

**ASSESSMENT AND MANAGEMENT OF THE ANXIOUS PATIENT
IN THE CARDIAC CATHETER LABORATORY**

Maree Ellen Ruge

A thesis submitted in partial fulfillment of the requirements of the degree of

Masters of Nursing Research

2013

School of Nursing
Faculty of Health Science

Australian Catholic University
1100 Nudgee Road
Banyo Queensland 4014

ABSTRACT

Nurses in the cardiac catheter procedure environment provide care for patients undergoing investigation and intervention for diagnosis and treatment of heart disease. It is evident that such patients undergoing cardiac catheterisation will experience heightened anxiety. Consequently, psychological assessment should be incorporated throughout all aspects of nursing care in this setting. Routine assessment is important to enable early identification of patient anxiety and inform management strategies to be applied to best support the patient. However, there is evidence from across cardiac patient populations that anxiety is not routinely assessed in the acute care setting. Moreover, evidence supports that nursing assessment of anxiety may be unreliable and does not always reflect the patient experienced anxiety.

The objective of this study was to utilise a qualitative approach to study nursing practices in regards to anxiety assessment and management when caring for patients undergoing cardiac catheter procedures. The study was undertaken from a single site cardiac catheter procedure unit in a large tertiary hospital. Data was collected through document analysis, chart review and semi-structured individual interviews with five cardiac nurses.

This study found that nursing assessment and management of patient anxiety for patients in this setting was not clearly defined or actively implemented. The research also identified that there were negative outcomes for both patients and nursing staff when patient anxiety was not identified or managed in a timely manner. Unique organisational and cultural factors were found to influence these aspects of care in this environment. Findings also identified the need for a standardised approach to nursing assessment of anxiety and its subsequent management. Timely anxiety assessment and application of suitable nursing interventions to minimise patient anxiety are needed to yield positive outcomes for both patients and nursing staff. It is suggested that a suitable assessment tool to support standardised anxiety measurement be developed.

ACKNOWLEDGEMENTS

I would like to thank my supervisor Dr Judy Gonda for her contribution to my completion of this thesis. Judy has provided consistent support and encouragement throughout this chapter of my nursing education. Her support for my completion of this thesis has been unwavering, equalled only by her patience and for both I am thankful.

I would also like to thank Dr Paula Schulz who has provided ongoing support and expert guidance throughout all iterations of this study.

A big thank you also goes to the nurses who shared with me their stories so that I can share them with others. Your work and dedication is amazing.

Finally I want to thank my family for their endless support, especially my husband Michael who has kept me “fed and watered” throughout this journey.

TABLE OF CONTENTS

ABSTRACT.....	2
ACKNOWLEDGEMENTS	3
TABLE OF CONTENTS	4
DEFINITION OF TERMS	7
CHAPTER 1 – PATIENT ANXIETY AND NURSING PRACTICE IN THE CARDIAC CATHETER PROCEDURE SETTING	9
1 INTRODUCTION	9
1.1 Background	11
1.2 Significance.....	13
1.2.1 Cardiac Catheterisations and Investigations	14
1.3 Research Purpose	18
1.3.1 Research Objectives	19
1.3.2 Reflexivity / Researcher Perspective	19
1.4 Structure of the Thesis	21
1.5 Summary	22
CHAPTER 2 – REVIEW OF THE LITERATURE	24
2 REVIEW OF THE LITERATURE - BACKGROUND	24
2.1 Literature Review.....	25
2.2 Literature Search.....	26
2.3 Findings.....	28
2.3.1 The Concept of Anxiety	28
2.3.2 Factors Influencing State Anxiety for Cardiac Patients.....	29
2.3.3 Outcomes of Patient Anxiety	30
2.3.4 Assessment of Patient Anxiety	32
2.3.5 Management of Patient Anxiety	36
2.3.6 Methodologies Applied Within Research.....	39
2.3.7 Recommendations for Further Research.....	42
2.4 Conclusions	43
CHAPTER 3 – CAPTURING THE NURSES’ PERSPECTIVE	45
3 METHODOLOGY.....	45
3.1 Design	48
3.1.1 Recruitment: Nurse Participants	52
3.1.2 Participants.....	52
3.1.3 Data Collection – Document Analysis and Retrospective Chart Review .	54

3.1.4	Data Collection – Semi-Structured Interviews	59
3.1.5	Data Collection - Reflexive Journal Notes	62
3.1.6	Data Analysis	63
3.1.7	Data Analysis – Document Analysis and Retrospective Chart Review ...	65
3.1.8	Data Analysis – Semi-structured Interviews.....	67
3.2	Ethical Considerations	72
CHAPTER 4 – PEELING BACK THE ONION.....		75
4	RESULTS	75
4.1	Document Analysis and Retrospective Chart Review	75
4.2	Semi Structured Interviews	81
4.2.1	Factors Influencing Patient Anxiety	84
4.2.2	Effect of Patient Anxiety on the Patient	87
4.2.3	Effect of Patient Anxiety on Nursing Staff.....	89
4.2.4	Anxiety Assessment	92
4.2.5	Anxiety Management	94
4.2.6	Nursing Priority.....	98
4.2.7	Nursing Needs	100
4.3	Conclusion	103
CHAPTER 5 – PRACTISING THE ART OF NURSING OR THE BUSINESS OF HEALTH CARE: NURSING PRIORITIES, CHALLENGES AND NEEDS		105
5	DISCUSSION	105
5.1	Environmental Impacts on Care Delivery.....	105
5.2	Patient Anxiety and Nurse Coping	107
5.3	Time as a Deterrent – Busy Nurses and Anxious Patients.....	109
5.4	Nursing Workloads and Patient Allocation.....	111
5.5	Significance of the Care Relationship	111
5.6	Influence of Nurse Education and Training.....	112
5.7	Variations in Anxiety Assessment	113
5.8	Measuring Patient Anxiety in the Acute Care Setting.....	115
5.9	Standardised Nursing Practice – Anxiety Assessment	117
5.10	Standardised Nursing Practice – Anxiety Management	118
5.11	Recommendations	120
5.12	Limitations and Qualifications.....	121
5.13	Summary	121
APPENDIX 1 – NURSE PARTICIPANT INFORMATION SHEET		123
APPENDIX 2 – NURSE PARTICIPANT CONSENT FORM		125

APPENDIX 3 – CLINICAL PATHWAY ADULT CARDIAC CATHETERISATION	127
APPENDIX 4 – DOCTOR’S REQUIRMENTS (EXAMPLE 1).....	131
APPENDIX 5 – DOCTOR’S REQUIRMENTS (EXAMPLE 2).....	132
APPENDIX 6 – DOCTOR’S REQUIRMENTS (EXAMPLE 3).....	133
APPENDIX 7 – WORK UNIT GUIDELINE STEMI	134
APPENDIX 8 – WORK UNIT GUIDELINE (NON-STEAC)	141
APPENDIX 9 – CHECKLIST CORONARY ANGIO PREP & POST CARE	146
APPENDIX 10 – CHECKLIST FOR ADMISSION	147
APPENDIX 11 – CHECKLIST HANDOVER INTO CCL.....	148
APPENDIX 12 – CHECKLIST HANDOVER CCL TO RECOVERY	149
APPENDIX 13 – CHECKLIST POST PROCEDURE RECOVERY.....	150
APPENDIX 14 – CHECKLIST CCL PROCEDURES	152
APPENDIX 15 – ETHICS APPROVAL.....	157
APPENDIX 16 – SEMI STRUCTURED INTERVIEW QUESTIONS.....	158
REFERENCE LIST	161

DEFINITION OF TERMS

acute coronary syndrome

Describes acute myocardial infarction (heart attack) or unstable angina when they first present as a clinical emergency with chest pain or other features.

acute facility / hospital

Public and private hospitals which provide services mainly to admitted patients with acute or temporary ailments. The average length of stay is relatively short.

anxiety

Anxiety is a multisystem response to a perceived threat or danger. It reflects a combination of biochemical changes in the body, the patient's personal history and memory, and the social situation.

anxiety disorders

A group of mental disorders marked by excessive feelings of apprehension, worry, nervousness and stress. Includes panic disorder, various phobias, generalised anxiety disorder, obsessive-compulsive disorder and post-traumatic stress disorder.

arrhythmia

A disturbed rhythm of the heart beat—either too fast, too slow or irregular.

average length of stay (ALOS)

The average of the length of stay for admitted patient episodes.

cardiovascular disease

Any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular). Includes heart attack, angina, stroke and peripheral vascular disease. Also known as circulatory disease.

complication

A secondary problem that arises from a disease, injury or treatment (such as surgery) that worsens the patient's condition and makes treatment more complicated..

coronary artery bypass graft (CABG)

Surgical procedure using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood flow to the heart muscle.

coronary artery disease

Disease of the coronary arteries, typically meaning atherosclerosis. When this leads to symptoms such as chest pain the result is known as coronary heart disease.

heart attack

Life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is myocardial infarction.

See also *cardiovascular disease*.

hypertension / high blood pressure

The definition of high blood pressure (also known as hypertension) can vary but a well-accepted one is from the World Health Organization: a systolic blood pressure of 140 mmHg or more or a diastolic blood pressure of 90 mmHg or more, or [the person is] receiving medication for high blood pressure.

intervention (for health)

Any action taken by society or an individual which 'steps in' (intervenes) to improve health, such as medical treatment and preventive campaigns.

myocardial infarction

Term still commonly used to mean a heart attack, but more correctly refers only to those heart attacks which have caused some death of heart muscle.

percutaneous coronary intervention (PCI)

A method of reducing a blockage in an artery by opening out a balloon placed inside the artery at the point of narrowing

revascularisation

Restoring adequate blood flow to the heart or other part of the body, usually after the supply has been reduced or blocked, as in angina or a heart attack.

Revascularisation includes methods such as percutaneous coronary intervention and coronary artery bypass graft surgery.

stent

A metal mesh tube that is expanded within an artery at a point of narrowing and left there to hold the artery open.

stress

Poorly defined term referring to when a person is under significant psychological or physical pressure—real or perceived, acute or chronic. Examples include illness or injury, bereavement, family problems, work demands or job loss.

symptom

Any indication of a disorder that is apparent to the person affected. Compare with sign (clinical).

(Source: Australian Institute of Health and Welfare, 2011)

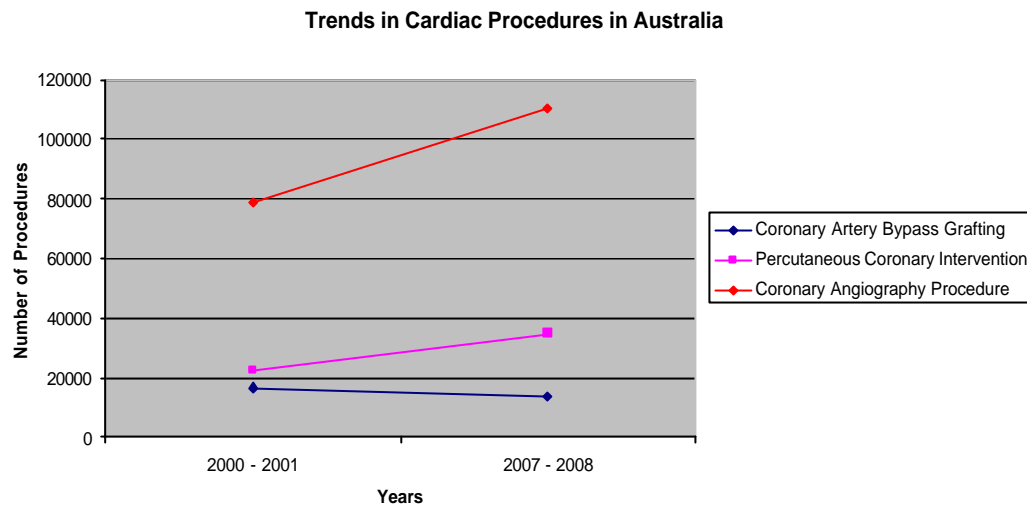
CHAPTER 1 – PATIENT ANXIETY AND NURSING PRACTICE IN THE CARDIAC CATHETER PROCEDURE SETTING

1 INTRODUCTION

The use of coronary angiography for diagnosis of cardiovascular disease and subsequent percutaneous coronary interventions (PCI) as an alternative treatment to surgery for revascularisation of heart tissue is increasing (Australian Institute of Health & Welfare, 2011; Bravata et al., 2007; Higgins, Theobald, & Peters, 2008). Evidence supports the effectiveness of PCI as a reperfusion treatment following ST elevation acute coronary syndrome (Astin, Jones, & Thompson, 2005; National Heart Foundation of Australia, 2012; Uzun, Vural, Uzun, & Yokusoglu, 2008).

Incorporation of PCI as a primary reperfusion strategy within international, national and state STEMI guidelines and management plans has resulted in a continued demand for delivery of percutaneous interventional cardiac services (Chew, Aroney, Aylward et al., 2011; National Heart Foundation of Australia, 2012; QLD Government, 2012; Taylor, 2012). Trends in Cardiac Procedures in Australia (Figure ¹) identify an increase in the number of diagnostic coronary angiography procedures performed, with a total of 78 981 coronary angiography procedures performed in 2000 to 2001, increasing to a total of 110 614 coronary angiography procedures performed in 2007 to 2008. Similarly there has been an increase in the number of PCI procedures performed with a total of 34 972 PCIs performed in 2007 to 2008, an increase of 58% from 2000 to 2001. In contrast the percentage of Coronary Artery Bypass Grafting (CABG) surgical procedures have reduced by 19% during similar periods, with the total number of these surgical procedures falling from 16 696 in 2000 to 2001 down to 13 612 in 2007 to 2008 (Australian Institute of Health and Welfare, 2011).

Figure 1. Trends in Cardiac Procedures in Australia



Source: AIHW National Hospital Morbidity Database (Australian Institute of Health and Welfare, 2011).

The increased demand for coronary angiography and PCI procedures to diagnose and treat patients with coronary artery disease, ensures continued requirement for nursing assessment and management of cardiac patients in this acute care setting (Nekouei, Yousefy, Manshaee, & Nikneshan, 2011). It is evident that prior to undergoing cardiac catheterisation many patients can be quite apprehensive about their approaching procedure. Commonly, patients will exhibit behaviours and express feelings of nervousness and at times fear concerning possible pain or harm during the procedure and a potential negative prognosis (Chan & Cheung, 2003; Chung., 2004; Gallagher, Trotter, & Donoghue, 2010). Display of such emotion is commonly referred to as *state anxiety*, an emotional condition where feelings of tension, fear and worry induce increased autonomic nervous system activity in response to situational circumstance (Astin et al., 2005; Chan & Cheung, 2003; Zipori-Beckenstein, Schechtman, Socholitsky, Rath, & Kaplinsky, 1999). Whilst a moderate level of anxiety may be considered useful in preparing for a defence against a real or perceived threat, unmanaged and sustained stress and anxiety may be detrimental for patients undergoing cardiac catheterisation procedures (Zolfaghari, Haztati, & Sameh, 2012).

In addition to explaining the phenomenon of patient anxiety, this introductory chapter will provide background information summarising associated patient outcomes

and nurse related issues drawn from the literature. This will be supported by personal reflections and opinions formed from my own nursing experiences when caring for anxious patients undergoing cardiac catheterisation. Significance to nursing practice will also be explained in context to this specific clinical setting leading to definition of the research aims guiding development of this study.

1.1 Background

As a nurse practising within the cardiac catheterisation procedure unit of a large cardiac focused tertiary hospital, I have provided pre and post procedure care to patients undergoing invasive cardiac investigations and interventions. At this time I witnessed many patients who expressed feelings and displayed behaviours associated with anxiety as a result of undergoing cardiac catheterisation. Some patients expressed verbally their concerns and worries of undergoing such an invasive procedure. Others also displayed behaviours which varied from withdrawal to more overt behaviours such as crying or complaining or even aggressive behaviours, creating subsequent barriers to communication and at times care.

In addition to anxiety induced hypertension, sympathetic responses to stress have been linked to reduced serum potassium levels, cardiac arrhythmias and alterations in mental state, with potentially compromised capacity to make suitable treatment decisions (Astin et al., 2005; Copland, Joekes, & Ayer Copland, Joekes, & Ayers, 2011; Frazier et al., 2002; Freise & Van Aken, 2011; Goodman, 2009). Clinical research conducted within the cardiac investigations environment identifies increased risks of post procedural complications for haemodynamically unstable patients (Dumont, Keeling, Bourguignon, Sarembock, & Turner, 2006; Frank, Kamalakannan, Kodenchery, Savoy-Moore, & Rosman, 2010; Gilmartin, 2006; Higgins et al., 2008). This evidence documents links between complications such as haematoma and pseudoaneurysm to unmanaged or elevated systolic blood pressure.

My own nursing experiences aligned closely with clinical evidence highlighting outcome risks associated with increased anxiety for cardiac catheterisation patients including detrimental physiological symptoms such as hypertension or heightened heart rate (Dumont et al., 2006; Gilmartin, 2006). Despite this evidence however it was not

apparent to me that there were any clear evidence based guidelines or strategies to identify appropriate prevention or interventions for anxious cardiac patients specific to the clinical setting

Furthermore, acknowledging the “cart before the horse” analogy, there was no apparent standardised or formal process or assessment tool appropriate to my work environment that either I or my nursing colleagues could use to assist in identifying and documenting our patients’ anxiety levels. Whilst current nursing texts cite the importance of undertaking a holistic approach to patient assessment (Dillon, 2007; Estes, Calleja, Theobald, & Harvey, 2013), reference to psychological assessment within practice guidelines is limited and even when referenced they do not include recommendation for any specific anxiety assessment tool or technique that is deemed suitable within this acute care procedural environment (Aroney, Aylward, Kelly, Chew, & Clune, 2006; Rolley, Salamonson, Wensley, Dennison, & Davidson, 2011).

I had also been involved in a previous trial within the unit which involved use of an adapted Visual Analogue Scale (VAS) and open questionnaire completed by nursing staff when assessing patient anxiety prior to cardiac catheter procedures. This local trial reviewed the suitability of a VAS to support nursing assessment and also examined nursing practice in regards to assessment of patient anxiety. Comparison of nurses’ evaluation of patient anxiety against the patients’ self-reported anxiety measures as indicated on a VAS were undertaken. The VAS documenting nursing staff’s evaluation of their patients’ anxiety level was completed at the time nurses were undertaking admission of the patient on day of procedure. In addition to completion of the VAS, each nurse was also asked to provide an annotated, free text response identifying any “particular behaviours and/or clinical symptoms” exhibited by the patient that indicated their anxiety levels prior to procedure.

This trial highlighted conflicting nurse evaluations in comparison to the patient’s self report anxiety. Furthermore nurses’ responses to the open ended questions regarding their patient’s behaviours or physiological signs of anxiety were at times sparse and non-descriptive, especially in regards to identification of physiological symptoms such as alterations in the patient’s blood pressure or heart rate, despite several instances where there were evident fluctuations from the patient’s documented baseline measures. This

was surprising at the time given the relevance and propensity of haemodynamic observations in the cardiac setting.

Similarly, nursing literature documenting studies of patient anxiety within the cardiac setting highlight disparity between nurse assessed and patient self report anxiety (Moser, 2007; Suriano, Michel, Zeitoun, Herdman, & de Barros, 2011). However, in contrast to the responses elicited in the aforementioned local trial, reported findings from other studies undertaken of nursing assessment of patient anxiety identified that one of the most commonly reported indicators used by nursing staff to denote increased patient anxiety were physiological elevated blood pressure and heart rate (Moser et al 2003).

This clinical evidence and my own experiences of nursing patients who have experienced emotional distress as a result of undergoing cardiac catheterisation, provided the initial catalyst for my research design.

1.2 Significance

State anxiety is an emotional state brought about when a person is placed in a stressful situation or has perceived that they are in some degree of threat or harm. Associated negative feeling such as agitation, tension and apprehension are temporary when state anxiety is experienced and are usually relative to the degree or level of threat perceived (Astin et al., 2005; Chan & Cheung, 2003; Tovilovic, Novovic, Mihic, & Jovanovic, 2009). Increased anxiety can impede patient comfort; affect patient response to painful stimuli and compromise treatment decisions and compliance (American Pain Society, 2009; Caumo et al., 2001; Copland, Joeke, & Ayers, 2011; Pritchard, 2009). Autonomic nervous system responses to acute anxiety include release of stress hormones such as adrenaline and nor-adrenaline which in turn trigger an elevated respiratory rate, heart rate and blood pressure (Uzun, et al., 2008). These relatively 'normal' physiological reactions however may have significant impacts when considering the clinical profile of many patients awaiting cardiac catheterisation (Ghetti, 2011; Trotter, Gallagher, & Donoghue, 2011).

Acute anxiety induced cardiovascular symptoms such as cardiac arrhythmias, increased metabolic rate and oxygen demand, and peripheral vasoconstriction with subsequent increase in blood pressure, may all be detrimental to someone with an already compromised cardiovascular system. Whilst not all patients exhibit physiological

responses such as hypertension or tachycardia when experiencing acute anxiety (de Jong-Watt & Arthur, 2004), it is relevant to consider that a high number of patients undergoing coronary angiography and percutaneous intervention have coronary artery disease which causes a narrowing of the arteries supplying oxygenated blood to the muscles the heart. Increased blood pressure and irregular heart rhythms can impede blood flow through already damaged and blocked coronary arteries adding additional stress on the heart muscle.

Management of patient anxiety therefore is a vital component of the cardiac nursing role throughout all stages of care (Frazier et al., 2002). Specifically, state anxiety has clinical significance for patients undergoing cardiac catheterisation procedures. The very nature of its transitory state provides opportunities for nurses to implement pre-emptive measures to reduce patient anxiety and associated adverse outcomes present prior to procedure.

1.2.1 Cardiac Catheterisations and Investigations

The Cardiac Investigations Unit (CIU) environment is unique and whilst there may seem to be an emphasis placed on interventional procedures such as PCI, as treatment for patients with acute cardiac presentations take priority when scheduling procedures within the labs, commonly patient lists include a combination of acute and scheduled elective patients (Siegrist, Gutkin, Levtzion-Korach, & Madden, 2009). Day procedure elective patients will be admitted on day of procedure and when undergoing diagnostic catheterisation procedures will often be cared for in a post procedure unit for several hours prior to being discharged home. Some patients will have been referred for diagnostic cardiac catheterisation by their GP or other patients may undergo coronary angiography as investigation for future surgical procedures such as valve replacements.

The cardiac catheter laboratory where I worked operated 24 hours per day, 7 days per week, with day case and elective procedures scheduled between standard hours of 0800hrs to 1700hrs. A 24-hour emergency service was also available supported by an on-call team of doctors, nurses, cardiac scientists and radiographers providing emergency cardiac procedures for acute presentations. Whilst some operating practises are facility centric; commonly cardiac catheter laboratories provide comparable services with similar levels of staff training and expertise supporting service provision. The combination of

high patient acuity, tight procedural scheduling and the decidedly complex nature of care can culminate in an acute and at times stressed environment to work in. Dixon (2007) recommends nurses' possess good communication skills, enthusiasm and "a good sense of humour" when working in the cardiac catheter setting (p281).

