training programs.[18,29,30] The literature states that if improvements are to be maintained, this training should be ongoing.[29]

Study limitations

The use of six different measurement tools across the studies included in the present review may have affected the results. However, if the hospital has a positive safety culture this should be the finding regardless of the tool used[31]. Also by making comparisons only where similar safety culture dimensions have been measured any effects should be minimal.

Conclusion

This review has highlighted that despite efforts to improve PSC, health professional groups have different views and do not perceive their organisations to be promoting patient safety. It

would seem that a PSC is important within their immediate work area for all health professionals. However, when it comes to the PSC of the hospital, it would appear that health professionals feel disconnected from hospital management and their organisation. Potential reasons for this have been cited and include poor communication and the perception that the organisation does not learn from the reported mistakes. The small study that the present review is linked to will examine the aforementioned reasons from an Australian perspective because there is a lack of recent PSC literature in acute hospital settings in Australia.

Competing interests

None declared.

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115

Appendix D. Letter of approval to use the Hospital Survey on Patient Safety Culture

From: Safety Culture Surveys
Sent: Wednesday, October 28, 2015 10:59 AM
To: Willmott, Julie
Cc: Safety Culture Surveys
**Subject:** RE: Use of audit tool

Dear Julie,

Thank you for the information. We in the Patient Safety Culture Surveys Support Group at Westat (SafetyCultureSurveys@westat.com) have been authorized to respond on behalf of the Agency for Healthcare Research and Quality by Ms. Randie Siegel, Associate Director, Office of Communications and Knowledge Transfer, Publishing and Electronic Dissemination. Our group, as the Safety Culture Surveys support contractor, handles the majority of permissions for these tools and their related documents in English, permissions to translate these documents, and maintains an electronic community for International users.

Based on your description of your project, AHRQ grants you permission to use the Hospital Survey on Patient Safety Culture in English for your graduate research at Curtin University in Australia. We understand that this research will be carried out at ▮▮▮▮▮▮ Hospital. AHRQ requests that you note on the survey forms that the form is "reprinted/translated with permission from the Agency for Healthcare Research and Quality (an Agency of the United States Department of Health and Human Services); Rockville, Maryland USA" In any publication of the results of the survey, such as a thesis, internal report to the hospital, or professional journal article, please include a proper source citation.

The AHRQ Web site for the patient safety culture surveys is http://www.ahrq.gov/professionals/quality-patient-safety/patientsafetyculture/index.html. The survey form and related materials can be found at this site. Be sure to read the *Survey User's Guide* for the appropriate survey, especially the sections on modifying or translating the survey. For technical questions, please contact us. We can also put you in touch with other non-U.S. users of the survey (go to "International Users of the Surveys on Patient Safety Culture" for more information).

If you have questions about permissions issues, or if you are interested in permissions to use or translate other AHRQ tools or documents, please feel free to contact Ms. Siegel or David Lewin, Manager of Copyrights & Permissions, Office of Communications and Knowledge Transfer.

Sincerely,
Jess Blackwood
Westat
SafetyCultureSurveys@westat.com
1-888-324-9749
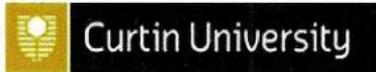
Curtin University

Government of **Western Australia**
Department of **Health**
Armadale Health Service

Armadale **Hospital and Curtin University**

Information Sheet

Health Professionals' Perception of Patient Safety and Quality

I invite you to participate in my research study exploring health professionals' perception of safety and quality. The study is for my Master Degree through the School of Nursing, Midwifery and Paramedicine at Curtin University and has been approved by a South Metropolitan Health Service Low Risk Review Panel, approval number 15-211.

The study involves completing a short questionnaire that will take between 10 to 15 minutes. The aim of the study is to assess how staff view safety and quality issues.

The information obtained during the study will be shared with the Armadale Hospital Directors and may be used to implement measures that will improve patient safety, staff confidence, and thus staff morale. In addition, the results of the study may be published in a journal and/or presented at a health related conference, however no identifying information will be used.

All medical, nursing/midwifery and allied health staff working on each of the 15 wards within Armadale Hospital are invited to participate.