Nursing roles and responsibilities within the cardiac catheter procedure setting are varied including preparing patients for procedure, working as a scout or scrub nurse in the cardiac catheter laboratory, co-ordinating patient flow and staff allocations as a team leader, recovery nursing or providing cardiac rehabilitation education. Additionally, nurses play an integral role during the pre admission phase, where many elective patients attend pre admission clinics which are conducted before the patient is admitted for their procedure. Baseline clinical assessments are performed, informed consent is obtained, medication orders are written up by medical staff and preliminary education about the procedure is commenced. Patients may experience and express varying degrees of anxiety at this time providing early indication for development and implementation of initial mitigation or treatment strategies.

Patients' anxiety levels may also vary substantially between pre-admission clinic and day of procedure. As it is often the nurses' role within the unit to undertake patient preparation prior to procedure, nursing assessment should incorporate assessment of patient anxiety at this time (Dixon, 2007; Köllner & Bernardy, 2006; McCaffrey & Taylor, 2005). As anxiety is a subjective phenomenon, measures to assess anxiety levels cannot be undertaken directly (Walker, 2007). The effects of anxiety however, may be displayed through overt behaviours and physiological responses such as the patient's blood pressure and heart rate and signs of stress such as sweaty palms and restlessness (Pritchard, 2009). However reliance on the patient's presentation and overt physiological responses to anxiety such as increased heart rate and blood pressure to validate evidence of anxiety can be problematic in the cardiac setting as many cardiac patients are prescribed medications such as anti-hypertensives and beta blockers that may blunt physiological stress responses (de Jong-Watt & Arthur, 2004; Frazier et al., 2002; Moser et al., 2003).

Alternatively valuable subjective data may be sourced directly from the patient through interview regarding their self reported anxiety levels. A number of instruments have been designed to measure anxiety within the clinical setting. However the suitability

of some self report tools to support measurement of patient anxiety have been broadly debated with conflicting views and evidence surrounding the appropriateness of some instruments within the environs of an acute care setting (Benotsch, Lutgendorf, Watson, Fick, & Lang, 2000; Bride, Robinson, Yegidis, & Figley, 2004; Court, Greenland, & Margrain, 2010; De Jong et al., 2005; Gallagher et al., 2010; O'Brien et al., 2001). When considering suitability of anxiety assessment tools to support routine nursing practice in the acute care environment, consensus has been reached however on the critical need to take into account a number of influencing factors. Time taken to complete the assessment, the patient's mental capacity influencing their level of understanding and self awareness and existing physical constraints including whether the patient is in pain or is unable to sit up or write to enable completion of a self report instrument are factors that should be considered (Benotsch et al., 2000; Court et al., 2010; Köllner & Bernardy, 2006).

Appropriate and timely evaluation of patient anxiety facilitates development and implementation of management strategies and interventions to support anxious patients undergoing invasive cardiac diagnostic and interventional procedures. When reviewing suitable nursing interventions in this clinical setting to manage patient anxiety both non-pharmacological and pharmacological interventions should be considered (Nekouei et al., 2011).

When considering suitable pharmacological interventions, temazepam is a benzodiazepine which is commonly administered as a pre-medication for day procedure patients for both sedative and anxiety-relieving effects (de Visser et al., 2003; Walker & Smith, 2009). However not all patients are routinely prescribed this drug as a pre-medication. As detailed previously, many elective patients undergoing cardiac catheterisation attend pre admission clinic prior to day of procedure. Medication orders for patients are often written by medical staff during these clinics several days before procedure and, unless requested by nursing staff, patients are not routinely reviewed by doctors prior to procedure. As patients' anxiety levels may vary substantially between pre-admission clinic and day of procedure (Chan & Cheung, 2003), it is the nurses' role within the unit to identify times when the patient is experiencing heightened levels of anxiety and determine if such an emotional state warrants medication administration (Kennedy, Kelly, Loan, & Boyd, 2000).

Patients admitted to the catheter laboratory for investigations are often day procedure patients who will receive post procedural care for a two to four hour period and then be discharged to home (Dixon, 2007; Gruchevsky, 2006). As such efficacy of any sedatives such as temazepam to minimise patient anxiety in these day procedure settings must be evaluated against anticipated post procedure recovery to ensure that sedative effects do not inhibit early mobilisation or impact recovery times. In light of these considerations, alternative non-pharmacological nursing interventions such as music or relaxation therapy may be equally effective as benzodiazepine administration to reduce patient anxiety without inducing sedative effects (Hanifi, Ahmadi, Memarian, & Khani, 2005; Higgins et al., 2001; McCaffrey & Taylor, 2005; Stirling, 2006; Zolfaghari et al., 2012).

Finally, whilst detrimental impacts and management of patient anxiety are emphasised within nursing literature, the effect of patient anxiety on the work environment and for clinical staff caring for anxious patients have not been well explored or documented. Working in the cardiac catheter procedure environment can pose both mental and physical challenges for nursing staff (Dixon, 2007; Keller et al., 2012; Siegrist et al., 2009). In light of the acute and sometimes stressful nature of nursing within this specific procedural setting, possible workplace impacts on nurses themselves when caring for anxious patients undergoing cardiac catheterisation seem a logical progression. My personal experiences provided some insight in this regard, as I noted times when caring for anxious patients the increased demands placed on my time. Equally, shift co-ordination and staff allocations were disrupted when nurses experienced increased demands for their time with patients requiring additional emotional support, impacting not just on nursing staff workload but also on nurses' ability to administer care to their other patients. Whilst not actively endorsed by my nursing colleagues or management, the repercussions of patient anxiety on nursing workload appeared to be either overlooked or just accepted as norm. Given the incidence of heightened anxiety experienced by many patients undergoing cardiac catheter procedures and significance of associated impacts for patients and staff when anxiety remains unmanaged, the two fundamental nursing practices of anxiety assessment and management were a primary focus when developing this study.

1.3 Research Purpose

The purpose of this study was to explore the nursing practice of anxiety assessment and management when caring for patients undergoing cardiac catheter procedures. Identification and evaluation of patient anxiety through nursing assessment is a fundamental first step in the initiation of appropriate management strategies to assist patient coping when undergoing cardiac catheterisation (Ayers, Joeke, & Copland, 2010).

Appleton and King (1997) consider that “a naturalistic enquiry should be stimulated through the experiences, interest, and knowledge of the investigator” (p18). The catalyst for this study was the incidence of patients experiencing detrimental anxiety associated outcomes when undergoing cardiac catheterisation in the unit where I worked. As literature informs us, nurses play an important role in mitigating patient risk for anxiety through early identification and intervention when warranted (Astin, Jones, & Thompson, 2005; Köllner & Bernardy, 2006; McCaffrey & Taylor, 2005). As highlighted previously, nursing anxiety assessment and management strategies were diverse and appeared to lack structure and conformity in the cardiac catheter procedure setting in which I worked. However, rather than jump knee deep in to promote a change in nursing practice when I was not sure what “nursing practice” meant for nurses working within this clinical setting, this research was designed to provide a foundational first step towards possible deeper enquiry. This study aimed to better understand and describe nursing anxiety assessment and management practices from the emic perspective of nurses working in this procedural environment. The interpretive and in-depth nature of a qualitative design for this study was deemed appropriate as this approach is “most suited to understanding the meanings, interpretations and subjective experiences” of participants (Liamputtong, 2009, p15).

This initial enquiry aimed to provide the foundational information necessary to gain insight into factors influencing nursing practice including nurses’ behaviours, actions, beliefs and priorities held in regards to caring for patients with heightened anxiety and experiences of any unique problems or challenges they encountered inherent to this procedural environment. I hoped that in addition to supporting evidence based practice, findings from this study would identify opportunities for improvement in clinical practice

and facilitate development of unit policies and protocols to guide and support nurses caring for anxious patients in this clinical cardiac procedural setting.

1.3.1 Research Objectives

The development of this study was undertaken with an aim to potentially reduce detrimental anxiety associated patient outcomes in the cardiac catheter procedure environment through informing nursing practice. Whilst it appeared through initial findings that practice changes may be warranted, further exploration of the nursing care processes and priorities when assessing and providing management for anxious patients in this procedural setting was warranted. To achieve this three research objectives were identified. These were to :

- 1) gain a better understanding of nurses' anxiety assessment and management practices when caring for patients undergoing cardiac catheter procedures.
- 2) identify factors that nurses' perceived influenced their practice of anxiety assessment and management.
- 3) identify the effects of patient anxiety within this clinical setting as described by the nurse.

1.3.2 Reflexivity / Researcher Perspective

A common challenge for researchers adopting a qualitative approach includes risk of becoming too subjective when immersed in the clinical setting (Roberts, 2009). It is an inherent fact that all researchers conducting qualitative research will bring along some degree of 'baggage' of personal perceptions, beliefs and preconceptions regarding the research they are undertaking. The level of bias may be influenced by the extent of background experience and prior knowledge the researcher has in the area of the phenomenon being studied (Liamputtong, 2011).

Bias is not essentially considered a problem from the theoretical standpoint of qualitative methodology (Carlson, 2010). A naturalist approach favours inclusion of all human actions and social forces within the study, including those of the researcher (McCabe & Holmes, 2009). This approach encourages the researcher to be aware of the influences of their own behaviours, views and perceptions on the people being studied

and reflect this transparently in the dialogue that is presented during data collection, analysis and reporting (Carlson, 2010; Lambert et al., 2011; McCabe & Holmes, 2009).

Reflexivity is a form of focused reflection seen as a means for qualitative researchers to raise awareness of how their own experiences, relationships, beliefs and values may affect data collection and analysis (Lambert et al., 2011; Newton et al, 2012). Reflexivity may be used as a countermeasure or control to address researcher bias (Kingdon, 2005).

A primary purpose of this research was to describe and explain the practice of nursing staff from their perspective when caring for anxious patient undergoing cardiac catheter procedures at the selected study facility. Given that this research was undertaken in the same specialty cardiac unit that I had worked in as a registered nurse and that most of the study participants were, or had been my nursing colleague at some time, my familiarity with staff and workflows was established. My background is in critical care and cardiac nursing. I have worked in intensive care and cardiac investigation units and more recently specialised in project activities across cardiac and other clinical services. This final responsibility required me to be analytical in my approach to services provided across facilities to enable assessment of current and proposed workflows associated with service re-design.

Although I have since moved on to other nursing roles, at the time this study was implemented I was working as a nurse in the same cardiac investigation unit in which the study was conducted. My reflexive journal notes reflected my concerns that my personal and professional experience with nurses and the clinical unit would influence data collection and analysis. However the benefit of this concern was that it indicated a level of self awareness and served as a constant way to self-monitor researcher bias. As a qualitative researcher I sought to explore from an emic perspective nurses perceptions of caring for anxious patients within this clinical setting whilst acknowledging that these were the very same nursing practices that I had contributed to and culture that I had been immersed in whilst working in the procedure unit.

When conducting this research I acknowledged that my personal and professional experiences could easily influence my perceptions and thus impact on the interpretative stages of this research. Equally, I did not want any preconceptions I held regarding the clinical environment or nurses' actions to influence my data collection, as I needed to be

sure that I was not looking for something that I believed already existed rather than being lead to a discovery through the natural processes embedded within the qualitative approach.

Conversely, whilst acknowledging the inherent risk of researcher bias, my experience and knowledge of the field provided distinct benefits when conducting data collection and when engaging with nurse participants during interviews. My knowledge of internal systems and processes at the research site were advantageous when requesting charts to review from the medical records department and undertaking document analysis. Similarly my familiarity with the clinical environment and responsibilities inherent within the nursing roles helped me understand and contextualise the clinical documentation that was reviewed. Additionally, as I had already established a previous professional and collegial relationship with many of the nursing staff in the unit, nurse participants were comfortable when sharing work experiences and providing examples to make their point as they knew that I understood the operational context to their stories. For instance following on interview a participant provided an example of an occasion when a nurse we had both worked with previously had struggled with a particularly anxious patient who was known to staff, using this as an example of how difficult the shift was for everyone not just the nurse but others that had needed to “take on her work” during the shift. The relaxed manner in which nurses shared their stories and interjections such as “you know what I mean” indicated to me that my familiarity with the people and the clinical environment provided an opportunity for some participants to be more direct and open in responses.

1.4 Structure of the Thesis

The following summary outlines the structure adopted to present this Masters in Nursing Research Thesis. In this initial chapter the phenomenon of patient anxiety when undergoing cardiac catheterisation has been explained. The issues relating to anxiety assessment and management by nurses within this clinical setting have been introduced and significance to practice has been outlined.

Chapter 2 of this thesis provides a summary of the evidence within published literature highlighting factors influencing, and impacts of patient anxiety within the acute

care setting, providing a theoretical framework for implementation of this study. This evidence has been used to support anecdotal evidence I have acquired through personal experience and engagement with other clinicians.

In Chapter 3 the methodology for this study has been detailed with a rationale provided for adoption of the qualitative approach taken to describe and explain nursing practices within this clinical setting. Data analysis processes have been detailed within this chapter. My role as researcher has also been discussed.

Data acquired through semi-structured interviews with nursing staff has been presented in Chapter 4. This data has been presented predominantly in the form of verbal descriptions, supported by direct quotations from nurses interviewed and journal extracts compiled through reflexive praxis. A summary of findings from document analysis and retrospective chart review has also been documented.

A focal point for discussion within the final Chapter 5 of this thesis will be data collected through semi-structured interviews undertaken with nurses to inform this study. The discussion documented will interpret research findings and consider these in context to the research questions guiding this study. Further comparison against current evidence will identify common, contrasting and emergent findings. The discussion will also contain sub-sections of text, structured to support progression of themes identified during analysis in context to clinical practice.

1.5 Summary

As this introductory chapter has identified, nurses in the cardiac catheter procedure environment provide care for patients undergoing investigation and intervention for diagnosis and treatment of heart disease. The phenomenon of patient anxiety within this clinical setting has been highlighted. Furthermore the importance of routine nursing assessment to enable early identification of patient anxiety and inform management strategies to best support patients undergoing cardiac catheterisation procedures has been emphasised.

Issues relating to nursing anxiety assessment and management have been introduced providing a baseline for enquiry. In alignment with identified research aims and objectives and the qualitative approach adopted, study design, implementation,

analysis and findings have been documented for this qualitative study undertaken to review nursing practice in regards to anxiety assessment and management for patients undergoing cardiac catheterisation procedures. The next chapter will provide reference to best available evidence literature used to inform the development of this study and support analysis and interpretation of data gathered following implementation.

CHAPTER 2 – REVIEW OF THE LITERATURE

This chapter will summarise evidence documented within nursing and medical literature highlighting the phenomenon of patient anxiety within the acute care and procedural setting, with a key focus on review of nursing anxiety assessment and management strategies.

2 REVIEW OF THE LITERATURE - BACKGROUND

Since the first experimental human cardiac catheterisation procedure performed in the 1900s by Nobel Prize winning Dr Werner Forssmann on himself in a Berlin hospital, coronary angiography and subsequent percutaneous coronary intervention (PCI) has been widely accepted throughout the world (Goyal, Ratib, Narain, & Nolan, 2010; Medicus, 2011). This procedure is used as an effective method of diagnosing and treating coronary artery disease as an alternative to cardiac surgery (McCaffrey & Taylor, 2005). These x-ray guided diagnostic and interventional procedures require a small tipped catheter to be passed via either the femoral, brachial or radial artery into the coronary arteries. The PCI procedure commonly involves ballooning or angioplasty and stenting of coronary arteries to return blood flow to the heart when blockages have been diagnosed (Woodhead, Harding, Simmonds, Dee, & McBride-Henry, 2007). Evidence indicates associated reduced clinical risks such as infection or cardiovascular complications for patients diagnosed with single vessel heart disease when undergoing PCI because of the less invasive nature of this reperfusion treatment in comparison to cardiac bypass surgery (Astin et al., 2005; Bravata et al., 2007; Leahy, 2006; Tough, 2006).

The invasive cardiac catheterisation procedure process can be anxiety provoking for many patients (Chan & Cheung, 2003; Chung., 2004; Nekouei et al. 2011; Trotter et al., 2011). Display of such emotion is commonly referred to as *state-anxiety*, an emotional condition where feelings of tension, fear and worry induce increased autonomic nervous system activity in response to situational circumstance (Ayers et al., 2010; Chan & Cheung, 2003; Zipori-Beckenstein et al., 1999). Sympathetic response to stress promotes increased plasma adrenaline levels with subsequent increase in heart rate

and blood pressure. Additionally, reduced serum potassium levels, cardiac arrhythmias and alterations in mental state, with potentially compromised capacity to make suitable treatment decisions, have also been identified as adverse events for patients and important considerations for nursing staff providing care for anxious clients (Astin et al., 2005; Chan & Cheung, 2003; Frazier et al., 2003; Pritchard, 2011).

Whilst patients are commonly assessed by Medical teams prior to undergoing cardiac angiography and PCI, nursing staff play an important role in early identification of patient anxiety and utilisation of appropriate management strategies to support the patient and minimise emotional distress (Dixon, 2007). My experiences working within this clinical environment have identified inconsistent and varied approaches applied by nursing staff to assess and manage patient anxiety in this setting bringing about this literature review.

2.1 Literature Review

Nursing assessment and management of patient anxiety within the clinical procedural environment were the key foci of this literature review. The patient experience whilst undergoing cardiac catheterisation was also examined including the subsequent effects of anxiety on patient outcomes during and after procedure.

A fundamental step to ensuring timely management of patient anxiety is early assessment (Ayers et al., 2010). Factors influencing nursing assessment of patient anxiety in acute procedural areas such as the cardiac catheter laboratory were sourced within this review. The focus included environmental aspects including factors unique to the acute procedural clinical area. Additional review was undertaken of the assessment methods applied by nursing staff including availability and suitability of assessment tools to assist nursing staff to efficiently and effectively identify cardiac patient's anxiety in the acute setting.

Management strategies which could be applied by nursing staff to assist patient coping whilst undergoing invasive day procedures included both pharmacological and non-pharmacological management strategies. Non-pharmacological interventions reviewed included relaxation, music therapy, therapeutic touch, massage therapy and patient education (Argstatter, Haberbosch, & Bolay, 2006; Chan & Cheung, 2003; Weeks

& Nilsson, 2011; Zolfaghari et al., 2012). Pharmacological interventions reviewed included conscious sedation and premedication administration of benzodiazepines such as oral temazepam, a drug commonly administered as a pre-medication for day surgery patients to achieve both sedative and anxiety-relieving effects (Beddoes, Botti, & Duke, 2008; de Visser et al., 2003; Riley & Lim, 1999; Woodhead et al., 2007).

2.2 Literature Search

The literature search sought English language studies and was conducted using the following selection of nursing and medical databases:

- EBSCOHost
- Informit
- Blackwell Synergy
- OVID
- Science Direct
- Internurse.com
- Cochrane Library

A multi-step approach was used with initial search terms such as “cardiac catheterisation”, “coronary angiography”, “coronary angioplasty” and “angiography preparation”. Review of older nursing journals and clinical studies conducted within the cardiac catheter procedure setting was included within this search as they provided valuable insight into the changing focus of the nursing literature generated as the complexity of percutaneous cardiology diagnostic and interventional procedures increased over time. The initial broader search approach produced a multitude of more recent articles referring more specifically to the clinical procedures undertaken in the cardiac catheter laboratory environment and technical skills required of nursing staff rather than assessment skills.

Further, more refined searches were undertaken applying additional filter terms such as “anxiety”; “anxiety assessment”, “anxiety management”, “state anxiety”, “trait anxiety”, “complications”, “premedication” and “temazepam” providing more suitable responses. A separate search was also undertaken using the terms “nursing emotional exhaustion” and “nurse burnout” to capture articles referencing impacts on

nursing staff when caring for anxious patients. Literature identified focused predominantly on organisation stressors such as patient load and management support. Whilst findings from these studies were applicable to the cardiac catheter laboratory environment, a further refined search was undertaken with the additional filter term of “compassion fatigue” producing several articles which also explored nursing stressors related to caring for patients and families in emotional distress.

To streamline the review, where full text articles were not available on initial search, titles and abstracts of the articles were assessed against inclusion criteria to determine relevance. References selected for inclusion in the review were imported into the bibliographic software package EndNote X3.

Inclusion criteria set for the review included:

1. qualitative and quantitative studies reviewing the three aspects of acute anxiety, nursing assessment and anxiety management in the critical care setting;
2. systematic reviews and intervention studies incorporating both or either topics of anxiety assessment, and review of pharmacological and non-pharmacological interventions to reduce anxiety in patients undergoing cardiac investigations or day procedures;
3. randomised controlled trials (or quasi-experimental designs) identifying measurable outcomes of oral benzodiazepine administration;
4. systematic reviews, quantitative and qualitative studies reviewing work related stress and the emotional effects on nurses working in critical care settings;
5. research conducted and published in peer-reviewed, international nursing and medical journals within the past 40 years to provide a comprehensive review and comparison of past and current evidence generated within the evolving cardiac procedural environment.

Exclusion criteria included:

1. non-English language studies

2. research undertaken involving paediatric patients
3. research undertaken investigating anxiety disorders such as post traumatic stress or generalized anxiety disorders
4. studies that investigated the effects of intravenous or multi-dose temazepam

2.3 Findings

2.3.1 The Concept of Anxiety

It is inevitable in life that most of us will experience some level of anxiety in response to either a real or possibly imagined threat. The concept of anxiety has Greek origins; however the notion of fear was represented as early as 3000BC within ancient Egyptian hieroglyphics (Endler & Kocovski, 2001). Kasper, den Boer and Ad Sitsen (2003) note that Descartes in the late 17th Century believed the human body's response to threat evoked a purely physiological reaction which "facilitated the perception of objects in terms of their effects upon us, whether beneficial or otherwise" (p12). Developing within Western culture, the concept of anxiety has been influenced through theorists' studies of self, forming the centre of Freud's theories in the early 1900s, which classified objective or reality anxiety as a response to danger (Freud, 1920). In 1966 Charles Spielberger introduced the multifaceted aspect of anxiety, differentiating *state* from *trait* anxiety, a distinction widely accepted within modern psychology (Endler & Kocovski, 2001; Spielberger, 1966).

State anxiety has been described as a normal physiological response to an acute stressor, evoking symptoms and unpleasant feelings which commonly subside over time (Uzun et al., 2008). In comparison, *trait* anxiety is an inherent phenomenon reflecting the day to day anxiety levels of an individual. Higher levels of *trait* anxiety have been found to predispose an individual to increased *state* anxiety (Horikawa & Yagi, 2012). If anxiety levels surpass what is considered to be normal levels, or continue to an extent that they hinder function, then anxiety is considered to be maladaptive (Moser, 2007; Perpiñá-Galvañ & Richart-Martínez, 2009; Uzun et al., 2008).

2.3.2 Factors Influencing State Anxiety for Cardiac Patients

It is well reported that many cardiac patients experience elevated levels of anxiety, with levels commonly peaking after an acute cardiac event (Ketterer, Bekkouche, Goldberg, Krantz, & McMahon, 2011; Moser, 2007). Influencing factors linked to acute presentations stem from severity of presenting symptoms, feelings of loss of control exacerbated by the emergent nature of diagnostic and interventional procedures, unknown prognosis and longer term outcomes (Chung, 2004).

Valuable past and current research studies undertaken specifically within the cardiac catheter laboratory setting also highlight the high incidence of psychological distress experienced by patients undergoing coronary angiography and percutaneous coronary intervention (PCI), with common themes emerging throughout many of the reviewed studies (Astin et al., 2005; Chan & Cheung, 2003; Ghetti, 2011; Hanifi et al., 2005; Heikkilä et al., 1998; Lundén, Bengtson, & Lundgren, 2006). Identified contributing factors relating to increased patient anxiety include the hospital environment, time waiting for procedure, fear of the unknown, and anxiety about the invasive procedure process and about future prognosis and how this may affect the patient's life (Astin et al., 2005; Beckerman et al., 1995; Finesilver, 1978; Lyons, Fanshawe & Lip, 2002; Nekouei et al., 2011; Zipori-Beckenstein et al., 1999).

Variation in research methods applied to review patient anxiety whilst undergoing cardiac catheterisation was evident through review of the literature, with some studies undertaking data collection on the same day of procedure (Beckerman et al., 1995; Uzun et al., 2008). Alternatively, other studies have collected data through interview or completion of questionnaires by participants one to twelve months post angiography or angioplasty, requiring recall by patients of their subjective views regarding their anxiety levels at time of procedure (Astin et al., 2005; Gulanick & Naito, 1994; Higgins et al., 2001). This delayed recall effect may result in diminished report of anxiety or fear experienced by study participants who have undergone cardiac catheterisation (Higgins et al., 2001) and may explain the contrast in findings in research undertaken by Gulanick et al. (1994) which surprisingly failed to identify any reports from study participants of fear associated with the angioplasty procedure.

2.3.3 Outcomes of Patient Anxiety

As highlighted within this review, it is well recognized that many patients who undergo cardiac procedures will experience some degree of anxiety. Whilst individual levels of anxiety may vary across the patient population, commonly patients experiencing anxiety will exhibit some form of detrimental physical, behavioural and/or emotional response often requiring intervention or support from nursing staff (Argstatter et al., 2006; Chan & Cheung, 2003). As the patient's physiological and emotional wellbeing is a key responsibility for nursing staff, outcomes of patient anxiety and distress can impact on the individual patient and also provide assessment and management challenges for nurses (Bauer et al., 2011; Brosan, Hoppitt, Shelfer, Sillence, & Mackintosh, 2011; Astin et al., 2005; Moser et al., 2003; Webster et al., 2012). Studies reviewing patient anxiety when undergoing cardiac catheterisation document physiological, emotional and behavioural responses to stress which nurses should identify and monitor (Gallagher, Trotter, & Donoghue, 2010; Ghet ti, 2011).

Patient Responses to Stress

Physiological responses such as anxiety induced cardiovascular and haemodynamic instability in patients undergoing cardiac catheterization may necessitate need for administration of sedative medication pre and intra-procedurally with associated adverse outcomes including longer recovery times and hospital stays (Chan & Cheung, 2003; de Jong-Watt & Arthur, 2004; McCaffrey & Taylor, 2005; Reddy, Jaggar, & Gillbe, 2006). When considering the longer term effects of procedural anxiety however, findings within the study undertaken by Zipori-Beckenstein et al. (1999) did not identify any significant relationship between the patient's pre-procedure anxiety levels and their recovery status 6 weeks following cardiac catheterisation. Statistical analysis identified that the only factor influencing recovery status at six 6 weeks post procedure was the age of the study participant. Similarly, a study by Kornerup, Zwisler & Prescott (2011) controversially identified no association between adverse patient outcomes and anxiety levels in patients diagnosed with cardiovascular disease. Whilst review of long term outcomes for patients who have undergone coronary angiography and angioplasty to treat cardiovascular disease is important, one of the limitations within both studies was the lack of data reflecting the patient's short term recovery status, including such factors as

emotional state, haemodynamic status and reported pain levels in the 24 hours immediately following procedure.

Studies exploring the patient's emotional response to cardiac catheterisation consider such things as the relationship between anxiety and patient expectation and satisfaction prior to and following procedure, feelings of loss of control both physically and mentally, and fear of the unknown regarding post procedure protocols and prognosis post angiography (Beckerman et al., 1995; Higgins et al., 2001; Lunden et al., 2006). One longitudinal study involving a random sample of 230 adult patients undergoing elective cardiac catheterisation identified a negative correlation between state-anxiety and positive expectation of outcome of procedure. Additionally, anxiety levels pre-procedure were found to have a statistically significant influence on the patients' perceived satisfaction six weeks following procedure, with patient's satisfaction levels lower when they had experienced heightened anxiety prior to procedure (Zipori-Beckenstein et al., 1999). Subjective data was gathered for this study using structured questionnaires completed during interview with the patient to assess their anxiety levels, expectations and satisfaction of treatment. Additionally, similar data collection methods were undertaken with the patient's physician to obtain objective data regarding recovery status. As multiple items such as patient expectation, patient satisfaction and state anxiety were assessed within the one questionnaire, appropriate measures of internal consistency were scored using Cronbach's alpha with results of alpha identifying adequate internal consistency of measures. In addition to identifying links between patient anxiety and longer term satisfaction following procedure, analysis also indicated that the patient's perception of how well they had recovered post procedure was realistic, aligning with their physician's evaluation of the patient's recovery outcomes.

Effects of Patient Anxiety on Work Environment and Staff

A review of studies conducted to explore multiple facets of patient anxiety commonly included consideration of patient outcomes, however within this literature review there was minimal reference to any direct practice or personal impacts for nursing staff caring for these patients (Gallagher et al., 2010; Moser, 2007; Nekouei et al., 2011). Whilst research abounds exploring patient outcomes when anxiety is unmanaged in acute care environments, review of the literature highlights a deficit of research exploring

nursing impacts when caring specifically for anxious patients in the cardiac catheter laboratory environment. Patients do not exist in isolation and as in any relationship; the nurse patient relationship is influenced by experiences and behaviours of both parties. The reported high incidence of patient anxiety within this procedural setting invites further exploration of nursing anxiety assessment practice throughout the care pathway.

2.3.4 Assessment of Patient Anxiety

Patient assessment is a critical component of nursing care and forms the initial phase of the nursing process driving decision making, informing treatment options and forming a foundation for clinical handover and review. As such, comprehensive assessment skills are key to the provision of quality patient care (Estes et al., 2013; Webster et al., 2012). Nursing knowledge and experience may influence nurses' approach to health assessment as more experienced nurses will draw on previous experience to help decision making and guide assessment processes (Estes et al., 2013; Webster et al., 2012). In comparison Estes et al., (2013) note that the less experienced nurse may need guidance in the absence of the more developed clinical reasoning and critical thinking applied by the more experienced nurse.

Nursing literature reviewing patient preparation and nursing assessment practices within the acute care and peri-procedural setting dedicate varying levels of content to assessment of patient anxiety (Finesilver, 1978; Pritchard, 2011; Walker, 2007). One article focused specifically on anxiety assessment, providing rich detail on the signs, symptoms and delineators between differing diagnoses of anxiety (McGrandles & Duffy, 2012). Another when discussing nursing assessment practices, highlight the inherent risks of poorer patient outcomes if patient anxiety is inaccurately assessed and subsequently un-managed, also noting that some nurses may not undertake psychological assessment as thoroughly as physiological assessments such as respiratory and cardiac function or ambulatory capacity (Frazier et al., 2002). In an older study of nursing care, Franklin (1974) noted that although nursing demeanour may be courteous and attentive whilst undertaking patient admission processes, they may neglect the psychological aspects of patient assessment. Frazier (2002) provides a possible rationale for nurses overlooking this important aspect of patient assessment when stating that "psychological indicators of

anxiety such as distorted cognitive functioning are difficult to detect without a specific measurement tool’ (p63).

In studies evaluating the phenomenon of patient anxiety, inconsistency in assessment strategies and approach and disparity between nursing evaluation and patient self reported anxiety levels were common documented themes (Moser, 2007; Suriano et al., 2011). Additional emphasis within the research included the critical importance of early recognition of patient anxiety by nursing staff to pre-empt delivery of appropriate and easy to implement interventions to facilitate patient coping and minimise discomfort at this time (Astin et al., 2005; Köllner & Bernardy, 2006; McCaffrey & Taylor, 2005). Information to assess anxiety may be sourced directly from the patient with valuable subjective data acquired by nursing staff through interview or questionnaire regarding the patient’s self reported anxiety levels. A variety of tools are available to support nursing staff assess and measure patient anxiety with review of the literature revealing a vast number of techniques and instruments used to ascertain anxiety levels. The following table in Figure ² identifies some of the instruments applied or reviewed within studies included within this literature search.

Figure 2. Instruments to Assess Patient Anxiety Levels

<i>Instruments to Assess Patient Anxiety Levels</i>		
Instrument	Frequency in Literature	Reference
Visual Analogue Scale (VAS)	15	Argstatter et al., 2006; Beechey, Eltringham, & Studd, 1981; Carabine, Milligan, & Moore, 1991; Caumo et al., 2001; Clark, Erwin, Yate, Burt, & Major, 1982; de Jong-Watt & Arthur, 2004; Gallagher et al., 2010; Kazemisaeid et al., 2007; Perpina-Galvan & Richart-Martinez, 2009; Heikkila et al., 1998; Kennedy et al., 2000; Nightingale & Norman, 1988; Radford, 2009; Ratcliff, Indalo, Bradshaw, & Rye, 1989; Zipori-Beckenstein et al., 1999

Figure 2. Instruments to Assess Patient Anxiety Levels

Instruments to Assess Patient Anxiety Levels		
Instrument	Frequency in Literature	Reference
Verbal Scale (Linear Numerical)	2	Benotch, 2000; Perpina-Galvan & Richart-Martinez, 2009
Spielberger's <i>State-Trait</i> Anxiety Inventory (STAI)	21	Argstatter et al., 2006; Astin et al., 2005; Benotch, 2000; Caumo et al., 2001; Chan & Cheung, 2003; Court et al., 2010; Finesilver, 1978; Gallagher et al., 2010; Perpina-Galvan & Richart-Martinez, 2009; Hamel, 2001; de Jong & Hall, 2006; Heikkila et al., 1998; Herrmann & Kreuzer, 1989; Kantor et al., 2001; Luttik, Jaarsma, Sanderma & Fleer, 2010; Moser, 2007; Mott, 1999; O'Brien, 2000; Radford, 2009; Taylor-Piliae & Molassiotis, 2001; Trotter et al., Uzun et al., 2008
Physiological assessment including heart rate and blood pressure.	12	Amarasekera, 1980; Argstatter et al., 2006; Beechey et al., 1981; Frazier, 2002; Hamel, 2001; Hanifi et al., 2005; Heikkila et al., 1998; Hindoyan et al., 2011; Kantor et al., 2001; Moser et al, 2003; Nightingale & Norman, 1988; Wimbush, Thomas, Friedmann, Sappington, & Lynch, 1986
Behavioural indicators	3	Frazier, 2002; Moser et al, 2003; O'Brien et al, 2001
Open questioning	3	Beckerman et al., 1995; Grieve, 2002; Higgins et al., 2001
Hospital Anxiety and Depression Scale (HAD)	11	Argstatter et al., 2006; de Jong & Hall, 2006; Perpina-Galvan & Richart-Martinez, 2009; Heikkila et al., 1998; Hindoyan et al., 2011; Kornerup et al., 2011; Pritchard, 2011; Roberts et al., 2001; Shen et al., 2011; Hunt-Shanks et al, 2010; Unsal, Unaldi & Baytemir,

Figure 2. Instruments to Assess Patient Anxiety Levels

Instruments to Assess Patient Anxiety Levels		
Instrument	Frequency in Literature	Reference
		2011
Brief Symptom Inventory (BSI),	2	de Jong & Hall, 2006; Perpina-Galvan & Richart-Martinez, 2009
STOP-D (5 Item Questionnaire)	2	Ayers et al., 2010; Young, Ignaszewski, Fofonoff, & Kaan, 2007
Cattle Anxiety Questionnaire	1	Nekouei et al, 2011
Mood Adjective Check List (MACL)	1	Finesilver, 1978
Teichman's questionnaire of <i>trait</i> and <i>state</i> anxiety	1	Zipori-Beckenstein et al., 1999

As indicated above in *Figure*², some studies incorporated more than one technique within their data collection with the *State-Trait* Anxiety Inventory (STAI) and the Visual Analogue Scale (VAS) identified as the most commonly used instruments respectively. The STAI consists of 2 separate self-report scales which have been proven to be effective in discriminating between situational stress and the more stable personality characteristic of *Trait* Anxiety which may reflect an individual's pre-disposition to anxiety (Hamel, 2001). The STAI presents a standardised approach to assessing anxiety levels, proving to be a popular choice in empirical studies in which features such as generalisability and reliability are imperative (Walker, 2007). A study undertaken to assess different instruments used to evaluate subjective fear concurs with this view, identifying STAI and VAS as reliable measures (Heikkila et al., 1998). Additionally, this study highlighted the inability of nursing staff to accurately evaluate changes in the

patient's emotional state, further recommending the implementation of tools such as VAS by nurses during patient assessment.

Studies reviewing suitable self report tools to support measurement of patient anxiety within the acute care setting highlight the need to consider factors such as time taken to complete the assessment, the patient's mental capacity influencing their level of understanding and self awareness, physical constraints including whether the patient is in pain or is unable to sit up or write to enable completion of a self report instrument (Benotsch et al., 2000; Court et al., 2010; Köllner & Bernardy, 2006). Instruments found to be suitable to assess anxiety levels of cardiac patients included the STAI, VAS and the Hospital Anxiety and Depression Scale (HADS) which is a 14-item self report measure using a four point likert scale on which the respondent is required to indicate degree of anxiety or depression symptoms (Ayers et al., 2010; Shen et al., 2011; Trotter et al., 2011).

When considering strategies applied to assess patient anxiety within nursing practice, several studies highlight the lack of consistency in assessment identifying a tendency for nurses to rely on more overt physiological and behavioural responses to anxiety such as increased heart rate and blood pressure and expressions of hostility or agitation to validate evidence of patient anxiety (Frazier et al., 2002; Moser et al., 2003). As these measures alone have been found to be unreliable due to medication effects and behavioural variations of patients, there is an identified need for an anxiety assessment tool for nursing staff to support a systematic approach to early identification of patient anxiety (Frazier et al., 2002).

2.3.5 Management of Patient Anxiety

In addition to exploring factors contributing to patient's state anxiety levels, studies conducted by nursing specialists and academics also review the effectiveness of interventions to facilitate patient coping and minimising anxiety (Astin et al., 2005; Chan & Cheung, 2003; Hanifi et al., 2005). The summary from this review has been categorized under the two separate intervention groups of pharmacological and non-pharmacological management strategies.

Pharmacological Intervention

Premedication administrations offer a pharmacological alternative for managing patient anxiety in the cardiac catheter laboratory environment (Reddy et al., 2006; Woodhead et al., 2007). As outlined previously, patients experiencing acute anxiety whilst awaiting cardiac catheterisation may require increased sedative medication pre and intra-procedurally. However, it has been identified that institutional policy tends to influence sedative and analgesic administration more so than patient pain and anxiety scores (Kennedy et al., 2000; Mott, 1999).

Benzodiazepines such as oral temazepam and diazepam are an anxiolytic medication with sedative effects which are commonly administered to relieve anxiety prior to surgery or day procedures such as coronary angiography (de Visser et al., 2003; Woodhead et al., 2007). When undertaking a literature search reviewing premedication practices within the cardiac diagnostic and interventional procedure area, it was found that articles focused on the physiological impacts of premedication for patients with compromised cardiac function (Kennedy et al., 2000; Reddy et al., 2006).

Several random, double-blind comparison studies (Amarasekera, 1980; Carabine et al., 1991; Clark et al., 1982; Nightingale & Norman, 1988) and a single random, comparative study in which only the participants were blinded to treatment (Kennedy et al., 2000), identified the suitability of oral temazepam for administration as a pre-medicant for minor or day surgery. All of these studies highlighted anxiolysis as a principle function of pre-medication within this setting and evaluated both anxiolytic and sedative effects of oral temazepam in contrast to other medications such as diazepam and clonidine (Amarasekera, 1980) and/or placebo (Carabine et al., 1991; Clark et al., 1982; Kennedy et al., 2000). With the exception of Clark et al. (1991) and Kennedy et al. (2000), all studies collected objective data in the form of clinical assessment of participant's blood pressure and heart rate in conjunction with documentation of the patient's subjective view of their own anxiety and sedation levels. Significantly lower systolic blood pressure (BP) and pulse rate ($p < 0.0005$ for BP and $p < 0.001$ for pulse rate) following administration of a 30mg pre-medication dose of oral temazepam was also noted in one of these studies (Amarasekera, 1980).

Conversely, in a study undertaken by Woodhead et al. (2007) reviewing efficacy of premedication specifically for cardiac catheterisation procedures, efficacy of diazepam

premedication as an anxiolytic was not supported within research findings. However patients in the experimental group of this randomised study who received 5 to 10 mg of oral diazepam, 30 to 60 minutes prior to procedure were significantly less likely to report peri-procedural pain.

Sedative Effects

Evident within some of these studies however is the disparity in findings regarding recovery rates reflecting alertness, memory function and performance ability of participant's following temazepam administration (Carabine et al., 1991; Nightingale & Norman, 1988; Riley & Lim, 1999). Long term sedative effects such as excessive drowsiness and respiratory depression are factors which must be considered when reviewing efficacy of pre-medications of patients with cardiac disease (Riley & Lim, 1999). As patients are commonly required to mobilise 1 to 4 hours post sheath removal in the cardiac investigations setting, it is important that they have regained full psychomotor abilities to reduce risk of complications such as falls (Tough, 2006).

Comparative studies undertaken to review appropriateness of oral temazepam in comparison to other pre-medicants highlight positive effects such as rapid onset of action but short elimination half life, with subsequent rapid rates of patient recovery (Kanto, 1986; Nightingale & Norman, 1988). A systematic review undertaken by Walker and Smith (2009), found little significant evidence that pre-medication with anxiolytic medications in day surgery settings resulted in prolonged recovery periods or delayed discharge times. This same review supported other study findings (Kanto, 1986; Nightingale & Norman, 1988) identifying patients who had received 10mg to 20mg of temazepam pre-operatively were able to be discharged 3 hours following short anaesthetic.

Non-pharmacological Interventions

Of additional consideration, is the possible alternative non-pharmaceutical methods nursing staff may incorporate into patient care to minimise anxiety prior to cardiac catheterisation. When considering alternatives to temazepam administration as an anxiolytic, there is an abundance of research available which reviews the effectiveness of non-pharmacological interventions that may be applied to reduce patient anxiety

(Argstatter et al., 2006; Ghetti, 2011; Hamel, 2001; Hanifi et al., 2005; McCaffrey & Taylor, 2005; Zolfaghari et al., 2012).

Results from three pretest-posttest experimental studies supported the use of music therapy as an intervention to minimise patient anxiety when undergoing cardiac catheterisation (Argstatter et al., 2006; Ghetti, 2011; Hamel, 2001). Findings from these studies identified that music stimulation had positive and relaxing effects for patients during this time however one study acknowledged limitations in sample size influencing statistical analysis of results (Ghetti, 2011).

Additionally there are several published comparative studies which contrast non-pharmacological interventions with temazepam administration. One study undertaken in Iran (Hanifi et al., 2005), identified similar alteration in pulse and respiratory rate in randomly selected groups of patients who had received either pre-medication with several drugs including diazepam, or alternatively had practiced relaxation techniques in the lead up to their angiography procedure. This research finding suggests that alternative, non-pharmacological interventions may be as equally effective as benzodiazepine administration to reduce patient anxiety prior to cardiac catheterisation.

Moreover, advocates for anxiety management through implementation of non-pharmacological interventions highlight additional benefits such as nil detrimental haemodynamic effects and reduced patient drowsiness post procedure, side effects which may occur with benzodiazepine pre-medication (Clark et al., 1982; Kazemisaeid et al., 2007; Riley & Lim, 1999). Unfortunately, increased work demands and limited time available for individualised nurse-patient interactions prior to procedures is a common problem, and a factor which may impinge on the nurse's ability to apply effective non-pharmacological interventions such as diversional therapy or patient massage to reduce patient anxiety (Higgins et al., 2001; Stirling, 2006).

2.3.6 Methodologies Applied Within Research

Evident in review of the literature is the diversity of research methodologies applied across studies reviewing the phenomenon of patient anxiety in the cardiac catheter procedure setting. Phenomenological and grounded theory methodologies have been applied to explore patient experiences when undergoing coronary angiography

(Caldwell, Arthur, Natarajan, & Anand, 2007; Lundén, Bengtson & Lundgren, 2006). Conversely, quantitative methodologies have been applied in some studies reviewing efficacy of interventions applied to minimise patient anxiety when undergoing cardiac catheterisation procedures (Argstatter et al., 2006; Ghetie, 2011).

In qualitative studies exploring patient experiences when undergoing coronary angiography, provision of information prior to procedure was found to be an important factor influencing patient's coping. In a phenomenological study involving seven men and seven women undertaken by Lundén et al. (2006), information and knowledge about the procedure was found to be a key factor in determining how well the patients coped physically and emotionally. Similarly a grounded theory study aiming to further elaborate theoretical understandings in relation to patient's perception of risk, which was undertaken by Caldwell et al. (2007), highlighted that male and female patients may display different coping styles, indicating benefits in adapting delivery of information prior to cardiac angiography procedures to meet identified preferences. Findings from this Canadian study, in which an equal number of ten men and ten women were recruited, indicated that female patients may benefit more from personal interaction with clinical staff in the lead up to their procedure. In comparison, male patients may prefer a less personal approach to provision of information, with a tendency to focus on the more technical aspects of the procedure preferring to not talk but "just get on with it" in a more problem-oriented approach to addressing their cardiac condition (Caldwell et al., 2007, p 1047). Given the nature of enquiry, adoption of a qualitative approach was appropriate in both of these studies

When reviewing the efficacy of nursing interventions to minimise patient anxiety, two randomised experimental designs and one quasi-experimental design (Argstatter et al., 2006; Chan & Cheung, 2003; Hamel, 2001) explored the impact of interventions such as education and music therapy on patient's anxiety levels during the cardiac catheterisation procedure. Subjects in these studies were separated randomly into a control group who received routine cares in the lead up to their procedure, and experimental groups who underwent an intervention as part of the independent variable within the study. A valuable finding by Hamel (2001) suggested that anxiety levels in

women undergoing cardiac catheterisation were higher than those of men participating in the study.

Other studies undertaken within Australia and Asia have explored appropriateness of education provided prior to angiography (Astley, Chew, Aylward, Molloy, & De Pasquale, 2008; Chair & Thompson, 2005). In a study involving 21 participants, Chair and Thompson (2005) found that whilst 48% of the patients in the study were keen to know details relating to their procedure such as processes undertaken in the catheter laboratory and following their procedure. No patients participating in this study wished to be told about the risks associated with their procedure and only a single participant was interested in receiving preventative education. However, the level of anxiety experienced by patients when receiving more detailed information regarding procedural risks associated with cardiac angiography was not found to be significantly increased, in a randomised study assessing outcomes of three different forms of information delivery to a sample of 99 patients undergoing cardiac angiography within one large Australian hospital (Astley et al., 2008).

Research conducted in the cardiac catheterisation setting highlights the need for nursing anxiety assessment to identify patient anxiety and inform management strategies (DeJong, 2006). Evidence also supports that nursing assessment of patient anxiety and subsequent intervention strategies applied may be inconsistent (Gallagher, Trotter, & Donoghue, 2010; Moser et al., 2004); however there is little documented qualitative review of nursing anxiety assessment and management practices from the perspective of nurses working with this group of patients.