There are no benefits or risks to you in participating in the study.

Completing the questionnaire is voluntary and returning the questionnaire will imply you give consent to participate. As the questionnaire is anonymous, you will be unable to withdraw once you have submitted the completed questionnaire.

Participation is strictly confidential and no-one will be identifiable by their responses. Please return the completed questionnaire to the drop box on your ward. If you would like more information please contact me on 0404 728142, or my supervisor Dr Jon Mould on 9266 9070.

If you have any complaints or concerns about the way the study is being conducted, you may contact the SMHS Research Ethics & Governance Unit on 6151 1180 or email SMHS.REG@health.wa.gov.au.

Julie Willmott
Post-Graduate Student, Curtin University
Clinical Nurse Specialist

Government of **Western Australia**
Department of Health
South Metropolitan Health Service

31 March 2016

Ms Julie Willmott
Clinical Services Improvement
Level 3 B Block
Fremantle Hospital
Alma Street
FREMANTLE WA 6160

Dear Ms Willmott

Project Title:	***Health professionals' perception of patient safety and quality in a Western Australian Hospital***
REG Number:	**2015-211**
Site:	**Fremantle Hospital**
	Armadale Hospital

The following **amended study documents** have been **approved** by a South Metropolitan Health Service (SMHS) Low Risk Review Panel (LRP) and the SMHS site.

Amendments
Addition of Site: Armadale Hospital
Documents: Research Protocol dated March 2016

Please submit a copy of this approval letter to the Research Governance Office or equivalent body or individual at each participating non SMHS site.

Yours sincerely

MARK WOODMAN
**Ethics Coordinator**
South Metropolitan Health Service
Southern Integrated Research
Organisation (SIRO)

SUE WALLACE
Research Governance Officer
South Metropolitan Health Service

Southern Integrated Research Organisation (SIRO)
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www.southmetropolitan.health.wa.gov.au

118

MEMORANDUM

Curtin University

To:	Professor Phillip Della	
	School of Nursing, Midwifery & Paramedicine	
CC:		
From	Professor Peter O'Leary, Chair HREC	
Subject	Reciprocal ethics approval	
	Approval number: HR29/2016	
Date	29-Feb-16	

Office of Research and
Development
Human Research Ethics Office

TELEPHONE 9266 2784
FACSIMILE 9266 3793
EMAIL hrec@curtin.edu.au

Thank you for your application submitted to the Human Research Ethics Office for the project: 6252

Health Professionals' Perception of Patient Safety and Quality in a Western Australian Hospital

Your application has been approved through Curtin University Human Research Ethics Committee (HREC) through a reciprocal approval process with the lead HREC.

The lead HREC for this project has been identified as South Metropolitan Health Service Low Risk Review Panel

Approval number from the lead HREC is noted as: 15-211

Please note the following conditions of approval:

1. Approval is granted from **01-Mar-16** to **31-Jan-19**
2. Research must be conducted as stated in the approved protocol.
3. Any amendments to the approved protocol must be approved by the Ethics Office.
4. An annual progress report must be submitted to the Ethics Office annually, on the anniversary of approval.
5. All adverse events must be reported to the Ethics Office.
6. A completion report must be submitted to the Ethics Office on completion of the project.
7. Data must be stored in accordance with WAUSDA and Curtin University policy.
8. The Ethics Office may conduct a randomly identified audit of a proportion of research projects approved by the HREC.

Should you have any queries about the consideration of your project please contact the Ethics Support Officer for your faculty, or the Ethics Office at hrec@curtin.edu.au or on 9266 2784. All human research ethics forms and guidelines are available on the ethics website.