In comparison to the study by Chair and Thompson (2005) in which all study participants were undergoing cardiac catheterisation procedures for the first time, other studies reviewing incidence of patient anxiety and efficacy of interventions have included participants who have undergone cardiac catheter procedures previously (Astley et al., 2008; Argstatter et al., 2006; Ghetti, 2011). A limitation of findings within these studies may be the influence of previous experiences of some participants on their responses to the procedure and interventions offered. Another limitation of single site quantitative studies reviewed within this literature search included the generalisability of research findings (Argstatter et al., 2006; Ghetti, 2011; Radford, 2009). Additionally, the under

representation of women within some of the quantitative studies (Trotter et al., 2011; Woodhead et al., 2007) raises the question of population validity within samples, compromising transferability and reproducibility of research findings.

2.3.7 Recommendations for Further Research

Review of the literature identified a high incidence of patient anxiety reported in the acute care and cardiac procedural setting and whilst many of these studies provided valuable evidence to guide assessment and management of anxious patients undergoing cardiac catheterisation, limitations within published research were apparent.

Nursing Assessment of Patient Anxiety

Whilst literature highlights inconsistencies in nursing assessment of patient anxiety, a scarcity of more comprehensive qualitative enquiry into factors influencing nursing anxiety assessment was evident. Further qualitative enquiry to explore nursing anxiety assessment from the nurses' perspective would be of value.

Broader Effects of Patient Anxiety

As highlighted previously, a number of clinical studies and systematic reviews have been conducted to explore the multi facets of patient anxiety (Chung 2004; Hamel, 2001; Hanifi et al., 2005; McCaffrey & Taylor, 2005; Moser et al., 2003; Nekouei et al., 2011; Uzun et al., 2008). Many of these studies cited the effects of anxiety on patient outcomes including physiological, emotional and behavioural responses, procedural complications and longer term recovery (Chung 2004; Hamel, 2001; Hanifi et al., 2005). Further to review of patient outcomes associated with patient anxiety in the cardiac catheter procedure setting, exploration was warranted to consider the nursing experience when providing care for anxious patients, including identification of operational and clinical practice factors. Further exploration would provide valuable information in regards to nursing practice and development needs in relation to patient anxiety assessment and management.

Questions Yet to Be Answered

As summarised, whilst evidence from nursing research documented the high incidence of patient anxiety in the cardiac catheter procedure setting, when exploring the phenomenon of patient anxiety in this setting it was apparent that some facets of nursing

practice required deeper exploration. A greater understanding of nursing actions in regards to patient care for anxious patients was needed. Arising questions desired responses from the emic perspective of nursing staff working specifically within this acute procedural environment in context to factors influencing their practice including such things as work environment and individual experiences. Guiding questions framed inception of this study included:

1. How do nurses perceive their assessment and management of patient anxiety within the cardiac catheter procedure environment?
2. What factors influence Nurses' assessment and management of patient anxiety within the cardiac catheter procedure environment?
3. What are the effects to the patient and to nursing staff of patient anxiety within the cardiac catheter procedure environment?

2.4 Conclusions

As this review of the literature reveals, nursing practices in regards to anxiety assessment and management for cardiac patients is diverse with subsequent risks to patient outcomes. When considering nursing assessment of patient anxiety, there was limited evidence to support appropriate strategies or tools to assist nurses to undertake anxiety assessment specifically within the cardiac catheter procedure environment.

Whilst there was an abundance of literature referencing non-pharmacological management strategies to minimise patient anxiety when undergoing invasive cardiac catheter procedures, there was a scarcity of nursing research reviewing appropriateness of nursing interventions in relation to specific evaluation criteria. Equally, when considering pharmacological management strategies that nursing staff can apply, evidence supports the efficacy of interventions such as oral temazepam premedication to alleviate anxiety in patients for day procedures. However there is no reference within this literature in regards to anxiety assessment and evaluation criteria to inform appropriateness of prophylactic premedication administration for all patients or just those who appear to be anxious.

As research reviewed within this literature identifies:

- the experience of undergoing cardiac catheterisation can be anxiety provoking for many patients;
- there are common stressors attributed to patient anxiety within the acute care environment;
- nurses have a responsibility to identify patients at risk of developing anxiety during preparation for cardiac catheterisation and to deliver appropriate nursing interventions to minimise patient stress at this time;
- there are inconsistency in strategies applied by nursing staff to assess and manage patient anxiety;
- unmanaged anxiety can impact on patient recovery and produce adverse physiological complications;
- pharmacological and non-pharmacological management strategies may be applied to minimise psychological discomfort relating to state anxiety.

This Literature Review chapter has provided a summary of clinical evidence documented within published literature highlighting factors influencing, and impacts of patient anxiety within the acute care setting. Findings from this literature review supported anecdotal evidence acquired through personal experience and my engagement with other clinicians to guide implementation of this study. The following Methodology chapter details the methodological approach taken to guide this study including data collection and analysis processes undertaken and important ethical considerations relevant to completion of this research.

CHAPTER 3 – CAPTURING THE NURSES’ PERSPECTIVE

This chapter will detail the conceptual and philosophical framework guiding this research project. The methodology for this study has been detailed with rationales provided for adoption of the qualitative approach taken to describe and explain nursing practices within this clinical setting. An overview of methods applied within the study including data collection and analysis processes undertaken for data sourced through nurse interviews, document analysis and journaling has also been provided. As an extension of reflexive journaling, my role as researcher in the context of the qualitative methodology adopted has also been discussed.

3 METHODOLOGY

An interpretive paradigm was chosen as a framework for this qualitative study, guided by the research objectives to understand and interpret nurses’ perspectives on patient anxiety and how they practice. This philosophical paradigm is underpinned by the epistemological view that knowledge is a social construct obtained through interpretation or understanding of human action (Smith, Mitton, & Peacock, 2009). Interpretive research seeks to “understand the meanings that constitute actions” (Wu & Chen, 2005, p 9). A key characteristic of interpretive research is that it is conducted in the natural setting using the researcher as the human instrument within the study. Research questions for this study desired responses from the emic perspective of nurses working specifically within the clinical setting of the cardiac catheter procedure unit. A focused enquiry aimed to gain an understanding of nursing actions in regards to patient care for anxious patients. Influences imposed or perceived from the nurses’ personal and professional drivers including their work environment and individual experiences were also explored.

Most qualitative researchers incorporate an interpretive and naturalistic approach. They seek to understand, describe and explain real world phenomenon and “unpick the worlds around them, what they are doing or what is happening to them in terms that are meaningful and that offer rich insight” (Flick, 2008, p 4). Qualitative researchers are interested in how study participants make sense of their actions and behaviours as the

participant's perspective forms part of the reality that is attempting to be understood (Maxwell, 2005).

Suitability of qualitative methodology as a framework to support research in the health care setting has been debated for many years with supporters advocating its rightful place alongside traditional quantitative paradigms as a contributor to the evaluation of health care (Hutchinson, 2001; Lempp & Kingsley, 2007). Hutchinson (2001) summarizes the development of qualitative research over the past twenty years, highlighting four evolutionary stages of qualitative research in health. Whilst describing these stages as fluid rather than structured, she interprets them as “transitional experiences” that include “stopping, waiting, transition and entry” (p505). The term ‘stopping’ has been coined to describe the earlier stages when qualitative researchers were considered to be non-conformists and qualitative studies were shunned by peer review who favoured the more traditional positivist approach to investigation. Subsequent stages reflect the times of growth in qualitative research including the increased acceptance and recognition within nursing research as nurse researchers refined the art of thinking and writing in an interpretive style acceptable to peer review (Hutchinson, 2001). Acceptance was reflected and also facilitated by the emergence of more published qualitative journals within health care literature and development of ethical guidelines by research funding institutions to assess design and implementation of qualitative studies (Al-Busaidi, 2008; Hutchinson, 2001).

Qualitative research has been depicted as “a set of interpretive activities *that* privileges no single methodological practice over another” (Denzin & Lincoln, 2005, p6-7). Much has been written about the different philosophical approaches, methods and techniques that sit under the umbrella term of qualitative research such as grounded theory, ethnography or phenomenology (Caroleo, 2002; Gerrish & Lacey, 2010; Liamputtong, 2011; Maxwell, 2005). However, rather than focus on methodological purity where each defined qualitative approach is presented as a sole option, Coyle (2010) and others advocate for ‘pluralism’ in qualitative research (Johnson, Long & White, 2001). When reviewing pluralism in qualitative research Frost et al. (2010) identify that the adoption of more than one single qualitative approach within a study design ‘might be seen to enhance the applicability and transparency of qualitative

research” (p2). The view that qualitative research is a plural domain, whilst supported by others, is balanced by the belief that methodological pluralism in qualitative research can make determination of quality a challenge (Easterby-Smith, Golden-Biddle, & Locke, 2008).

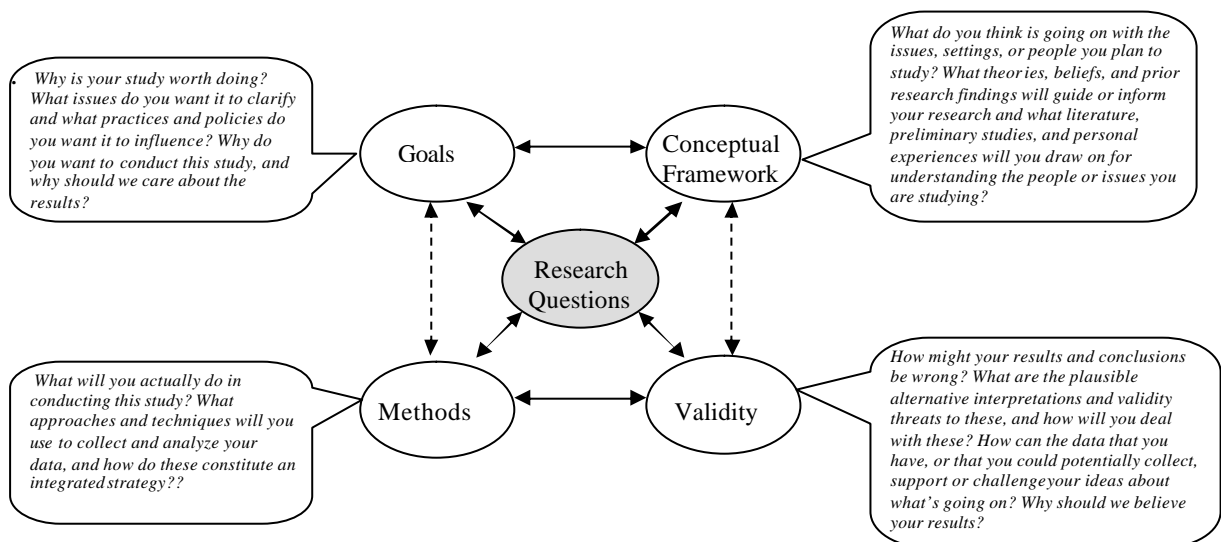
Regardless of approach, there are commonalities evident across all qualitative methodologies, with terms such as inductive, descriptive, holistic, emic, subjective, and process oriented all used to describe qualitative research (Gerrish & Lacey, 2010; Liamputtong, 2011; Maxwell, 2005). Qualitative research does not measure numerical values or statistical significance rather it is focused on meanings and values of individuals to depict a true or real world view of the people or the environment being studied (Lapan, Quartaroli, & Riemer, 2011). Methods applied in qualitative studies commonly seek comprehensive descriptions from the emic perspective of the study participants (Caroleo, 2002).

Acknowledging the inherent subjectivity of the research questions, an emic approach was undertaken to inform this study to provide opportunity for discovering ‘unexpected findings’ rather than drawing on prior theories, preconceptions or assumptions carried over from my close involvement working in this clinical setting. Methodology drives study design and may be derived from and in turn influence the research questions posed, the research setting and individuals who form focus for the study (Lapan et al., 2011). Accordingly, a qualitative methodology was adopted for this study to facilitate review of nursing practice within the specific specialty context of the cardiac catheter procedure setting viewed through the eyes of nursing staff providing care for anxious patients within setting. This interpretive approach to qualitative enquiry aimed to inform an understanding of the meaning of nursing practice for participants contributing to the study intending also to provide descriptions of nurses’ experiences including their practice, behaviours, actions, beliefs and factors influencing patient care within their work environment.

3.1 Design

Conceptual models are useful to guide research designs as they define the focus and content of the study aligning the study purpose, the guiding questions framing the study and research methods applied to collect data to inform the study (Flick, 2008; Liamputtong, 2009). The conceptual model that has been adopted for this study is Joseph A. Maxwell's Interactive Model of Research Design (2005) which identifies five key components of qualitative research design as outlined in Figure 3 below.

Figure 3. An Interactive Model of Research Design



SOURCE: Adapted from Qualitative Research Design: An Interactive Approach, by J. A. Maxwell, 2005.

This qualitative study design has been summarised below in context to the defined parameters of Maxwell's Interactive Model of Research Design (2005):

- Goals:** To describe and explain nursing practice when caring for anxious patients undergoing cardiac catheter procedures.
- Conceptual Framework:** Patients experience emotional distress as a result of undergoing cardiac catheterisation. Nursing assessment and management of patient anxiety is a fundamental component of nursing care in this clinical setting.

Nursing assessment and management of anxiety for patients undergoing cardiac catheter procedures appears to be diverse and unstructured.

- c) **Research Questions:** Guiding questions framing this research aligned with the goals and conceptual framework outlined above and included:
1. How do nurses perceive their assessment and management of patient anxiety within the cardiac catheter procedure environment?
 2. What factors influence Nurses' assessment and management of patient anxiety within the cardiac catheter procedure environment?
 3. What are the effects of patient anxiety within the cardiac catheter procedure environment?
- d) **Methods:** In recognition of the subjective nature of the research questions, qualitative data collection methods and analysing techniques were applied throughout this study. Qualitative methods are deemed appropriate when answers to study questions draw from descriptions and understanding gained from participants' experiences and perspectives (Lempp & Kingsley, 2007). Methods applied included:
1. data collection through semi-structured interviews with nursing staff, document analysis of procedural protocols, work unit guidelines and nurse generated clinical pathways and retrospective chart review of nursing documentation and researcher reflexive journaling;
 2. data analysis utilising a constant comparative analysis framework (Hewitt-Taylor, 2001).
- e) **Validity:** A critical framework aligning with the criteria outlined by Guba and Lincoln (1998) for reviewing validity of qualitative research guided strategies to optimise and maintain validity throughout this study. In an approach akin to the quantitative concepts of internal validity, external validity, reliability and objectivity, the following four parallel qualitative concepts of credibility, transferability, dependability and confirmability are described below and illustrated in context to this study design:
3. Credibility refers to the congruence between the data and the researcher's interpretation and presentation of the meaning of the data and also

questions if the descriptions given by the participants are credible (Liamputtong, 2011). Credibility was confirmed in this study by:

- clarification of ambiguous responses or foreign terminology with the study participants;
- member checking and validation of data from study participants to minimise risk of transcription error or mis-interpretation of data.

4. Transferability refers to how well the study can be generalised or relevant in other contexts (Liamputtong, 2011). Transferability for this study remains a concept that may be challenged:

- as data was collected from one single site;
- as the degree of transferability may be limited given the information provided by participants was in context to their working environment;
- although similarities in practice and clinical environment across other cardiac catheter procedure settings may generate some level of specialty specific transferability.

5. Dependability refers to the consistency and transparency of the data and the research process (Gerrish & Lacey, 2010). Dependability was addressed within this study by:

- maintaining an audit trail documenting the interview process and analysis of transcripts;
- collection of comprehensive and rich data through semi-structured interviews which were transcribed verbatim to promote transparency in data collection;
- continued peer debriefing to externally evaluate the research process;
- data analysis applying an established systematic framework of constant comparative analysis to ascertain any outliers or inconsistency in data and identify when data saturation had occurred

6. Confirmability refers to ensuring that the data findings are linked back to data analysis not from the assumptions or bias of the researcher. Confirmability has been addressed in this study by:

- coding of data by a suitably experienced and PhD qualified second coder was conducted to counter researcher bias in analysis of data.
- researcher reflexivity was practiced throughout all stages of the study with a journal of reflexive commentary of my research experiences documented and referenced throughout data collected and analysis to monitor and highlight researcher bias or pre-conception
- triangulation by collecting data from different sources including document analysis, retrospective chart review, semi-structured interview.

As indicated within the previous diagram depicting this “Interactive Model” (Figure 3), each component of the design is integrated with another in an interwoven rather than linear sequence. An example of these interdependencies or influences within and across the defined design components is the goal of this study which was to describe and explain nursing practice within the cardiac catheter procedure environment. This goal or research purpose, as indicated by the solid linking arrow (in figure 3), shaped the questions that guided the research which in turn also influenced my decision to conduct semi-structured interviews with nursing staff (the method of data collection applied). Similarly the conceptual framework, informed by assumptions and theories draws from my clinical experience and literature search review, influenced the rationale for conducting the study and goals that were hoped to be achieved from conducting this qualitative enquiry.

As highlighted by Maxwell (2005), whilst not defined explicitly within this Interactive Model, ethical standards for conducting qualitative research must be given appropriate consideration throughout all stages of research and have been outlined in the following Ethical Considerations section of this chapter.

3.1.1 Recruitment: Nurse Participants

As outlined, a key focus of this study was to examine nursing practice in regards to assessment and management of patient anxiety. Following submission and ethics approval from site, additional approval was sought from the unit Nurse Manager to interview nursing staff. With the support of the unit Nurse Manager, an invitation was sent out via attendance at staff meetings to nurses in the unit who provided pre, intra and post procedure care to patients who underwent cardiac catheter procedures.

An overview of the study, including a summary of the research protocol, recruitment process, research aims and possible benefits for nursing and patients was delivered to nursing staff at several nursing team meetings. Additionally, a copy of the research protocol and all documentation pertaining to the research was stored in the unit handover room to ensure availability for review at any time for clinical staff. At two of these staff meetings a total of eighteen nurses were invited to participate in individual, semi-structured interviews. Acknowledging that I had worked on the unit previously and was a past colleague to some of the potential nurse participant candidates, I stressed that any information shared during interviews would be confidential. All nurses were advised that there were no obligations to participate in the study and if at any time during the study they should feel uncomfortable or compromised by participating they could withdraw from participation at any time.

3.1.2 Participants

An important aspect of research design is consideration of the unique characteristics required of research participants (Gerrish & Lacey, 2010; Suri, 2011). When setting the sample criteria for a qualitative study incorporating semi-structured interviews, the researcher should ensure that the research objectives are kept in mind and that the research participants have 'what it takes' to answer the questions and provide rich and valuable information to inform the study (Devers & Frankel, 2000).

As the study purpose aimed to better understand and describe nursing anxiety assessment and management practices from the emic perspective of nurses working specifically within this unique procedural environment, participant inclusion and exclusion criteria focused meeting this objective.

Inclusion Criteria

Nursing staff working within the cardiac investigations unit of the chosen site who commonly undertook all stages of patient care, including pre-procedure preparation and assessment and post procedure care, were invited to participate in this study.

Exclusion Criteria

Nursing staff that only worked within the cardiac catheter procedure laboratory such as dedicated scrub nurses who did not undertake any pre or post procedure patient care were excluded from this study as anxiety assessment prior to procedure was a key focus of the study.

Sampling

Selection of nurse participants for this study was achieved by purposive sampling. Participants in qualitative studies are commonly recruited by purposive sampling to facilitate access to individuals who have knowledge or experience within the phenomenon being studied (Liamputtong, 2011). Recruitment was conducted over a two month period with a total of five nursing staff participating in the semi-structured interviews. Due to the rich and detailed data collected during interviews, data saturation was achieved with this smaller sample and further recruitment was not required. The characteristic of the study sample contributed significantly to the quality of data collected. All nurses interviewed had acquired specialist expertise and formal competencies applicable to the cardiac catheter procedure area.

In qualitative studies sample sizes tend to be smaller, with a reliance on the richness of the data collected rather than quantity (Liamputtong, 2011; Mason, 2010). Supporting smaller sample sizes of less than 20 in qualitative studies, Crouch and McKenzie (2006) espouse that qualitative methodology aims to explore things that exist rather than how many things exist, noting that the focus is “primarily not to the number of respondents ...but rather to dimensions and aspects of the situation under investigation” (p 489). Similarly, findings from a study by Guest, Bruce and Johnson (2006) concluded that where the goal of the study is to describe a shared perception or behaviour within a group of people who share common or similar attributes such as occupation, work environment or age, a smaller sample size may adequately support development of meaningful themes and useful interpretations.

This English National Centre for Research Methods (NCRM) Methods Review Paper (Baker & Edwards, 2012) provides a series of summarized responses from experienced researchers to the question of ‘how many interviews are enough?’ when undertaking qualitative research. When looking at academic abstracts of interview-based qualitative studies in Great Britain and Ireland, Mason (2010) identified sample ranges from as low as 1 participant up to 95. Mason provides the rationale that there is a “point of diminishing return” in qualitative studies where acquisition of additional data does not necessarily equate to more information (p1). Bryman (2012), whilst acknowledging that there is little consensus on what the minimum number of interview participants should be in a quantitative study, supports Mason’s views when identifying the concept of saturation as an appropriate method of determining and also justifying sample size.

In contrast to quantitative studies which apply power analysis as a statistical parameter to inform appropriate sample size, data saturation is a qualitative concept often applied when semi-structured interviews are analysed to determine validity of findings (Francis, Johnston, Robertson et al., 2010). First introduced by Glaser and Strauss (1967), data saturation refers to the stage in data collection when it is considered that there is no new information arising from data collection or data becomes repetitive (Walker, 2012). It is considered that when study participants share similar familiarity and knowledge in respect to the research domain as indicated within this study, saturation may be reached earlier therefore sample size will be smaller (Guest et al., 2006).

The process undertaken to determine data saturation has been detailed within the data analysis section of this chapter. Acquisition of data from additional multiple sources, including document analysis and chart audit aligned with and supported findings from analysis of data gathered during semi-structured interviews with nurses.

3.1.3 Data Collection – Document Analysis and Retrospective Chart Review

As a complement to data collection methods such as interview or observation, review of relevant documents can be included to answer study questions when applying a qualitative approach (Bowen, 2009; Genzuk, 2003). Prior to conducting semi-structured interviews with nurse participants, document analysis of clinical protocols and work unit guidelines aligning with cardiac catheter procedures, relevant nurse generated clinical

pathways and retrospective chart review of nursing documentation was carried out to collect supplementary data for this study. Document analysis is a process whereby soft-copy and/or hard-copy of documents pertaining to the phenomenon of interest in a study such as institutional reports, work guidelines, letters and memos are examined and data is analysed to draw meaning and gain understanding from the content (Rasmussen, Muir-Cochrane, & Henderson, 2012). Document analysis may be used in conjunction with other data collection method as a means of triangulation in qualitative studies to increase credibility to the study (Bowen, 2009). Additionally, Bowen (2009) notes that further benefits of document analysis are that it may help the researcher both contextualise and substantiate data gathered during interviews within the same study and also guide enquiry and formation of interview questions.

The use of document analysis in this study complemented the primary data collection method of interviews. Whilst considered to be a suitable source of data in this qualitative study, it was important to review the documentation critically to ascertain if the data was representative of the phenomenon being explored and to determine the trustworthiness of the data in respect to authenticity and accuracy (Bowen, 2009). Keeping in mind the study objectives, document analysis involved review of documents relevant to nursing practice that were used in the unit to support, inform and document delivery of care for patients undergoing cardiac catheter procedures (see Appendix 3 through to 14). Examination of these documents raised the researcher's awareness of nursing documentation processes and provided valuable data highlighting current guidelines for patient care that were applicable to the clinical setting. In this study the following documents were reviewed:

- 22 documents detailing Cardiologist's requirements (protocols) for peri-procedural clinical management of patients undergoing coronary angiography and percutaneous coronary intervention as stipulated and approved by Consultants practicing in the cardiac catheter unit.
- 56 cardiology specific clinical checklists and work unit guidelines (WUGs) which were used to inform and support clinical practice and decision making through recommendation on best practice applicable to the cardiac catheter procedure unit.

- 1 clinical pathway form used by nursing staff in the cardiac catheter procedure unit to guide, standardise and document nursing care processes when caring for adult patients undergoing cardiac catheterisation.
- 10 patient charts with specific focus on nursing notes and documentation relevant to patient admission for coronary angiography and percutaneous coronary intervention

When initiating critical review of the documents several aspects were assessed to determine suitability of the document to be included for analysis. These aspects included identification of the:

- document type, source and characteristics for example ‘the document was a clinical checklist hard copy document filed within the Accreditation Folder in the nurse handover office of the unit.
- document approver(s), author(s) and role(s) to inform credibility of data.
- document date to inform currency and progression of amendments where relevant.
- intended purpose and audience of the document to contextualise content relevance and application.

Doctor’s Requirements

The Cardiologist’s requirements or protocols were used on the unit to inform medical and nursing management for patients undergoing cardiac catheterisation procedures. Multiple cardiac procedures were undertaken by clinicians within the research site’s cardiac catheter procedure unit, hence there were a significant number of Cardiologist’s requirements documents available for review. To refine the process documents referring to complex procedures such as ventricular septal defect closures or pulmonary artery stenting were not included within the analysis which included documents specifically referencing coronary angiography and percutaneous coronary intervention procedures only.

At the time of review the documents were current and document content reflected the Cardiologist’s preferences for medical management of their patients at that time. The content in the documents was developed and approved by each individual Consultant

who undertook the aforementioned specified procedures within the unit. The purpose of the doctor's requirements documents were use as a reference guide for the medical and nursing teams when undertaking admissions, patient preparation and post procedure care for patients undergoing cardiac investigations and interventions. Content included medications to be prescribed, pre and post procedure observations and consent and discharge requirements. Hard and electronic copies of these requirements documents were stored within the nurse's station in the unit and in the out patient pre-admission clinic (PREAC) for reference by nursing and medical staff. Additional hard and soft copies were also kept on all inpatient wards of the hospital.

Review of these documents for this study provided information and insight into the uniqueness and variety of Consultant's preferences influencing clinical management of patients undergoing procedures within the unit. Specifically, initial data collection focused on references relating to patient anxiety, anxiety assessment and management strategies noted within the documents. An example of this was the inclusion or exclusion of a protocol for the administration of pre-medication such as oral temazepam for patients when undergoing cardiac catheter procedures as determined by their Consultant. Three examples of these requirement documents have been included within the Appendix section of this thesis (see Appendix 4, 5 & 6) and summary of analysis and subsequent findings have been detailed in this and the Results chapter.

Clinical Checklists and Work Unit Guidelines (WUGs)

Documents relating specifically to clinical processes and management for patients undergoing cardiac catheter procedures, including acute cardiac presentations such as ST elevation acute coronary syndrome (STEAC) or Non ST elevation acute coronary syndrome (Non-STEAC) requiring cardiac catheterisation were included in the document analysis (see Appendix 7 through to 14).

Clinical Pathways

A single clinical pathway proforma for Adult Cardiac Catheterisation was reviewed for this study. Clinical pathways are used in clinical settings by nurses and other clinicians as management tools. They define efficient and effective care processes in a step wise, evidence based approach to treat patients with a particular diagnosis or when undergoing a specific procedure (Panella, Marchisio, & Di Stanislao, 2003). The

clinical pathway document reviewed as a component of this document analysis process was a current version developed by senior medical and nursing staff within the unit. The pathway document was used by nurses to guide and document patient assessment and care when undergoing cardiac catheterisation procedures. The structure and content within the pathway included nursing assessment and observations and documentation of patient outcome variations and clinical complications. The document also included post procedure and discharge processes to be followed and documented for patients undergoing coronary angiography and/or percutaneous coronary intervention (see Appendix 3).

Chart Review and Nursing Documentation

A retrospective chart review of nursing notes was also carried out for this study. This process provided an opportunity to review documentation commonly completed by nursing staff when providing care for patients undergoing cardiac catheterisation in the unit and more specifically to review documentation practices in regards to anxiety assessment and management. Purposive selection of charts was undertaken following identification of patients listed on the cardiac catheter procedure scheduling system who had undergone coronary angiography and/or percutaneous coronary intervention. A total of ten patients who had undergone either of the aforementioned procedures within the previous six months were selected and their chart was requested from the hospital's medical records department.

Only information documented by nursing staff prior to admission within at Pre Admission Clinic (PREAC) or during the patient's admission to the cardiac catheter procedure unit on day of procedure was reviewed within the chart. These documents included the patient's medication chart and the clinical pathway document completed by nursing staff. My familiarity with the clinical environment and responsibilities inherent within the nursing roles helped me understand and contextualise the clinical documentation that was reviewed.

Unlike their colleagues working on in-patient units, nursing staff within the cardiac investigations unit undertake limited documentation directly into the patient chart, predominantly documenting within clinical pathway documents aligning with the specific cardiac investigation procedure carried out (see Appendix 3). Clinical pathway

documents are commonly filed in the patient chart following the procedure. A total of ten patient charts were reviewed. As document analysis was considered to be a supporting or complementary data collection method in this study this number of charts was deemed to be suitable. Bowen (2009) supports this view identifying that, “When documents are being used for verification or support, even a few can provide an effective means of completing the research” (p33). Random selection of charts aimed to provide a broader representation of nursing documentation to support rather than validate data gathered during interviews therefore charts and documentation completed specifically by the nurses who participated in interviews were not actively selected. A summary of data analysis processes followed is included within this chapter and summary of findings from this retrospective chart review have also been documented in Chapter 4 of this thesis.

3.1.4 Data Collection – Semi-Structured Interviews

As this qualitative study sought to explore the subjective reality of nursing practice when caring for anxious patients undergoing cardiac catheter procedures, dialogue with nursing staff working within this setting was essential. The hallmark of qualitative research is that data is produced in the form of text (Liamputtong, 2011). Qualitative data collection commonly involves face-to-face interaction with the study participants and as such interviewing is a common method applied by researchers when undertaking qualitative studies (Lambert, Glacken, & McCarron, 2011; Mills, 2008; Oliffe, 2005). This inductive approach to research and data collection allows study participants to apply their own understandings in response to questions relating to behaviours, knowledge and views relating to the study (Genzuk, 2003; Paulson, 2011). “Interviews offer access to research participants’ ideas, thoughts, and memories in their own words and provide an excellent way of discovering the subjective meanings and interpretations that people give to their experiences...” (Oliffe, 2005, p397).

Semi-Structured Interviews

Semi-structured interviews with nurse participants were held in a quiet spot in an unused office where there would be no interruption from other staff or patients thus maintaining confidentiality. These occurred at a time that the nurses were either off line and not undertaking direct patient care or had finished their shift for the day. It was

anticipated that interviews would take up to one hour, with some additional commitment required by participants to verify interview transcripts. Whilst no interviews exceeded one hour, some participants remained after interviews to chat and add some further details relevant to questions that had been asked during the interview.

Interviews adopted an open ended questioning approach in which answers were elicited from the perspective of nurse participants' responses. High level questions guided the interviews based on the three study questions. These questions provided a framework to direct enquiry and guide discussion with nurses during interview to ensure that similar data was collected and topics were covered to answer the research questions. They also provided 'stepping stones' to dialogue in which pools of rich and descriptive data was collected.

It was very important as the interviews progressed to maintain a good rapport with participants to encourage informative and comprehensive responses to questions (Leech, 2002). Before initiating the interviews I reminded nurse participants that the interviews were confidential and that anything they said during interviews would not be linked back to them directly or indirectly. I thanked them for their time and support in my research and advised participants that the intent of the interviews was to learn about their experiences when caring for anxious patients. This was reinforced by stipulating that it was their personal stories and perceptions, told in their own time and in their own words that I was interested in therefore there were no 'wrong answers' or anything to be nervous about.

I indicated my interest in nurses' responses by attentive and affirming body language and prompts such as nodding and leaning forward as they spoke, using brief summary sentences to validate and confirm my understanding of the information they provided. I used similar language to that used by the nurse participants when questioning and affirming to reduce the risk of mis-interpretation or leading the direction of responses (Leech, 2002). In instances when clarification or more detail on a point or comment made was required I asked them for an example or to 'describe' the process to contextualise the information. I also found this clarification approach less intimidating or affronting for the nurses as I felt if I asked them to clarify what they meant it would put pressure on them and they may feel that they were not doing a good job or providing me with the

responses I needed. An example was when one of the participants identified that a premedications may be offered if a patient's anxiety is noticed early enough. As this was an anxiety management strategy that I wished to explore further I asked the respondent to "describe for me that process and what's involved....." She then went on to detail in a step wise approach the process that would follow.

The progression of interviews mostly followed the course of conversation with follow-up questions and prompts directed by nurse participant responses. I was mindful not to cut participants off before they had finished speaking and paid special attention to key words or phrases that respondents made that provided prompts or segue into following questions. This created a more natural progression in conversation which resulted in a more even flow of dialogue.

Attention to prompts in the conversation assisted me to address questions key to my study and also helped flag when the interview was drawing to a close. The appropriate time to 'wrap up' the conversations with nurses became evident as their responses became repetitive or they began to use shorter, less descriptive responses. All nurses were asked if they had any more to add before recording of interviews was completed to provide an opportunity for them to clarify anything they may have said or to add anything new that had not been introduced within the context of the interview. Whilst most nurses stated they had nothing to add when asked this question, others took the opportunity to ponder on some of the points that had been discussed within the interviews and reinforce their views.

Whilst respondents were encouraged to be open and feel unrestricted when detailing their experiences, it was important to ensure that similar questions were asked during all interviews, as summarised in the table below, to align with the research objectives and to achieve data saturation.

Figure 4. Sample Interview Questions

Study Question	How do nurses perceive their assessment and management of patients' anxiety within the cardiac catheter procedure environment?
Interview Question	Can you share with me some of your thoughts and perceptions around your assessment and management of patient anxiety as a nurse working in the cardiac catheter procedure unit?
Participant Response	I think there is very little assessment on the anxiety side for patients.
Study Question	What factors influence Nurses' assessment and management of patients' anxiety within the cardiac catheter procedure environment?
Interview Question	Are there any particular things that influence your nursing care for anxious patients?
Participant Response	What times they go into the procedure, how many patients we've got.
Study Question	What are the effects of patient anxiety within the cardiac catheter procedure environment?
Interview Question	What are some of the impacts as a Nurse that you see for your patients, yourself and for other nurses you work with when patients are anxious?
Participant Response	Well the patient experience is that everything will be a little more difficult to achieve for them everything.....

Whilst the same set of high level questions framed each individual interview, as discussed previously topic progression was only semi-structured and relatively responsive to the natural progression of conversation with participants. As a result of the nature of interviews the flow and structure of each individual interview varied as responses from participants were unique directing conversation onto their own path. This allowed nurses to talk freely about their experiences in regards to caring for anxious patients culminating in acquisition of rich, descriptive data.

3.1.5 Data Collection - Reflexive Journal Notes

In qualitative studies the researcher is commonly considered to be the most important instrument of data collection (Mills, 2008). In qualitative data collection and analysis the researcher's presence may bring valuable personal and professional

experience from within the field of study whilst their reflexivity provides insight and personal reflection to be aware of possible biases and how they themselves may influence the research process (Flick, 2008; Ratner, 2002). Throughout this study I drew on personal and professional experience to understand and give meaning to the data collected. My professional experience working in the same clinical environment as the nurses interviewed assisted me to make sense of the behaviours, feelings and opinions expressed by interview participants in context to their roles and responsibilities and work environment.

Throughout this study I maintained a reflexive journal comprised of personal reflections, abstracts of conversations, observations and brief anecdotes from staff during data collection on site. These notes were dated, referenced in context to engagement or study stage and transferred to an electronic journal and filed. I also referred to the journaling undertaken throughout the iterative document analysis and chart review process and my researcher notes taken during and immediately following interviews to add context to data as documented within the Discussions chapter of this thesis.

3.1.6 Data Analysis

As the data collection and data analysis processes were undertaken concurrently in this study, the emergence of new categories during analysis of successive interview transcripts allowed me to incorporate new and relevant questions into subsequent interviews.

Figure 5. Emergent Categories and Modification of Interview Questions

<i>Emergent Category</i>	Emotional effects of patient anxiety on nursing staff
<i>Interview Question</i>	And what about as a nurse, tell me a little bit about your feelings and experiences when your patient is anxious.
<i>Participant Response</i>	If my patient is anxious and more stressed I would certainly be more stressed..... it can be very emotionally draining for me.

Once this approach was adopted all subsequent nurses interviewed identified having experienced emotional impacts themselves when caring for anxious patients.

Theses adaptive and iterative interviewing techniques detailed helped me to achieve data saturation and determine an appropriate time to cease interviewing and participant recruitment.

All interviews were recorded with the permission of nurse participants. Recording of the interviews did not seem to be a concern to any participants and sections of the audio were played back to participants to clarify or confirm conversation and information they had provided. One nurse however declined listening to her audio transcript as she did not want to hear her recorded voice and stated she was happy that her comments had been captured accurately.

Respondent validation or member checking is often used by researchers in qualitative studies to ascertain trustworthiness of the data they have collected (Carlson, 2010; Torrance, 2012). The term refers to study participants reviewing data collected such as interview transcripts or coded transcripts to verify accuracy of transcription or if interpretation by the researcher during analysis is reflective of the meaning and context that data was provided (Torrance, 2012).

In addition to listening to audio of interviews, a short summary discussion was undertaken with each nurse at the end of the interviews to recap on details discussed during interviews and provide the participants to ask any additional questions that they had not thought of during interviews. All nurses were invited to review the coded verbatim transcripts of their interview once completed however no nurses accepted this offer. A second individual summary discussion with four of the five participants was held after coding had been completed where themes from their individual interviews were discussed. When declining to view coded transcripts participants said that they felt that our conversation had captured all they wanted to say on the topic and that they felt that my initial interpretations of the information they had provided were accurate.

The initial informal chat with participants after interviews also provided an opportunity for nurses to de-brief following completion of the interviews. Conversations that continued following completion of the interviews were summarised within my reflexive journal and commonly revolved around personal anecdotes of other nurses' anxiety assessment practices. These discussions were documented within my reflexive journal and are summarised within the following Results chapter.

3.1.7 Data Analysis – Document Analysis and Retrospective Chart Review

Document analysis was undertaken to complement analysis of data from nurse interview transcripts which formed the primary data collection for this study. As the aim of the research was to gain an understanding of patient anxiety assessment and management within the cardiac catheter procedure unit, documents reviewed were pertinent to the phenomenon of interest, that is, anxiety assessment and management practice in context to the identified clinical setting. Documents reviewed for this study included:

- Clinical pathway [form] – Adult Cardiac Catheterisation Procedure
- Cardiology work unit guidelines and clinical check lists specific to the cardiac catheter procedure environment
- Doctor's requirements [documents] detailing peri-procedural clinical management requirements for patients undergoing coronary angiography and/or percutaneous coronary intervention in accordance with their Cardiologist's preferences.
- Patient charts with specific focus on nursing notes and documentation

An inductive content analysis was undertaken to initially analyse documents for this study. Document analysis was an iterative process initiated prior to conducting the interviews to provide background information and inform development and refinement of interview questions. Based on the research objectives the initial two questions applied to analyse the documents were:

1. Does the document make reference to:
 - a. patient anxiety?
 - b. anxiety assessment?
 - c. anxiety management?
2. In what context does patient anxiety/assessment/management appear in the documents?

In accordance with the constant comparative analysis model adopted to guide data analysis within this study, review of the documents was on-going throughout the study. This process involved continued examination of the data drawn from each document as it was collected with comparison against the data already collected to identify alignment or

variance across data sets (Liamputtong, 2011). For the purposes of abstraction it was important to read through all of the documents rather than skim over content. This process helped make sense of the document and ensure that the meaning and context of the data was understood. However, as document analysis was an iterative process, and documents were read and re-read throughout this process, further questions asked to analyse the documents also developed. Resulting questions included:

3. Are the concepts of patient anxiety/assessment/management explicit within the documents or are they implied?
4. Are there clinical processes or guidelines where patient anxiety assessment/management seem to have been overlooked?

These same documents were again re-examined whilst undertaking analysis of interview transcripts to cross reference against data sets from both information sources. For instance when a participant referred to standing orders for some doctors and how these influenced nurse administration of premedications without assessment or consultation with the patient, the Consultant's protocols was re-analysed. This constant comparative analysis brought to light data reflecting the nuances between some of the doctor's requirements detailed in the Results chapter of this thesis. Additionally when nurse participants referred to clinical processes inherent in their practice and work environment, data analysis from review of clinical checklists and work unit guidelines were reviewed to identify alignment or congruency between document analysis findings and how nurses perceptions of their practice.

Data analysis highlighted common data and themes drawn from both document analysis and analysis from the interview transcripts with no significant differences within the data, as outlined in the following Results chapter. It was recognised however, that data collected during retrospective chart review included nursing documentation from nurses who were no longer working within the cardiac catheter procedure unit or were on leave when the interviews were conducted. This meant that clarification or further direct query regarding their documentation processes was not feasible.

3.1.8 Data Analysis – Semi-structured Interviews

Qualitative methods of data collection such as interview draw rich volumes of data requiring a systematic approach to analysis (Liamputtong, 2009). Findings from the data gathered within this qualitative study are predominantly in the form of verbal descriptions supported by direct quotations from nurses interviewed. “Detailed description and in-depth quotations are the essential qualities of qualitative accounts” (Genzuk, 2003), facilitating a greater understanding of the people and the clinical setting represented within the study.

As data collected within qualitative studies is produced in the form of text, all qualitative data analysis involves the process of coding sourced data into themes or categories in order to draw findings (Hewitt-Taylor, 2001). All nurse participant interviews conducted for this study were recorded and electronically transcribed then manually coded to describe and identify key concepts within the data.

Coding is an interpretive process of defining and organising data by “tagging” groups of data with names or terminology into meaningful groups for further analysis (Saldana, 2011). Transcription of each interview conducted with nurse participants was undertaken sequentially and manually coded. The use of coding software, such as NVivo was considered to support this process however it was decided that manual coding was manageable given the number of interviews conducted.

Data collection and analysis occurred concurrently for this study as it was beneficial to analyse data as soon as possible after collection to improve accuracy in recollection of information gathered. Codes were produced through an inductive process whereby the researcher analyses words or phrases from the transcript, representing a concept or idea for which the data reflected. For instance when nurses stated that “anxiety assessment should be an ongoing process” the code ‘on-going’ was given to data that indicated when in the nursing care pathway nurses believed patient anxiety assessment was or should be carried out. Each coded section was highlighted within the individual soft copy transcript and was also cut from the original transcript and copied into an electronic file where both the code name and its definition were recorded. An identifier reflecting the source of the data and interview number was also documented within this

table to enable linkage back to the original transcript for future reference and context clarification if required.

Applying Constant Comparative Analysis as an Analysis Framework

Data coding was also an iterative process with the initial coded data continually reviewed, compared, refined and cross referenced. This step-wise approach to data analysis aligned with the constant comparative analysis framework. This method of data analysis commonly used in qualitative research was first developed for use in grounded theory methodology (Glaser & Straus, 1967; Mills, 2008). This process involves constant review of data as it is collected with constant comparison against other data collected to identify similarities and/or differences. All sections of the electronic interview transcripts were analysed and coded. After the first interview transcript was coded, each following transcript was coded with the previous coded transcript in mind. In accordance with the constant comparative analysis framework, review and re-review of each interview transcript was undertaken to systematically search for patterns to combine the data into larger, more comprehensive categories or themes. If new codes were found within subsequent interview transcripts then previous transcripts were reanalysed and compared to determine if the data fitted within established categories or if a new category was required. New codes were added as needed until data became repetitive with no new information or themes emerging. Initially fourteen key categories were identified within the interview transcripts. Further review of these categories identified inter-related links and concepts across categories, merging some of these categories to form a more comprehensive group. These have been detailed within the Results chapter of this document.

Data Saturation

Following transcription and coding of the fifth nurse interview within this study it became evident that no additional information or new data from new participants had been identified and therefore data saturation had been reached. Walker (2012) provides a comprehensive summary of the application of data saturation within qualitative research, concluding that “saturation can be a tool used for ensuring that adequate and quality data were collected to support the study” (p 40). Data saturation is a key juncture in development of themes or categories and provides a point in time for qualitative

researchers to determine if new participants need to be included in the study to complete the data or draw meaningful and trustworthy findings from the data collected (Bowen, 2009; Gerrish & Lacey, 2010).

Evidence of Saturation

The process of constant comparative analysis provides a framework to “operationalise” saturation (Bowen, 2009). This process guided data analysis within this study, providing a mechanism of analysis to identify new data and emerging themes and categories within data as interviews were conducted and transcribed. The final seven key categories and concepts within these categories have been identified in the following results Chapter 4.

Despite the smaller number of study participants than indicated within the literature (Mason, 2010), the total of five nurse participant interviews drew rich and detailed descriptions, providing a clear picture of nursing anxiety assessment and management practice within the focus setting obtained from the participant’s perspective and reflected within the data gathered. Guest et al, (2006) provide rationale for instances when data saturation is achieved with a smaller number of participants in qualitative studies, noting that saturation may occur earlier when study participants share common characteristics such as expertise and training. All nurse participants interviewed were specialist cardiac nurses who held competencies specific to the cardiac procedure environment.

Alongside data saturation, trustworthiness of findings within this qualitative study was a key consideration. Trustworthiness in qualitative research refers to how credible the research is, ultimately reflecting on the conduct of the researcher themselves in regards to ethical and appropriate data collection, analysis and reporting (Carlson, 2010). As documented previously, a critical framework aligning with the criteria outlined by Guba and Lincoln (1989) for reviewing validity of qualitative research guided strategies to optimise and maintain validity throughout this study to indicate to others that they could have confidence in the findings from this study. Within this model four aspects of trustworthiness are specified as credibility, transferability, dependability, and confirmability.

Credibility refers to the congruence between the data and the researcher's interpretation and presentation of the meaning of the data (Liamputtong, 2011). The primary strategies applied to enhance credibility within this study included member checking of data to clarify any ambiguity of responses and validate data to minimise risk of transcription error or mis-interpretation of data.

Transferability refers to how applicable the study findings are beyond the limits of the research project. Transferability is an aspect of qualitative design sometimes challenged as some researchers propose that this concept, aligning with generalisability in quantitative research, is not relevant to the unique, naturalistic enquiry undertaken in qualitative studies (Higginbottom, 2004; Liamputtong, 2011). When considering transferability of study findings from this sample, the perspectives of nurse participants which formed a major component of study data were in context to the single focus site. Some emerging themes and embedded concepts however may be recognised outside the bounds of this setting as the specialised nature of nursing care within this clinical area may indicate that views expressed and experiences described by nursing staff interviewed may be applicable to other similar specialist cardiac investigations units. However this is an assumption that would be best validated with further research at other sites. Additionally, findings linked to factors influencing patient anxiety such as procedural consent processes may also be found to be applicable within the broader cardiac community when considering many patients undergoing cardiac catheter procedures present acutely to our emergency departments and coronary care units where consent is undertaken prior to proceeding to the catheter laboratory.