Yours sincerely,
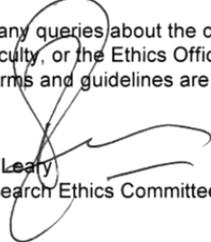
Professor Peter O'Leary
Chair, Human Research Ethics Committee

Appendix H. Frequency Table

Percent positive responses for the 42 items

Item	Strongly disagree/ Never	Disagree/ Rarely	Neither/ Sometimes	Agree/ Most of the time	Strongly agree/ Always	Number of responses
Ward/Unit	1	2	3	4	5	
People support one another in this ward	0.4% SD = ±0.74	4.2%	3.4%	54.3% X = 4.25	37.7%	265
We have enough staff to handle the workload	3.4% SD = ±0.98	19.6%	20.0% X=3.38	49.1%	7.9%	265
When a lot of work needs to be done quickly, we work together as a team to get the work done	0.0% SD = ±0.75	4.1%	7.1%	52.3% X=4.21	36.5%	266
In this ward, people treat each other with respect	1.5% SD = ±0.76	1.5%	7.9%	55.3% X=4.18	33.8%	266
Staff in this ward work longer hours than is best for patient care (reverse worded)	5.8% SD = ±1.07	19.0%	24.4% X=3.30	41.1%	9.7%	258
We are actively doing things to improve patient safety	1.1% SD = ±0.79	5.3%	6.8%	63.3% X=4.03	23.5%	264
We use more agency/temporary staff than is best for patient care (reverse worded)	5.8% SD = ±1.06	24.3%	25.1% X=3.16	37.5%	7.3%	259
Staff feel like their mistakes are held against them (reverse worded)	6.1% SD = ±1.02	17.2%	23.4% X=3.30	47.5%	5.7%	261
Mistakes have led to positive changes here	1.9% SD = ±0.83	9.5%	24.0% X=3.58	57.6%	6.9%	262
It is just by chance that more serious mistakes don't happen around here (reverse worded)	7.4% SD = ±1.13	18.4%	18.4% X=3.34	44.1%	11.7%	256

Item	Strongly disagree/ Never	Disagree/ Rarely	Neither/ Sometimes	Agree/ Most of the time	Strongly agree/ Always	Number of responses
When one area in this ward gets really busy, others help out	1.9% SD = ±0.88	8.3%	12.6% X=3.82	60.3%	16.8%	263
When an event is reported, it feels like the person is being written up, not the problem (reverse worded)	3.9% SD = ±0.97	17.9%	26.8% X=3.32	45.1%	6.2%	257
After we make changes to improve patient safety, we evaluate their effectiveness	1.5% SD = ±0.82	8.8%	21.8% X=3.65	59.0%	8.8%	261
We work in "crisis mode" trying to do too much, too quickly (reverse worded)	8.6% SD = ±1.06	25.6%	27.4% X=3.00	34.2%	4.1%	266
Patient safety is never sacrificed to get more work done	3.8% SD = ±1.11	24.1%	18.8% X=3.36	39.1%	14.2%	261
Staff worry that mistakes they make are kept in their personnel file (reverse worded)	6.2% SD = ±1.03	27.8%	28.2% X=3.03	32.4%	5.4%	259
We have patient safety problems in this ward (reverse worded)	5.4% SD = ±1.13	27.7%	16.9% X=3.22	39.2%	10.8%	260
Our procedures and systems are good at preventing errors from happening	3.1% SD = ±0.95	13.4%	15.3% X=3.59	57.5%	10.7%	261

Item	Strongly disagree/ Never	Disagree/ Rarely	Neither/ Sometimes	Agree/ Most of the time	Strongly agree/ Always	Number of responses
Supervisor/Manager	1	2	3	4	5	
My supervisor/manager says a good word when they see a job done according to established patient safety procedures	5.0% SD = ±1.00	10.3%	15.7% X=3.61	56.7%	12.3%	261
My supervisor/manager seriously considers staff suggestions for improving patient safety	3.1% SD = ±0.92	8.4%	14.6% X=3.74	59.0%	14.9%	261
Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts (reverse worded)	3.9% SD = ±1.01	9.3%	13.1% X=3.78	52.1%	21.6%	259
My supervisor/manager overlooks patient safety problems that happen over and over (reverse worded)	2.7% SD = ±1.06	12.5%	10.5% X=3.86	44.4%	30.0%	257
Communications	1	2	3	4	5	
We are given feedback about changes put into place based on event reports	2.3% SD = ±0.95	12.0%	37.2% X=3.45	35.3%	13.2%	258
Staff will freely speak up if they see something that may negatively affect patient care	0.0% SD = ±0.71	2.7%	18.5% X=3.98	57.3%	21.5%	260
We are informed about errors that happen in this ward	1.9% SD = ±1.00	10.8%	24.6% X=3.70	40.8%	21.9%	260