Dependability refers to the consistency and transparency of the data and the research process (Gerrish & Lacey, 2010). There were several strategies applied to address dependability within this study. An audit trail documenting the interview process and verbatim transcripts of the comprehensive and rich data acquired through semi-structured interviews was maintained to promote transparency in data collection. Secondly, data analysis was undertaken applying an established systematic framework of constant comparative analysis to ascertain any outliers or inconsistency in data and identify when data saturation had occurred. Thirdly, continued peer debriefing to externally evaluate the research process was carried out. This process of peer debriefing

was undertaken with two senior nurse academic, PhD qualified peers. Both of these peers had extensive nursing and research knowledge and active experience in nursing research. I met regularly throughout the research project either individually or with both peers to review research progress and discuss all aspects of the study including formation of research questions and design, methodology and ethics and implementation strategies. Discussions and points raised during these meetings and resulting additions or amendments made throughout the study were noted within my reflexive journal.

Confirmability refers to ensuring that the data findings are linked back to data analysis not from the assumptions or bias of the researcher (Liamputtong, 2011). Researcher reflexivity was practiced throughout the study with a journal of reflexive commentary of my research experiences documented and referenced throughout data collected and analysis to monitor and highlight researcher bias or pre-conception.

Additionally, triangulation was used within this study to enhance confirmability. Triangulation involved two forms of cross checking of data to corroborate findings drawn from the data collected. Data triangulation involved the use of different sources of data acquisition to inform the study (Denzin, 1970). Data drawn from document analysis and nurse interviews was analysed within this study with supporting data within the researcher's reflexive journal.

The second type of triangulation undertaken to enhance confirmability was investigator triangulation. Investigator triangulation refers to the use of an additional investigator in the study to undertake the second role of observer, interviewer, coder or data analysts (Thurmond, 2001). Thurmond (2001) notes additional credibility is obtained when this cross checking process is undertaken independently in the absence of collaboration with the primary researcher. Whilst not involved directly in the data collection processes, an external peer reviewer acted as a second coder for this study.

This external second coder who was a senior PhD qualified nursing academic with considerable experience in qualitative research undertook review of all interview transcripts and independently coding all sections. Once reviewed independently the second coder and I met and discussed the participant responses and themes that we had identified within the data. Common themes were identified and agreed upon whilst some concepts identified within themes appeared initially unique to either only myself or the

peer reviewer. However once we discussed the meanings that we had attached to each of these concepts we found that it was more the terminology that we had assigned rather than diversity in the coding. An example of this would be the code “Processes” that was allocated by the second coder to a number of data. Whilst I had not coded any data against this descriptive term, I had coded a number of data against the term “Operational”. Upon discussion we realised that our meanings assigned to the data, which were in reference to nursing processes such as patient and shift allocation where in fact the same and so agreed to assign this data under the same category.

Whilst undertaking data analysis, researcher notes were taken to reflect the decision process and to document any issues or questions that arose during the coding process. These notes were used when discussing individual coding decisions with the second coder during peer review as part of the inter-rater reliability process.

3.2 *Ethical Considerations*

This study design and researcher obligations have incorporated values and guidelines developed by the National Health and Medical Research Council (NHMRC, 2007). The subjective nature of enquiry of this research has been considered throughout all stages of this study, with acknowledgment that the interpretive study design may create potential vulnerability for participants, necessitating appropriate risk mitigating strategies to be embedded within the research design as summarised below.

The following ethical considerations were incorporated in study design:

1. Risk /Inconvenience to Study Participants

This project was considered to pose minimal risk to participants. All costs for the study were outlaid by the student researcher. Minimal additional time constraints were imposed on some nurse participants who attended interviews conducted at the selected facility outside working hours.

2. Anonymity/Confidentiality

Data was collected from the identified single research site and once collated data was re-identified to facilitate participant and study location anonymity within the data sets. Information gathered during interviews was treated in the

strictest confidence and used only for the purpose of research. The interviews were audio recorded. Recordings were stored in a locked cabinet in the researcher's office and were accessed by the researcher only. Coded transcripts from interviews were stored on a password protected computer and USB and all audios were deleted once analysed. Pseudonyms were used on transcriptions from tapes ensuring anonymity of individual participants and research site. No patient or facility names were documented within transcripts. Participants will not be identifiable in any documents resulting from the research including interview transcripts, researcher's thesis or any other publications. The information was stored as electronic records. A number of security measures were employed to promote confidentiality of data including coding of data and creating researcher-specific passwords to access data. Access to data was restricted to only the Principal Student Researcher and two Supervisors.

3. Withdrawal from Study

Participants were advised that they may withdraw from the study at any stage of the research procedure. Withdrawal from the study did not have any effect upon the participants' work or employment status. In the event of participant withdrawal from the study, any data which may have been gathered at that time was to be removed from the data set, however as no participants withdrew this action was not required.

4. Consent

An information sheet was given to participants detailing the purpose of the research, how data was to be gathered and what was involved for the participant should they choose to participate in the study(see Appendix 1). Informed consent was sought from participants prior to agreeing to participate in this study(see Appendix 2). The consent form was completed and signed by all nurse participants indicating that they had read and understood

information provided to them regarding their involvement in the study and that participation in the study had been undertaken on a voluntary basis. Ethics approval for this study was sought and granted from the ACU Ethics Committee and the site Ethics Committee (see Appendix 15).

This chapter has provided an overview of the conceptual and philosophical framework and qualitative methodology guiding this research project. Supporting qualitative methods applied throughout the study have also been detailed. The following Results chapter will present data collected and analysed through interview, document analysis and chart review.

CHAPTER 4 – PEELING BACK THE ONION

In this chapter data acquired from document analysis and retrospective chart review and semi-structured individual interviews with nurse participants will be presented. Data collected from the interviews comprise the predominant portion of these findings and have been presented in the form of verbal descriptions. These will be supported by direct quotations from the nurses interviewed and interpretations from journal extracts compiled through reflexive praxis. Pseudonyms have been provided when quotes have been documented to maintain confidentiality of interview participants. Additionally, results from document analysis and retrospective chart review of nursing documentation have been summarised. The complexities of the nursing role and effects on nurses when caring for anxious patients undergoing cardiac catheterisation are also highlighted within this chapter.

4 RESULTS

Data collected identified unique environmental factors influencing nursing assessment and management of patient anxiety in this clinical area. The pace and priority of nursing care administered, patient acuity, supporting nursing guidelines, clinical pathways and reporting templates and work process were all found to influence nursing practice and patient care.

4.1 Document Analysis and Retrospective Chart Review

Examination of documents undertaken within this study included Cardiologist's requirements, clinical check lists and work unit guidelines, patient charts and clinical pathway forms for adult cardiac catheterisation (see Appendix 3 to 14). When undertaking an initial high level review of clinical checklists and work unit guidelines some of the documents were found to be more relevant to guide care for patients undergoing electrophysiology procedures or as inpatients within a ward environment and therefore not pertinent to this study. The majority of the other clinical checklists and work unit guidelines were specific to unique processes within the cardiac catheter

procedure unit such as 'Radiation Exposure' or 'Visitors to the Cath Lab' and also considered unrelated to the study questions or objectives.

Doctor's requirements were documents unique to the research site which outlined protocol for patient care in accordance to each of the unit's practicing Cardiologist's *modus operandi*. All requirement documents that referenced protocols for Cardiologists who performed coronary angiography and percutaneous coronary interventions were examined to identify references made to patient anxiety assessment or management practices and recommendations for care. This document review provided valuable insight into nursing practices prior to conducting the semi-structured interviews with the nursing staff.

Doctor's Requirements

Of the total twenty-two documents examined to identify reference to patient anxiety, anxiety assessment or management strategies, there were no documents that made direct reference to anxiety assessment within the pre, intra or post-procedure protocols. When considering anxiety management strategies, all documents made reference within recommendations for verbal consent processes to "advise the patient that the procedure will be done under local anaesthetic and that sedation will be provided if required" (see Appendix 4, 5 & 6). Sedation in this context was considered to be an indirect reference to an anxiety management strategy optionally applied in the catheter laboratory during the cardiac catheter procedure.

Within all of the Cardiologists' requirements that were analysed, only a few made reference to patient anxiety in correlation to pre-medication administration, stipulating that 10mg oral temazepam pre-medication be administered to their patients prior to procedure "if the patient requested or was anxious" (see Appendix 4). This direct reference to patient anxiety was missed in the first iteration of document analysis however the constant comparative analysis applied during nurse interviews brought to light data reflecting the nuances between some of the doctor's requirements detailed in the Results chapter of this thesis. Of the remaining few doctors that requested their patients were to be written up for and administered oral temazepam premedication, all requested a standard oral 10mg dose be administered prior to procedure; however none of these doctors made direct reference to patient anxiety or patient preferences for

management within their protocols (see Appendix 5). Some Cardiologists made no direct reference to premedication administration or patient anxiety within their requirement documents (see Appendix 6).

Clinical Checklists and Work Unit Guidelines

Clinical checklists and work unit guidelines used by clinicians working within the cardiac catheter procedure unit to inform and support their practice and decision making were reviewed during the document analysis process. These evidence based documents were written and approved by senior clinicians within the unit and provided recommendation on best practice applicable to the cardiac catheter procedure unit. Work Unit Guidelines reviewed were formal documents that provided a comprehensive evidence based framework for diagnosis, assessment and management processed for patients presenting with acute cardiac presentations (see Appendix 7 & 8). These documents outline evaluation criteria, testing requirements, medication regimes and procedural requirements for medical and nursing staff working within the unit and across the cardiology service to follow. Whilst pain relief was noted with the medication regime required prior to angiography within these documents, there was no direct or indirect reference to patient anxiety or anxiety assessment or management in either of these documents.

Clinical checklists reviewed outlined requirements for pre, intra and post procedural nursing care for patients undergoing coronary angiography and/or percutaneous coronary interventions with stenting (see Appendix 9 – 14). These documents provided detailed, step wise approaches for nurses to follow when undertaking patient preparation prior to procedure, scouting or scrubbing during procedure or when recovering the patient post procedure. Some of these documents also referenced the Doctor's Requirements documents analysed as a component of this document analysis.

Direct reference to patient anxiety as a phenomenon was noted in data within some of the clinical checklist documents. Recommendations for nursing handover of care for the patient from the cardiac catheter laboratory to the post procedure recovery area identifies that if the patient has experienced "increased anxiety" during the procedure then this must be documented by nursing staff as a "Cath Lab Complication"

on the clinical pathway and handed over as a variance to nurses providing post procedure management of the patient (see Appendix 12).

When considering anxiety management strategies applied by nursing staff, many of these nursing checklist documents made reference to pre-medications for patients within the pre-procedure portion of the document. Some documents made reference to “checking” if a premedication is ordered (see Appendix 10) or noting that “some patients require a premedication that should be administered following a signed medication order” (see Appendix 9). However there was no mention of nursing assessment or criteria evaluation to guide anxiety assessment to inform clinical decision making regarding necessity or appropriateness of administering premedication to patients within any of the documents reviewed.

Retrospective Chart Review

After initial purposive sampling to identify patients who had undergone coronary angiography and/or percutaneous coronary intervention within the unit, ten patient charts were randomly selected for review from the list of patients identified on the cardiac investigations scheduling system who had undergone either of the defined procedures over a six month period. Analysis of data collected from nursing documentation within patient charts relating to the patient admission for cardiac catheterisation only was undertaken.

Little to no nursing documentation relating to the cardiac catheter procedure was completed directly within the patient’s chart within the unit unless dictated by privacy or confidentiality requirements. The clinical pathway documents which were used by nursing staff as continuous forms to document patient assessment, clinical observations and variations in status or care were filed within the patients chart and included for review in the document analysis process.

Clinical Pathways

The clinical pathway – adult cardiac catheterisation form which is commonly filed within the patient’s medical record was examined to identify any data referencing patient anxiety, anxiety assessment or management (see Appendix 3). This document is completed by nursing staff when undertaking pre admission checks and education with patients prior to day of admission and throughout the peri-procedural period of admission

for adult cardiac catheter procedures. No assessment scales or evaluation criteria were noted on the proforma to inform or direct nursing anxiety assessment, however assessment scales were noted within the form to assist nurses document the patient's:

- pulse scale at the procedure puncture site;
- colour, warmth, movement and sensation of effected arm or leg relevant to site to obtain sheath access;
- chest pain scale;
- haematoma scale (size and description).

A single direct reference to anxiety was noted within the last page of the document where 'Variances' were noted. Clinical pathways are developed in accordance with evidence based practice relevant to the patient's diagnosis or clinical procedure and outcomes and variances should be documented when there has been an identified deviation from the pathway as a result of a complication or unexpected outcome (Kinsman, Rotter, James, Snow, & Willis, 2010). For example if a patient is experiencing chest pain this is considered to be a variation from the pathway and should therefore be documented with a descriptor of the pain including date and time of presentation, intervention provided and outcomes achieved. Examination of the document confirmed that the word 'Anxiety' was noted as a complication within the Variance section of the clinical pathway analysed under the heading of Neurologic/Psychiatric, Variance Number 7.2.

When considering nursing management strategies to minimise patient anxiety, examination of this original proforma identified a space dedicated for nursing staff to confirm if a pre-medication had been administered and signed for. This data appeared on the front page of the document under the heading of 'Admission Checklist'.

Nursing Documentation

Review of nursing notes within patient charts and clinical pathways provided valuable insight into nursing practices prior to conducting semi-structured interviews with nursing staff. Examination of medication sheets, nursing notes, including relevant completed clinical pathway documentation filed within the ten patient records selected, identified no documented evidence of nurses undertaking anxiety assessment. Of the

total number of five nurse participants interviewed within the study, only one of the nurses interviewed was identified within the nursing documentation reviewed.

There were no variances identifying patient anxiety documented within the completed clinical pathway forms reviewed. Nor was there any documented evidence of administration or application of any anxiety management strategy or intervention for the patients who had undergone either coronary angiography or percutaneous coronary intervention unless the patient had been written up for pre-medication in PREAC in accordance with the aforementioned Cardiologist's requirements. In instances when the patient had been prescribed pre-medication prior to day of admission, all pre-medication orders had been administered and the medication sheet signed for by a nurse.

When reviewing nursing notes in conjunction with the patient's clinical observations it was noted that in several instances when the patient's blood pressure and heart rate were elevated during admission on day of procedure in comparison to baseline measures taken prior at PREAC, no documentation of anxiety assessment was evident. Similarly in several of these cases, there was no evidence of any intervention offered such as premedication to minimise pre-procedural anxiety and no pre-medications had been prescribed by the doctor prior to day of admission. This may reflect that no anxiety assessment or intervention was completed. Alternately however, whilst anxiety assessment or non-pharmacological nursing interventions may have been undertaken, lack of any documented evidence may be contributed to the deficit of reference to, or requirement for, completion of this data within the pre-procedure admission portion of the clinical pathway-adult cardiac catheterisation form used by nurses within this setting (see Appendix 3).

The data collected through chart review indicated that nurses were not assessing for patient anxiety, documenting it or managing it in any consistent way. Although as a nurse I had worked in this clinical setting for a number of years, I was perplexed as to the rationale for this lack of standardised approach to patient care. Whilst I had expected some level of variation in nursing practice, the apparent deficit of nursing documentation in context to patient assessment and management of anxiety surprised me. This chart review provided valuable data reflecting nursing practices in regards to anxiety

assessment and management that was supported by data collected during nurse interviews.

4.2 Semi Structured Interviews

Data from semi-structured interviews with Nurse Participants was recorded, coded and analysed to establish key themes and categories relating to nursing practices within in this unique care environment. These themes have been summarised and supported using quotes from nursing staff during interview and journal notes. Pseudonyms have been applied to any quotations provided to ensure confidentiality of study participants.

Experience and age of nursing staff participating in the semi-structured interviews varied from younger and newly experienced nurses to more senior nurses with considerable experience caring for cardiac patients in the acute care setting. When conducting interviews I was pleasantly surprised how freely all nurses shared their personal experiences and feelings during interviews. I likened the interview experience with nurses to “peeling back an onion” in which the layers and complexities of nursing within this procedural environment were exposed. Their openness and willingness to share stories about their nursing practice and also share, often very candidly, their personal feelings and emotions, made me feel extremely privileged.

Data collected throughout these interviews indicated that environmental factors within the procedural cardiac catheter unit had considerable influence on nursing assessment and subsequent management of patient anxiety. Additionally, whilst most nurses articulated the importance of assessment and management of patient anxiety in this setting, lack of a standardized approach to nursing assessment, documentation and management strategies was evident.

The majority of nurses interviewed identified multifaceted outcomes when patient anxiety was unmanaged in this environment. Common negative patient outcomes included both physical and emotional responses observed by nursing staff. Additionally, nurses identified emotional, physical and operational impacts experienced personally and within the nursing care team when patients experienced anxiety highlighting the need for strategies that could be applied to support nursing staff in such instances.

When undertaking initial analysis from data gathered during the semi-structured interviews, fourteen categories were identified by myself and an experienced, doctoral qualified researcher who undertook the role of second coder. Further review of these categories was then undertaken to identify inter-related links and concepts across categories, merging some of these categories to form a more comprehensive group. Several of the concepts such as environmental factors influencing patient anxiety and detrimental outcomes experienced by anxious patients that were identified within these categories are comparable to concepts identified within the literature.

During analysis the concept of emotional effects on nursing staff when caring for anxious patients surfaced whilst discussing impacts of patient anxiety in the clinical setting. This led me to consider how I formulated some of my queries and I subsequently asked participants to share their “feelings” rather than just talk about their experiences or the impacts of caring for anxious patients.

The following final seven key categories and concepts within these categories were identified:

Figure 5. Identification of Key Categories

Category	Concept
Factors Influencing Patient Anxiety	<ul style="list-style-type: none"> – Unmanaged anxiety – Time waiting for procedure – Invasive procedure – Hospital environment – Experience of self and/or others – Unknown prognosis – Consent process/identification of risks
Effect of Patient Anxiety on the Patient	<ul style="list-style-type: none"> – Increased blood pressure – Delayed discharge – Difficulty removing sheath – Feels pain more – Multiple

Figure 5. Identification of Key Categories

Category	Concept
Effect of Patient Anxiety on Nursing Staff	<ul style="list-style-type: none"> – Operationale ((Nursing processes/allocation /shift) – Handover/ patient “labelling” – Influences care given – Effects relationship with patient – Time consuming – Emotional exhaustion
Anxiety Assessment	<ul style="list-style-type: none"> – Early in care path – Ongoing – Focused – Minimal – Subjective (Verbal/Non-verbal cues) – Overall – Physiological – Conversation – No tool used – Not specific – Inconsistent – Inherent human skill/trait
Anxiety Management	<ul style="list-style-type: none"> – Early – Pharmacological intervention – Non-pharmacological intervention – Not done well – Varies
Nursing Priority	<ul style="list-style-type: none"> – Assessment important – Management not a priority over an acute

Figure 5. Identification of Key Categories

Category	Concept
	<p>patient</p> <ul style="list-style-type: none"> – Management not a priority over procedure schedule – Management not a priority over physical cares – Management not done enough
Nursing Needs	<ul style="list-style-type: none"> – Staff development – Assessment tool – Assessment process

When reviewing concepts identified within the data it was apparent that some of these concepts fell across categories. For instance, nursing allocation changes made to ensure an experienced staff member is allocated to a particularly anxious patient falls within the *Effect of Patient Anxiety on Nursing Staff* category and, as it is also an identified anxiety management strategy, it could equally sit within the *Anxiety Management* category. As such, the approach taken when analysing this data was to consider not only the frequency of which a particular concept had been identified within the data but to also contextualise the data, identifying the nuances, both differences and similarities and consider the inter-relationships across themes.

A summary of the data gathered from interviews, with supporting quote extracts is provided below.

4.2.1 Factors Influencing Patient Anxiety

During interviews all nurses agreed that many of their patients experienced elevated levels of anxiety when undergoing cardiac catheterisation procedures. However whilst identifying that although at times their patients were quite overtly demonstrative when expressing anxiety, displaying behaviours such as aggression, pacing or becoming

teary, nurses noted that there are also times that these behaviours are overlooked or not initially responded to by the nursing staff. The rationale offered by nurses interviewed when questioned about this apparent lack of response to patient need was commonly lack of available time, as priority is given to ensuring compliance with procedural schedules and acute patient needs.

“I think because it is such a fast turn over some things tend to get overlooked or some patients needs aren’t fully met, their social needs aren’t fully met” (Grace)

“I think definitely when it is busy you do see more signs and more progression of anxiety in more patients because they are over looked.” (Christine)

“...if we have a long list and there are lot of outpatients coming in and we have to have a fast turn over that can sometimes rush things.” (Grace)

Conversely, un-managed anxiety was most commonly identified as a factor influencing the degree of anxiety experienced by patients, with exacerbation of anxiety related symptoms and behaviours noted by nursing staff when patient anxiety is overlooked or not identified and appropriate intervention is not undertaken in a timely manner.

“...to ignore their anxiety just makes it worse...you can see a progression in some people...the sooner you pick up on them the better, the easier it is to deal with.” (Christine)

Nurses also spoke about the effect that the hospital environment had on their patients. They noted that hospitalisation can be quite daunting to some patients with time again a common factor highlighted by many nurses as anxiety provoking for both the patient and their families. This problem has been noted by researchers previously (Trecartin & Carroll, 2011). Time waiting to go in for the procedure and also waiting in a busy clinical area where clinical staff are often managing both tight timeframes and emergency acute patients, were noted as factors influencing patient anxiety by the nurses. These factors also combined with the associated anxiety provoking anticipation of undergoing a physically invasive procedure with unknown diagnostic outcomes.

“....the fact that they have never been in hospital before can make people anxious” (Mary)

“sometimes the whole hospital experience is just an anxiety provoking process” (Julie)

Personal previous experiences and those of others may also taint the patients' perception of risks associated with the procedure, with nursing staff identifying that if these past experiences have been negative ones this may subsequently contribute to the anxiety experienced by the patient. Additionally, the procedural consent process which is a mandatory pre-procedure requirement in elective cases was in itself highlighted by some nursing staff to be a confounding and often stressful time for many patients.

“They've signed a consent form that gives all sorts of risks like strokes and death and dying and there's bound to be a lot of anxiety” (Christine)

“.... because the informed consent is not put into context, it is just a set of figures read out and most people can't conceptualise it. It really does make some people absolutely just about hysterical.” (Julie)

Nurses acknowledged that similar to the procedural consent process, other processes often considered “business as usual” for nursing staff working in this busy acute procedural environment could contribute to manifestations of patient anxiety. The process of pre-procedure preparation, including intravenous cannulation was highlighted as an experience which nurses felt was also anxiety provoking for some patients. Nursing focus on operational processes and clinical routines along with patient allocation to less experienced staff without senior support were sometimes seen to be detrimental to their patients' emotional well being.

“.... just to get them through, just to get the process done, just to get them ready rather than focusing on the emotional needs of the patient so much..” (Grace)

“...the busier the place gets the more intolerant we become of anything that upsets the routine that keeps us going, that keeps us churning through the patients. This is very much a process.” (Julie)

The operational process of patient allocation was broached a number of times during interviews with most nurses acknowledging the importance of the nurse patient relationship to the patients' emotional well being. Detrimental patient outcomes were noted in instances when less experienced nurses were allocated to patients without adequate support by senior staff to ensure all patients' needs are met.

".....very junior or graduates who can't answer any questions or who is not confident themselves then that will just provoke their anxiety" (Christine)

Additionally, several nurses noted that nursing workload, attitudes and their emotional and physical state can sometimes influence their care and management of patient anxiety.

"if you have a really busy day and you have a heavy patient load you think that it is more of a burden than anything else and it becomes more of an annoyance to have an anxious patient so you are less likely to spend that extra time or it doesn't become the main focus the main focus becomes the physicality of the recovery..." (Grace)

"...there are days when I am tense or tired or hurried and then I realise that I actually haven't been practicing my anxiety reducing methods for my patients." (Julie)

A predominate concept when nursing staff considered factors influencing patient anxiety appeared to be availability of time. The busy clinical procedure area and subsequent nursing workload and priority to meet procedure schedule deadlines or "time on table" were seen to hinder nurses' ability to meet patients' emotional needs. This was apparent despite most nurses acknowledging that early identification and management of patient anxiety was optimal to minimise detrimental effects of anxiety for their patients.

4.2.2 Effect of Patient Anxiety on the Patient

Through interview, it became apparent that nursing staff witnessed varying degrees of patient anxiety. However, whilst the severity of each patient's anxiety levels varied, nurses identified that patients experiencing anxiety commonly exhibited detrimental physical, behavioural and/or emotional responses, often requiring

intervention or support from nursing staff. The effects of anxiety on patients were seen to be far reaching, encompassing increased perception of pain, limited ability to follow instructions, episodes of panic attacks and/or hyperventilation and haemodynamic instability.

“They’re less co-operative ...the patient experience is that everything will be a little more difficult to achieve for them, everything” (Mary)

“Just coping with any reasonably simple instructions” (Mary)

Clinical outcomes for anxious patients were also seen to be compromised, with common complications identified by nursing staff. Many of these complications linked physiological stress responses to post procedure complications and subsequent delays on discharge.

“Maybe a rise in their blood pressure.... Plus the blood pressure problems they could develop bleeding or haematomas from high blood pressure”(Mary)

“.... can then affect the blood pressure and the difficulty in removing the sheath and the complications from sheath removal or if they have had a complication in the lab.” (Julie)

Additionally, a concerning link between anxiety and the patients’ increased pain perception was commonly identified.

“People tend to feel things more” (Mary)

“...we notice that they feel pain or are more aware of the pain because they are nervous which can then extend taking out the sheath and things like that.” (Julie)

“...because we are trying to manage pain and manage anxiety which then will increase their recovery time with us taking time to try and ease their nervesBecause you are trying to ease their nerves, this can also increase their recovery which in turn can increase their nerves as well.” (Grace)

Finally, patient anxiety and some of the resulting behaviours displayed were found to impact on relationships with caregivers as highlighted by comments below.

“...it can then colour the handover and the patient then gets labelled. Which of course labels are bad and they can colour the whole relationship we have with the patient.” (Julie)

“I think in some people it presents a little bit as aggression and in that case it changes the relationship a great deal”(Christine)

The carer relationship and the patient's perception of nurse caring that they experienced when in hospital may have longer lasting effects than on day of procedure. This study and others found that patients who perceive or experience a poor relationship with their nurse during the cardiac procedure may carry negative perceptions of the overall quality of care administered regardless of outcomes (Zane Robinson, Miller, & Devine, 2003).

“I mean it can be good if you were successful in helping them. If you were not successful in helping them it can be very negative when you re-approach them at one week, one month and six months...” (Helen)

“If the patient is really anxious and their expectations aren't met then that is where we generate the patient complaints. The patients complain, “Don't go to XX Hospital, the nurses are really horrible, nothing went right” (Julie).

Effects of anxiety on patients were seen to be far reaching. Patient complications such as increased blood pressure and pain perception were commonly cited by the nurses as result of increasing anxiety. The effect on the nurse/patient relationship were commonly described, however, even broader effects of patient anxiety were highlighted when nurses discussed how caring for patients experiencing heightened anxiety levels can have significant effects on nurses themselves.

4.2.3 Effect of Patient Anxiety on Nursing Staff

Given the high occurrence of patient anxiety in this cardiac procedure setting, nursing staff are often required to provide care for patients and their families experiencing both physical and emotional distress. Interviews with nursing staff provided invaluable insight into the professional and personal challenges met by nursing staff in this acute care setting. Prioritised high volume turn around times and scheduling

constraints combined with the emotional demands placed upon nursing staff when supporting anxious patients were linked to direct practice and personal factors. Increased work load and additional time providing one on one care for anxious patients were commonly identified.

“...having an anxious patient increases your work load a bit because you are not only having to care for the physical needs but you are also having to care for the emotional needs as well” (Grace)

“Patients don’t exist in isolation. You can’t halve off the emotional welfare and just leave the physical welfare.... unfortunately the emotional welfare can take a lot more time and energy than the physical welfare....” (Julie)

Operational strategies applied by nurses included staff allocation to align more complex patients with more senior nursing staff. However, attempts to align patients’ emotional acuity to nursing skill and expertise were not always successful nor a priority over complex or acute presentations.

“...if we had someone who was anxious we would try and have the same nurse follow them through so looking after them pre procedure and post procedure and possibly even the same nurse that saw them in pre admission clinic the day or week before that they were already familiar with. That would be lovely if that could be the same nurse all the way through.” (Mary)

“...it changes who you allocate that patient to....an experienced staff member for an anxious patient is desirable because patients pick up on the level of experience” (Christine)

“Having to have a particular person tied up with the patient for a long period of time and therefore other patients won’t be getting the care” (Mary)

Working in busy acute care environments where time critical, complex care delivery is required has been found to predispose nursing staff to emotional exhaustion and stress (Austin, 2011; Erickson, 2008). In addition to these influencing environmental factors, it was evident during interview that the very process of caring for patients in emotional distress can also place considerable emotional strain on nursing staff.

“If my patient is anxious and more stressed I would certainly be more stressed” (Helen)

“It’s very, very soul sucking and draining to deal with that sort of emotional upheaval on a constant basis” (Julie)

“....it can be very emotionally draining for me..... It opens up emotional channels” (Helen)

Additionally, stronger feelings of frustration and intolerance were expressed from nurses when describing the detrimental emotional impacts of managing anxious patients. Comments made by nursing staff interviewed highlighting the resiliency of negative experiences.

“Lots of positive experiences actually and they’re the majority, unfortunately they don’t stick in your mind as much as the others.” (Helen)

“....it can also frustrate you as a nurse if you have an anxious patient whether it is right or not just because of time. It does increase your work load and can impact the patient because they don’t get the emotional support that they need as well.” (Grace)

“.... we basically have little tolerance when dealing with their anxiety.” (Julie)

“...the emotional stress that comes with that. There have been cases that have been extremely stressful with patients abusive on the phone, so they are not enjoyable at all.” (Helen)

No nurses identified using any personal coping strategies when discussing emotional stress encountered in the work environment. Rather they made reference to needing more guidance on how to deal with difficult situations when caring for patients and their families.

When speaking about their personal experiences when nursing patients with anxiety, some of the nurses also spoke quite emotively and after the interviews expressed surprise themselves at the strength of emotions provoked when discussing this particular topic. When discussing the responses given to some of the questions asked during interview one nurse said she felt the interview had been *“surprisingly therapeutic to get stuff of my chest like that”*. On the other hand another very experienced nurse stated

simply *‘I’m surprised how emotional it got when we were talking about some of those things’*. Furthermore a few of the same nurses identified that there was a tendency to bottle in some of the frustrations that they had voiced during the interview and *‘just get on with it’*. They admitted however that this sometimes had detrimental effects on their mood and energy levels later in their day, even after they had finished their shift.

Ultimately, workplace and emotional effects relating to patient anxiety were identified by all the nurses interviewed. This highlighted the importance of early identification and management of patient anxiety for both the patient and nurses. Methods used by nursing staff to assess patient anxiety were discussed throughout all interviews.

4.2.4 Anxiety Assessment

Patient assessment is a critical component of nursing care, driving decision making, informing treatment options and forming a foundation for clinical handover and review (Webster et al., 2012). All nurses interviewed stated that they usually undertook patient assessment for anxiety at some stage throughout the care process, with all identifying that they undertake some form of anxiety assessment with their patient early in the care pathway. When asked to provide specific approaches or strategies applied to assess their patients’ anxiety, most nurses struggled to define any consistent processes, methods or tools applied.

“...we rely at the moment on the nurses’ judgement to be able to look at someone and assess” (Mary)

“There is no particular assessment that I use. No tool. It’s more actually just personal experience....” (Helen)

Some also considered that assessment was more of an intuitive understanding of the human factor rather than a structured assessment process. Paradoxically while highlighting the inherent nature of this intuitive skill a few admitted that some nurses are better than others when assessing anxiety.

“It is hard to explain how you can tell that someone is anxious.....it is one of those human conditions that people can see in other people.” (Christine)

“...but it is very intuitive there’s no...I couldn’t tell you what it is. But I am sure there is a process in there somewhere but maybe I have just done it for too long I don’t know, I can’t put a finger on it.” (Helen)

“...most of the time I think it would be obvious if someone was anxious.” (Mary)

“I think a good nurse can pick up anxiety in a patient very early” (Christine)

“Some staff members are better than others at assessing anxiety” (Julie)

Some nurses noted reliance on observation of more overt patient behaviours and physiological responses to stress such as increased heart rate and blood pressure and expressions of hostility or agitation when assessing patients’ anxiety.

“How much noise and how much attention the patient is demanding.obviously if they are acopic, they are crying, they are shaking, they are requiring lots of attention..” (Julie)

“I look for things like body language, if they’re looking away if they’re fidgety, things like that to assess their nerves and then you’ve got things like when you do your base line obs that show or can show whether they are overly anxious or not.” (Grace)

Whilst patient self report of their anxiety level was taken into account during assessment by some nurses, others highlighted that this was not always reliable.

“Some people aren’t as forthcoming as others about their nerves” (Grace)

When considering the predominantly subjective nature of assessment techniques that were highlighted by all nurses, conversation was one technique commonly applied. Nursing staff interviewed identified that a lot of their patient assessment was embedded in everyday conversations with their patients. It was through these conversations, especially when first meeting their patients during pre-procedure preparation that the nurses not only began to develop a rapport with their patients but also undertook initial assessment of the patients’ emotional state.

“I like to just talk and have a normal conversation with the patient to make them feel a bit more at ease and then I tend to get

an idea if they are nervous if they are not participating in a normal conversation as they would in a normal setting.” (Grace)

“If patients experience anxiety or are showing signs of it I personally would slow down and sort of talk to them about that. Sort of evaluate why they are feeling stressed.” (Helen)

“...when you first initially get the patient you often are doing an assessment when you are leading them in. You are saying, “How are you feeling today, what procedure are you having”, and in their responses you are getting a bit of a clue.” (Christine)

The perceived intuitive nature of anxiety assessment was evident when talking to nurses about assessment techniques applied with the concept of “a good nurse” having the ability to pick up on patient anxiety fairly quickly. By the very nature of defining “good” versus possibly “not so good” however, the nurses identified that reliance on inherent capabilities was not always trustworthy. Nor was reliance on patient self report of anxiety levels.

Subjective assessment of patient anxiety was common across all nurses interviewed with most nursing relying on overt behaviours or physiological responses such as increased blood pressure or heart rate to indicate heightened anxiety levels. None identified any specific tool or standardised assessment process utilised within their workplace nor was there any standardised documentation within the patient chart or clinical pathway following assessment cited. This was also evident in retrospective chart review undertaken in the initial first phase of data gathering. Inconsistencies in nursing approach to anxiety assessment were paralleled when reviewing the anxiety management strategies applied.

4.2.5 Anxiety Management

A dominant theme when reviewing management strategies applied by nursing staff to minimise or assist their patients to cope with anxiety was the diversity in nursing practice. Although some nursing staff referred to ‘doctors standing orders’, there did not appear to be any consistent correlation between anxiety assessment, evaluation and subsequent application of a specific management strategy.

“...it really is dependant on the behaviours the patient displays more than anything” (Julie)

“Standing orders for premedication are a standing order for some doctors” (Grace)

“I think the way anxiety is treated is very much staff dependent...” (Julie)

Management strategies applied fell broadly under the two defined categories of pharmacological and non-pharmacological interventions, with all nursing staff identifying both options as strategies implemented in the cardiac procedure environment.

“I prefer talking... to go for the warm blanket, talk to them strategy first but then if there is a patient that is overly anxious then I believe premedications are really good as long as it is given in a timely manner before going into the procedure.” (Grace)

...”some offer the patient help just by counselling....others are just as likely to “throw a pill”.....sometimes it is a combination of both” (Julie)

Studies reviewed in the following discussion chapter of this document support premedication administration as a pharmacological alternative for anxiolysis in the cardiac catheter laboratory environment (Reddy et al., 2006; Woodhead et al., 2007). All nursing staff interviewed referred to premedication administration with the benzodiazepine temazepam as a common pharmacological intervention applied to minimise patient anxiety prior to cardiac catheterisation.

“...we do give most of our patients a premed” (Christine)

“maybe use of a sedative or something like that to take off that overt anxiety that is going to effect the procedure” (Helen)

“Temzepam is generally the medication of choice, 10mg” (Mary)

Most nurses advocated premedication administration as a useful method of anxiolysis noting benefits for their patients, with additional derived benefits highlighted for nursing staff when patient anxiety is managed effectively.

“.... most of us believe that temazepam does relax people and make them more manageable” (Christine)

“If we recognise a patient is anxious then we will try to organise to get them premedication because it is easier for them and it is easier from a nursing perspective as well if your patient isn’t anxious.” (Grace)

“I think pre-meding an anxious patient early on can be a great benefit to the whole smooth process” (Christine)

Some nurses, whilst noting the benefits of premedication, disparaged the practice of colleagues administering premedications to patients in the absence of any anxiety assessment simply because the tablet had been ordered by the medical team.

“I don’t think enough assessment is done with an anxious patient or even for patients who don’t appear anxious.premedication are a standing order for some doctors they are just given out whether we have first assessed whether the patient is anxious or not.” (Grace)

In general, all nurses highlighted benefits of implementing pharmacological management strategies such as premedication to minimise anxiety for patients leading up to procedure. Equally, in instances when patient anxiety was un-managed at this time, nursing staff identified an increased need for sedation during the procedure. Unfortunately procedural sedation was also linked to post procedural complications including over sedation and subsequent longer recovery times.

“you end up having to keep them for much longer to wait for them to wake up because you are waiting some times for a huge amount of sedation to wear off because it was needed to manage their anxiety” (Julie)

When considering alternatives to pharmacological interventions to manage patient anxiety, nurses referred to numerous non-pharmacological management strategies which they applied either in isolation or concomitantly with premedication. As detailed in earlier results, nursing allocation was used as both a pre-emptive strategy and a management strategy to minimise patient anxiety.

“try and have the same nurse following them through....someone that they are familiar with” (Mary)

Providing information was also a common strategy applied by nurses, with a focus on tailoring communication styles in response to patients’ emotional state.

“spend a bit more time with them explaining what’s happening” (Mary)

“you try and answer their questions, explain the process in as simple terms as possible, and try and get them to understand to some degree what is going on.” (Julie)

“If patients experience anxiety or are showing signs of it I personally would slow down and sort of talk to them about that. Sort of evaluate why they are feeling stressed.” (Helen)

Nursing staff also recognised the significance of environmental influences on patient anxiety and the importance of family support to assist many patients to cope when under emotional duress.

“make the environment as relaxed as possible” (Mary)

“Come and sit in the TV room so move them out of that immediate recovery environment and put them into the lesser intense room where patients are just sitting and chatting to reduce their anxiety levels.” (Julie)

“keep their family members with them if you think that would help that they can sit with them until they go in for the procedure.” (Mary)

Nursing strategies applied to manage patient anxiety appeared to be relatively similar across interviewed participants, encompassing both non-pharmacological and pharmacological interventions. However there did not seem to be any apparent management process aligning with assessment criteria to support clinical decisions about which intervention to apply and when. Whilst some staff mentioned that pre-medication with oral temazepam would be their first line option for anxiety management others stated that they preferred non-pharmacological intervention as an initial approach.

In the absence of what appeared to be any formalised process to align management strategies with clinical assessment, it is assumed that management of patient

anxiety is dependent on the individual nurse caring for the patient or at times on the medical team who may or may not have prescribed a premedication for the patient in accordance with the team's pre-procedure preferences. The important role that nursing staff play in ensuring patients' anxiety is assessed and managed in a timely manner was highlighted by all nursing staff, however conflicting priorities were also noted with time being flagged as a major determinant in how well and how often strategies were applied.

4.2.6 Nursing Priority

As previously identified, most nursing staff highlighted the importance of assessment and management of patient anxiety to nursing practice identifying that anxiety assessment should be undertaken continually throughout the patient journey.

"Anxiety assessment should be one of the first things we do when we meet and greet the patient and we take them through to process them through, get them through to get ready for their procedure. " (Julie)

"I think it is really, really, really a big part of patient care. A huge part of patient care." (Christine)

"...anxiety assessment should be an ongoing process" (Julie)

Some admitted that whilst they would like to think anxiety assessment was embedded in their day to day practice, there were factors that influenced how and when they undertook anxiety assessment. Whilst identified as a priority, paradoxically most nurses noted that when the unit was busy or when an acute or complex case presented, anxiety assessment and management practices took second place.

"well if you have a nice flowing day then you are able to spend more time with the patient and you don't mind providing that extra support and care for your patients and you really feel like you want to do that as well." (Grace)

"...emergencies happening they would always take priority over someone that is sitting and is well pre procedure that may need someone just with them to talk to..." (Mary)

When considering proclivity of nursing anxiety assessment some nurses felt that not enough nursing staff undertook anxiety assessment routinely. Comparisons were

made against the regular physical nursing assessments and observations common to the cardiac environment such as hemodynamic observations or pain assessment.

“I don’t think enough assessment is done with an anxious patient or even for patients who don’t appear anxious..... So I think there is more room for, time allowing obviously, for more assessment” (Grace)

“It certainly is the more task focused things you do more routinely because that’s how we were taught as nurses. And certainly in my nursing training, and I will admit I am old and hospital trained, but I did go to uni and I did actually do a counselling unit and more psych and it certainly did make me think more about personality types and how to help my patients, but certainly it was not something we were taught to focus on.” (Julie)

In general the nurses agreed that assessment and management of patient anxiety was important; easily identifying suitable management strategies and interventions that could be implemented to minimise patient anxiety. However, upon review, the patients’ physical well being appeared to commonly be a key focus and priority, as was compliance with procedural schedules and timeframes.

“There still tends to be the focus on the physical and so we then struggle with patient management both short and long term when the patient doesn’t conform to what our expectations are to be..... and yet it can make our own lives so much easier if we manage that.” (Julie)

Throughout discussions, the nurses indicated that the patients’ psychological well being was considered when time permitted or when signs of patients’ anxiety and stress became overtly obvious, despite acknowledged shared benefits to patient and nurse when patient anxiety was managed in a timely and appropriate manner. Physiological assessment was seen to be not only a priority but also a process that the acute care nursing staff appeared to be very capable and comfortable with undertaking as part of the patient care process. However, some of the nurses interviewed however highlighted what they appeared to see as limitations in their ability to appropriately assess and provide for the emotional needs of their patients. They identified a need for further professional

development and also organisational supports to assist them provide care for patients with heightened emotional dependencies.

4.2.7 Nursing Needs

Whilst nursing staff acknowledged undertaking some form of patient assessment to identify patients at risk of developing anxiety during preparation for cardiac catheterisation, there were noted inconsistencies in strategies applied. Despite a consistent trend for nurses to rely on subjective measures to assess patient anxiety in this setting, there was support for introduction of some form of an assessment tool to facilitate standardised nursing assessment. The nurses also identified the benefits of assessment tool to also provide baseline data which could be evaluated against by others throughout the patient encounter.

“I think just to promote awareness and if staff were to use the tool like that they might become more aware” (Christine)

“We could have an anxiety scale that we could do on patients as they come through the pre admission clinics and then repeat it on the day of the procedure” (Mary)

“.....I think it probably might be useful to come up with something like that [assessment tool] for staff that just don’t have the ability to see those things naturally” (Christine)

As documented previously, nursing staff identified emotional, physical and clinical practice effects when caring for anxious patients. Whilst discussing these issues some nursing staff also flagged opportunities for professional development, with focus on strategies to best support nurses in the provision of evidence based care for anxious patients.

“...but it can be very emotionally draining for me and it’s probably very emotionally draining for the patient as well and stressful, without having any particular knowledge or particular training on how to deal with very stressful situations sometimes. From a nursing point of view, you get the basics but you don’t get continual training or education on how to deal with that.” (Helen)

And certainly in my nursing training, and I will admit I am old and hospital trained, but I did go to uni and I did actually do a counselling unit and more psych and it certainly did make me think more about personality types and how to help my patients, but certainly it was not something we were taught to focus on.” (Julie)

“But I think a little bit of extra tutorial or work...I mean I’ve done the motivational interviewing course as well and that has been very helpful, but I do think some more guidance with difficult situations would actually be very good.” (Helen)

Opportunities to meet both patient and staff needs were flagged, with benefits identified for all when patient anxiety is managed appropriately.

“Absolutely I mean yes I want a good outcome for my patient to have an enjoyable process but I still want to have a good day at work” (Julie)

Once the interview finished several nurses spoke about how they had not really thought too much about the need for a tool or formalized method of evaluating and documenting patients’ anxiety levels. However, as they had progressed through the interview they realized that they did not approach anxiety assessment quite like they approached say pain assessment but thought that possibly they should. Interestingly once the recording process for interviews was completed all nursing participants identified at least one nurse specifically by name that they worked with who did not “naturally” pick up on patient anxiety well and who would benefit from a more formalised approach to assessment and documentation of patient anxiety levels. Possibly, the idea of the interviews being recorded made nurses hesitant to have this discussion during the interview.

My Experience as an Interviewer

Reflexivity was an important activity throughout this qualitative study especially when conducting the interviews. To ensure that the true meanings behind their words and actions were represented, it was important to me that the participants expressed their views and shared experiences important to them and that these were articulated in their own words. The interpretive nature of this study required my role as the researcher and

“human instrument” of the study to be open and responsive to contextual cues. In qualitative studies the relationship between the researcher and study participants can have significant impact on the quality of data collected (Appleton & King, 1997). A healthy level of trust and rapport within this relationship will promote productive and rich data collection (Appleton & King, 1997). It seemed that my established relationship with some of the nurse participants encouraged open and candid dialogue however I acknowledge that I was concerned that my seniority both in age and professionally may have been a problem when interviewing younger nurses. Fortunately my concerns that this difference in seniority and age between researcher and respondent may have had some impact on the views expressed during interviews with younger nurses were not realised as all nurses interviewed were very open when sharing their opinions, perceptions and experiences during interview.

Although an experienced nurse, as a novice researcher I was quite surprised how nervous I was in preparation for conducting interviews. Once the interview commenced I was extremely conscious not to lead the nurses. I was conscious that my own personal experiences, specifically within this clinical setting, could potentially influence or guide how the interviews developed and as such did my best to encourage a natural progression in conversation and topic. When undertaking interviews with some of the staff that I had worked professionally with previously, there was a feeling of familiarity and trust that may have not been present in a newly forged relationship.