Item	Strongly disagree/ Never	Disagree/ Rarely	Neither/ Sometimes	Agree/ Most of the time	Strongly agree/ Always	Number of responses
Staff feel free to question the decisions or actions of those with more authority	3.4% SD = ±0.99	16.0%	35.5% X=3.33	34.0%	11.1%	262
In this ward, we discuss ways to prevent errors from happening again	4.0% SD = ±0.88	7.3%	26.1% X=3.81	43.7%	22.6%	261
Staff are afraid to ask questions when something does not seem right (reverse worded)	0.4% SD = ±0.88	10.3%	28.6% X=3.65	45.0%	15.6%	262
Frequency of events reported	1	2	3	4	5	
When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	0.8% SD = ±0.99	19.3%	32.9% X=3.41	31.7%	15.3%	249
When a mistake is made, but has no potential to harm the patient, how often is this reported?	0.8% SD = ±0.98	12.2%	28.5% X=3.66	37.0%	21.5%	246
When a mistake is made that _could harm the patient_, but does not, how often is this reported?	1.6% SD = ±0.97	4.5%	21.1%	32.9% X=4.05	39.8%	246

Item	Strongly disagree/ Never	Disagree/ Rarely	Neither/ Sometimes	Agree/ Most of the time	Strongly agree/ Always	Number of responses
Hospital	1	2	3	4	5	
Hospital management provides a work climate that promotes patient safety	4.2% SD = ±0.91	7.7%	14.2% X-3.68	63.5%	10.4%	265
Hospital units do not coordinate well with each other (reverse worded)	11.2% SD = ±1.11	31.2% X=2.86	22.3%	31.2%	4.2%	266
Things "fall between the cracks" when transferring patients from one unit to another (reverse worded)	10.4% SD = ±0.99	43.8% X=2.6	23.1%	20.8%	1.9%	266
There is good cooperation among hospital units that need to work together	3.8% SD = ±0.94	21.1%	22.6% X=3.26	50.2%	2.3%	265
Important patient care information is often lost during shift changes (reverse worded)	1.9% SD = ±0.96	24.8%	24.4% X=3.26	43.1%	5.7%	262
It is often unpleasant to work with staff from other hospital units (reverse worded)	1.5% SD = ±0.86	13.1%	27.7% X=3.48	50.8%	6.9%	260
Problems often occur in the exchange of information across hospital units (reverse worded)	1.1% SD = ±0.84	31.2%	35.0% X=3.0	32.0%	0.8%	266
The actions of hospital management show that patient safety is a top priority	1.9% SD = ±0.93	14.3%	24.3% X=3.52	49.0%	10.4%	259

Item	Strongly disagree/ Never	Disagree/ Rarely	Neither/ Sometimes	Agree/ Most of the time	Strongly agree/ Always	Number of responses
Hospital management seems interested in patient safety only after an adverse event happens (reverse worded)	8.5% SD = ±1.10	29.8% X=2.98	22.1%	33.7%	5.8%	258
Hospital units work well together to provide the best care for patients	1.1% SD = ±0.87	13.4%	29.5% X=3.49	47.5%	8.4%	261
Shift changes are problematic for patients in this hospital (reverse worded)	1.5% SD = ±0.91	17.2%	26.8% X=3.40	47.1%	7.3%	261

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Author(s) ___ Willmott, Julie; Mould, Jonathan;

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for and on behalf of ___*Curtin University*___ (Institution)

Appendix J. Contribution to journal article

Publication

Title: Health professionals' perception of patient safety culture in acute hospitals: An integrative review.

Authors: Julie Willmott and Jonathan Mould

Journal: Australian Health Review

Study concept design: Julie Willmott and Jonathan Mould

Acquisition of data: Julie Willmott

Analysis of data: Julie Willmott

Critical revision of manuscript: Julie Willmott and Jonathan Mould

I, as a co-author, endorse that this level of contribution by the candidate indicated above is appropriate.

Signatures:

Julie Willmott

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