I was mindful that nurse participants identified me as a ‘cardiac nurse’ and a colleague who had worked along side them in the procedure unit and although I had not been “on the floor” for a number of months since initiating the nurse interviews this association filtered into conversations with participants prior to and during interviews. However, as it was my objective to gain an understanding of nursing practice of anxiety assessment and management from other nurses’ perspective rather than my own, I actively avoided contributing any personal anecdotes reflecting my time nursing in the unit when conversing with nurses.

Whilst some discussion points during interviews were expected, the emotional experiences and effects on nursing staff when caring for anxious patients were not an agenda that I had envisaged before conducting the interviews. On a personal level I

found the rawness of emotion expressed at times by some of the nurses when discussing the stress they had experienced a little confronting. Upon reflection I acknowledged that although I had also felt stressed at times when nursing particularly anxious patients, the level of emotional impact expressed by some of the nurses interviewed exceeded my experiences and expectations. This highlighted to me how the emic qualitative approach taken to complete this study provided the valuable opportunity to understand the people behind the nursing practices that I was so interested in.

I was conscious to ensure that interviews were not too structured as I wanted to provide adequate opportunity for nurse participants to respond to questions. For example one nurse went on for several minutes to emphasise her view that anxiety was not well managed in the clinical setting and gave further examples to those she had previously provided to support her views. This emphasised the value in not closing interviews prematurely and allowing interviewees the opportunity to dictate when they felt all that needed to be said has been covered.

Also documented within my journal were my notes from interviews conducted with nurses recounting comments made after recording had ceased; some of these are provided within the following Discussion chapter of this thesis. Additionally I noted emotions expressed through participant's mannerisms or verbal inflections during interviews as these were also not included within the recorded transcripts. Whilst not all notes within the researcher journal were relevant to incorporate into analysis, many such as the above examples and others detailed in subsequent chapters were reviewed during analysis to add context and meaning to the data.

4.3 Conclusion

Data acquired through document analysis, retrospective chart review, semi-structured interviews with nursing staff and reflexive praxis has been presented in this chapter. Conclusions drawn from analysis of this data identified an inconsistency in approach by nurses to assessment and management of patient anxiety. Additionally, unique environmental factors influenced their practice in this clinical area. The fast paced procedural environment which is driven by adherence to tight schedules to ensure completion of patient lists within set timeframes was a major deterrent to completion of

standardized nursing assessment and initiation and provision of ongoing management for patients' anxiety. The critical task focused approach to service delivery was evident when reviewing documents outlining clinical processes of care during document analysis and when undertaking nurse interviews. Even though nurses highlighted negative effects for their patients and themselves when patient anxiety was not identified or managed in a timely manner, operational and task oriented priorities were noted. Additionally, the clinical acuity of many cardiac patients was highlighted as a rationale for precedence of monitoring and managing the physical status of patients over need to assess and manage patients' psychological wellbeing when time was of the essence. These findings will be interpreted and discussed in the final chapter of this thesis.

CHAPTER 5 – PRACTISING THE ART OF NURSING OR THE BUSINESS OF HEALTH CARE: NURSING PRIORITIES, CHALLENGES AND NEEDS

The following discussion will present an interpretation of the findings within the previous chapter. Comparison against current evidence will identify common, contrasting and emergent findings. The discussion will also contain sub-sections of text, structured to support progression of themes identified during analysis in the context of clinical practice. A focal point for discussion will be the data collected through semi-structured interviews undertaken with nurses who were participants in this study.

5 DISCUSSION

Study findings indicated that the fast paced procedural environment impacted on delivery of standardised nursing anxiety assessment and management for patients. Negative patient and nursing outcomes were associated with increased and unmanaged patient anxiety. Assessment and management of patient anxiety was considered to be an important component of care delivery by nurses. Precedence was given to compliance with procedural schedules and provision of clinical care relating to the patients' acute physiological needs over the need to assess and manage patients' psychological wellbeing when time was limited. The following summary of research findings has been provided in the context of their meaning to nursing practice specifically within the cardiac catheter procedure setting.

5.1 Environmental Impacts on Care Delivery

In the cardiac catheter procedure environment the acute nature of the patient's cardiac condition and clinical presentation drives a focus on timely diagnosis and intervention with adherence to tight procedure schedules and rapid patient turn over. An imperative for acute cardiac emergency presentations is prompt restoration of blood flow through blocked culprit arteries to ensure reperfusion of rapidly dying heart muscle (De Luca, Cassetti, & Marino, 2009). This life saving priority drives procedure schedules, taking precedence over less acute elective cases.

Contextualising associated risks outlined by medical staff during the informed consent process may be one of the challenges for patients at this time. Nurse interviewed during this study highlighted risks associated with the procedural consent

process to increasing patient anxiety levels. Equally, earlier research undertaken by Fraser (1984) published similar findings from a single site study which focused on consent process for cardiac catheterisation. This study identified that two thirds of the one hundred and four patient sample in the study would prefer not to know about the inherent risks associated with the invasive procedure. Similarly a study undertaken by Chair (2005) found that of all participants within the study sample, none wanted to hear about the clinical risks associated with the cardiac catheterisation procedure they were about to undergo during pre-procedure education sessions.

As reflected within the data, anxiety assessment and management is not always a nursing priority against a backdrop of complex physical cares, cardiac monitoring and pain and medication management for patients undergoing invasive cardiac catheter procedures. Clinical staff working in the cardiac catheter laboratory require a high level of organisational and technical skills including knowledge and utilisation of complex biomedical technology to deliver care efficiently within tight time and financial constraints (Harb, 2011). What is considered to be standard nursing care in this acute procedural setting may align more closely with the medical model of care in which a primary focus is diagnosis and treatment of the disease condition of the patient and consideration of the patients' emotional state becomes a secondary priority (Germov, 2002). Nurses interviewed for this study identified that a large component of the nursing care they administer in this setting focused on complex peri-procedural tasks and physiological assessment. Tight turn around times drive all stages of care including recovery post procedure. The primary short term objectives of discharge planning and education post procedure are minimising risk of complications and ensuring compliance with prescribed medication regimes.

The long days, scheduling complexities and critical time dependent nature of care delivery within the catheter laboratory can be stressful for staff as well as patients, as supported by Siegrist et al., (2009) who highlight "Cardiac catheterization labs are typically stressful places to work. Days can be hectic and unpredictable, staff must constantly juggle schedules in order to slot emergent and urgent cases between scheduled ones, and cases are often bumped or delayed, leaving patients hungry, anxious, and impatient" (p 92). Nurses within this study and others commonly reported feelings of emotional distress associated with conflicting professional responsibilities

and patient demands when caring for anxious patients (Beck, 2011; Garcia & Calvo, 2012).

5.2 Patient Anxiety and Nurse Coping

It is arguable that to be able to meet the needs of their patients, nurses must first care for themselves to ensure physical and emotional energy levels are replenished. The psychological effects experienced by nurses when caring for anxious patients and their families can be substantial as articulated in the findings of this study. Feelings of frustration, intolerance, avoidance and mirrored stress were expressed. Conflicting priorities contributed to nurses' stress when attempting to meet organisational and operational responsibilities such as compliance with procedural timeframes and discharge schedules whilst also trying to meet the emotional needs of their patients. The intensity and frequency of dealing with emotionally demanding care relationships was a key contributing factors to stress for nurses within this and other studies (García & Calvo, 2012; O'Mahoney, 2011; Poghosyan, Clarke, Finlayson, & Aiken, 2010).

Compassion fatigue is a term first phrased by Joinson (1992) in a study exploring emergency department nurses' emotional responses to caring for patients in emotionally demanding situations. A form of secondary traumatic stress, compassion fatigue is described as emotional and physical depletion which may be brought about by the act of empathetic caring inherent in the nursing role. This phenomenon has also been linked to responses to a fundamental shift in nursing models of care to a predominantly customer service and process driven model of practice (Austin, 2011; Lombardo & Eyre, 2011). Work processes, schedules and routines were also prioritised by some nurses within this study who expressed feeling more frustrated when patients emotional demands interrupted clinical routines within the cardiac catheter laboratory.

“It’s very, very soul sucking and draining to deal with that sort of emotional upheaval on a constant basisSo the busier the place gets the more intolerant we become of anything that upsets the routine that keeps us going, that keeps us churning through the patients. This is very much a process.” (Julie)

Nurses highlighted times when caring for anxious patients that they felt emotionally exhausted during and after completion of their shifts. When discussing

these feelings of frustration and emotional stress brought about from caring for anxious patients, some nurses became very animated, emphasising the importance of their words and the strong feelings behind them. In contrast to many other studies exclusively reviewing patient outcomes relating to anxiety (Ghetti, 2011; Viars, 2009; Ylinen, Vehviläinen-Julkunen, & Pietilä, 2009), flow on effects of patient anxiety to nursing staff became a significant focal point of this study.

The opportunity to share and understand this germane nursing experience may be contributed to one or two factors. Firstly, the qualitative approach taken to gather data facilitated open conversation during data gathering. As I was not expecting these responses from nursing staff, study design of a more structured, quantitative approach may have overlooked this important finding. Additionally, the increased comfort levels of nursing staff to confide feelings and experiences may have been influenced by the established rapport we shared as nursing colleagues, leading to a more intimate and open discussion.

No nurses within this study spoke of applying any personal coping strategies when experiencing work stress. Rather they highlighted the need for additional guidance to assist them manage 'difficult situations'. Self awareness and self care are two important attributes nurses need to manage stress. They must become comfortable to express their own needs and develop healthy self care behaviours and work life balance including eating well and having adequate sleep and exercise (Lombardo & Eyre, 2011).

Additionally, nurses can develop appropriate coping strategies to deal with stress. Some of these may include drawing on social support, either from colleagues and supervisors within the workplace or family members or friends outside work (Lombardo & Eyre, 2011). However, time restrictions in the clinical setting which were commonly reported in this study, can impinge on nurses' ability to access workplace social support mechanisms to mitigate work stress. One study which examined the incidence of burnout experienced by emergency nurses reported seventy per cent of nurses felt there was insufficient time or opportunity to talk to their colleagues about problems they had experienced with patients (O'Mahoney, 2011).

Evidence informs us that the quality of nursing care can also be compromised when nurses experience high levels of work stress (Garcia & Calvo, 2012; Poghosyan

et al., 2010). Nurses in this study described occasions when their responses to emotional stress impacted on their care delivery acknowledging that at times they tended to avoid spending time with some of their more demanding patients. This mechanism of avoidance is not an uncommon response when emotional fatigue is encountered (Lombardo & Eyre, 2011). Another view expressed within the literature highlights that it is not only emotional exhaustion that fosters avoidance behaviours. A study by Austin (2011) identified that nurses may also avoid recognising patients' emotional distress when they know they are simply too busy to meet their patient's needs.

5.3 Time as a Deterrent – Busy Nurses and Anxious Patients

Scarcity in available time is not an uncommon problem for nurses working in cardiac intervention units where nurses report unmanageable workloads (Naismith, 2008) and intense demands of short stay patients requiring rapid turn around times and a wealth of documentation including pre, intra and post procedural check lists (Harb, 2011; Naidu, Rao, Blankenship, Cavendish, & Farah et al., 2012). Anecdotes of busy shifts and limited time were commonly repeated by nurses in this study when describing their work day. Austin (2011) notes nursing staff struggle with the ethical dilemma of balancing task focused responsibilities with allocating adequate time to support the emotional needs of their patients. Likewise, time appeared to be a major determinant in the anxiety assessment and management practices of nurses within this study.

The fast paced procedure area in which this research was conducted required multi-tasking by nursing staff who at any time during their shift may be responsible for undertaking patient admission and pre-procedure prep, setting up procedures areas and supporting medical staff as they perform invasive cardiac investigations, recovering patients post procedure or undertaking discharge planning and patient education. It was not unusual for many of these nurses to have a patient load which involved half hourly observations on patients who had undergone cardiac investigations or interventions, or electrophysiology procedures. Additional nursing responsibilities included multiple femoral sheath removals, cardiac monitoring, wound dressing, pain management and medication administration whilst simultaneously undertaking patient admission and

assessment for pre-procedure check in to ensure compliance with the mandatory tight turnarounds within the procedure lab.

Whilst noting the importance of anxiety assessment and management for patients at this time, nurses within this study emphasised the impact that busy shifts and multiple tasking had on their time available to spend with patients who required additional emotional support. Findings from this study identified that the patient's psychological well being was considered by many nurses when time permitted or when signs of patient anxiety and stress became overtly obvious, despite acknowledged shared benefits to patient and nurse when patient anxiety was managed in a timely and appropriate manner. Many nurses expressed that they would like to spend more time with their patients but work priorities often deterred them, noting that when shifts in the unit were particularly busy there was an increase risk of patients having unmanaged anxiety. Other studies discuss similar issues, highlighting that in the current health care climate in which there are increasingly limited resources with subsequent flow on effects on staff's time, many nurses see their capacity to offer nursing cares as "hurried and superficial" (Webster, 2012, p42).

Cardiac nurses interviewed within this current study indicated that their patient's physiological status was a primary priority within the cardiac catheter laboratory setting. All nurses expressed confidence in undertaking the complex care processes required as part of their normal and every day workload. Adherence to procedure schedules were also seen to take precedence over patient anxiety assessment and management. These findings raised further questions not explored in this study of how external factors such as education and training, personal values and organisational priorities may influence nursing behaviour and practice within this particular clinical environment. In an attempt to meet both workload demands and patient needs, nurses in the study described operational strategies that were implemented when feasible. These operational "work arounds" included changes made to nursing allocations and work load sharing between nurses when patients were at heightened risk for anxiety or management is required.

5.4 Nursing Workloads and Patient Allocation

It was apparent in this study that changes to staffing allocations commonly occur in an attempt to align most suitable or often more experienced nursing staff with anxious patients. Furthermore, data reflected that staff allocated to anxious patients often experienced increased workload. Associated outcomes included delays in care administered to other patients or increases to other nurses' patient quotas to compensate and share patient load across the shift.

As well as increased patient demands for emotional support, additional nursing work loads were attributed to treatment for patient complications relating to anxiety such as increased requirements for pain management or treatment of puncture site hematomas resulting from restlessness or anxiety induced hypertension. However, the perception of increased workload may also be related to the view that assessment and management of patient anxiety falls outside the "norm" of nursing practice in this short stay procedural environment. The belief that management of the patient's psychological well being is an additional responsibility rather than embedded within the nurse's daily practice, may be representational of the contemporary business aspect or "customer service model" of care in today's health care environment as described by Austin (2011). Values which focus on fiscally driven models of care with maximum through put and turn over of patients and "bottom line" budget constraints, if supported organisationally, may effectively 'reframe' the provision of patient care administered by nursing staff and nurses may continue to feel that workloads relating to this type of care is exceptional.

5.5 Significance of the Care Relationship

Significance of nurse caring behaviours on patient satisfaction and outcomes should not be overlooked (Wolf, Miller, & Devine, 2003). Literature and nurses' perceptions during this study align, advocating that patients who perceive or experience a poor relationship with their nurse during the cardiac procedure may carry negative perceptions of the overall quality of care administered regardless of outcomes (Zane Robinson, Miller, & Devine, 2003). Nurses within this study described on-going effects when patients have perceived their needs have not been met by their nurse, including generation of emotional roadblocks that create hurdles to overcome in future care

relationships such as cardiac rehabilitation. They also referred to possible detrimental organisational implications as the patient's broader perception of care is tied to the service provider and facility. Equally, in addition to these "provider-related" indicators, as referenced by Hatler (2006, p247), it is also important to consider organisation and work unit influences such as structures and work processes on patient outcomes.

As discussed previously within this Discussion, the task focused approach to service delivery within this critical care setting drives clinical processes, as supported by institutional and work unit policies and guidelines. Even though when patients experienced heightened anxiety negative outcomes for both nurses and patients were recognised by nurses participating in this study, it was apparent that task focused processes such as haemodynamic monitoring and medication administration drove nursing practice in response to the critical acuity of many of the cardiac patients..

In addition to clinical processes, findings from this study highlight that nursing education and professional development strategies embedded within organisational structures and professional curriculum are also characteristics of indicators that can influence care delivery.

5.6 Influence of Nurse Education and Training

Some of the nurses interviewed within this study highlighted what they appeared to see as limitations in their ability to appropriately assess and provide for the emotional needs of their patients. Level of access to professional development and on-going learning opportunities to assist the nurses to support anxious patients within their work place was something that was also introduced. Evidence shows that organisational and work unit characteristics such as staffing skill mix, case volumes and support and development models for nursing staff within the facilities and organisations in which they work influence patient outcomes (Hatler, 2006; Stecker & Stecker, 2012). Equally, Hatler (2006) found nurses' perceptions of the quality of professional support and learning opportunities provided within their work environment were significant predictors of organisational efficiency. Additionally, clear benefits were cited in ensuring continued development opportunities within the work place as this "helped sustain professional nursing practice" (p251).

Many nurses working in this clinical setting are from an acute care background. Practice guidelines, training and post graduate education in this specialty area provide minimal focus on psychological assessment (Rolley et al, 2012; O'Brien et al., 2001). Primarily nursing education in the acute clinical environment is targeted on maintaining an appropriate theory and skills base relevant to the complex and often highly technical acute care setting (Boyd & Witt, 2012). Moreover, it is considered an imperative for nursing staff to apply an advanced knowledge of cardiac anatomy and physiology whilst staying up to date with latest advances in supporting technologies. The significance of this limitation within post graduate nursing curriculum is that nurses may not understand the importance of anxiety assessment and management nor value its place within patient care delivery with possible detrimental outcomes for themselves and their patients.

5.7 Variations in Anxiety Assessment

A contributing factor to outcomes relating to increased patient anxiety is the absence of structured or standardised anxiety assessment processes to inform nursing diagnosis or treatment within this clinical setting. Findings from this study indicate a strong tendency for nurses to rely on subjective evaluations to assess patient anxiety. Overt behavioural indicators such as restlessness, failure to co-operate with care or follow instructions and agitation were relied upon to guide nursing diagnosis, paralleling findings from other nursing studies (Frazier et al., 2002; Moser et al., 2003). In addition, physiological responses such as the patients' increased blood pressure and heart rate were anecdotally attributed to heightened anxiety by nurses within this study and others (Kantor et al., 2001). Whilst all of the aforementioned clinical presentations and behaviours may be representational of patient anxiety, any number of factors such as cardiac medication regimes and inherent personal behaviours or values of patients can make these characteristics unreliable as single points of reference.

A noteworthy finding from this study was the secondary priority set by nursing staff on anxiety assessment in comparison to other physiological assessments such as cardiovascular or neurovascular assessments embedded within daily nursing care within the unit. Other studies have highlighted similar findings identifying that in acute and critical care environments, psychosocial factors are not as much of a focus for nurses as

the patient's physical well being (Perpiñá-Galvañ et al., 2009). Whilst anxiety assessment was deemed important to nursing staff in this study, it was not undertaken consistently or regularly. One explanation for nurses' acceptance that emotional assessment takes second place to other physiological nursing assessments in this clinical setting may be that the outcomes for patients if anxiety assessment was not undertaken may have been deemed to be transitory in comparison to the longer term and more significant detrimental outcomes such as heart attack or permanent damage to nerves and blood supply if physical assessments are not completed in a timely and responsive manner.

Equally, when considering the standardised approach taken by specialist nurses in this cardiac procedure setting to assess factors such as chest pain or limb function and circulation, study findings indicated that anxiety assessment was unstructured. Availability to, or utilisation of a standardised assessment tool or formalised process was absent. No defined assessment criteria, rating scale or evaluation measures appeared to be implemented or documented even when physiological clinical indicators such as increased blood pressure or heart rate were present.

Nursing staff valued patients' self report of anxiety to inform anxiety assessment, identifying varied approaches to elicit this information. Every day conversations with patients were deemed to be a popular method to engage patients. This less direct approach, taken predominantly during pre-procedure assessment, was referred to by nurses as an effective way of evaluating patients' anxiety. Literature supports nursing conversation as a valuable and effective method to "produce an accurate shared understanding of the client's health" (Macdonald, 2001). When considered in context to the evidence highlighting disparity between nursing evaluation of patient anxiety and the patients' self report measures (Moser, 2007; Suriano et al., 2011), support for this approach appears valid.

When asked about their own and colleagues approach to anxiety assessment, some nurses attributed assessment technique to an inherent ability contributing nursing experience to how well this art is honed.

" I think I work on feel more than anything, you know my gut feeling or you know put out the feelers to start with and see what I get back but it is very intuitive...(Helen)

This approach closely aligns to the aesthetic “pattern of knowing” referred to by Carper (1978). The four patterns of knowing cited abundantly within nursing literature: empirics, aesthetics, ethics, and personal knowing, provide a foundation for nursing assessment and intervention (Archibald, 2012; Carper, 1978; Porter, 2010). Carper (1978) suggests aesthetic knowing comes from the experience of interacting and caring for patients (Archibald, 2012; Porter, 2010). Drawing on the nurses’ intuition, understanding and interpretation, aesthetic knowing is not expressed via words or statistics (Clements & Averill, 2004).

When discussing nursing practice in regards to patient assessment, some nursing texts and journals also suggest that nurse experience may influence their approach to health assessment (Estes et al., 2013, Webster et al., 2012). Nursing literature informs us that more experienced nurses will draw on knowledge gained from previous experiences to help decision making and guide assessment processes (Estes et al., 2013; Webster et al., 2012). Estes et al. (2013, p 2) state that “over time nurses build a repertoire of professional experience that they take into each patient encounter”, whilst in comparison, the less experienced nurse may need guidance in the absence of the more developed clinical reasoning and critical thinking applied by the more experienced nurse.

Whilst nursing intuition and understanding are highly valued attributes, the individual nature of this knowledge base leads to opportunity for diversity in both nursing diagnosis and implementation of subsequent nursing interventions, as evident within this study. A suitable countermeasure may be the introduction of appropriate tools such as a visual analogue scale or reference criteria to inform and facilitate standardised assessment.

5.8 Measuring Patient Anxiety in the Acute Care Setting

Anxiety has been described as an “unpleasant state characterised by feelings of uneasiness and apprehension...” (Plotnik, 2002, p493). Whilst anxiety is known to be a subjective state, indirect measures to assess anxiety levels can be taken through observation of physiological responses and collection of objective data such as the patients’ blood pressure and heart rate (Hamel, 2001; Heikkilä et al., 1998; Kantor et al., 2001). Additionally, valuable subjective data sourced from the patient through

interview or questionnaire regarding their own rating of anxiety levels may also be measured with one study highlighting that there are over 200 instruments designed to measure anxiety (Beckerman et al., 1995; De Jong & Hall, 2006; Higgins et al., 2001; Nekouei et al., 2011). Summary and review of a number of these instruments and studies undertaken has been documented within the Literature Review chapter of this thesis.

The appropriateness of some assessment tools to support nursing practice in the fast paced cardiac procedure unit however requires further review, and may be a contributing factor to the apparent slow uptake of a formalised assessment model within the acute care setting. Time constraints relating to tight procedure schedules and acuity of patients were common justifications by nurses within this study for not completing comprehensive anxiety assessment or providing timely intervention when patients had identified anxiety.

Evaluation of patient anxiety within the acute care environment however remains controversial with studies reviewing patient self report instruments highlighting the need to consider a number of relevant factors when choosing an assessment tool to support practice. Time taken to complete the assessment, the patients' mental capacity and self awareness and physical constraints including whether the patient is in pain or is unable to sit up are just some factors in the acute and critical care setting that can make application of some assessment tools challenging (Benotsch et al., 2000; Court et al., 2010; Köllner & Bernardy, 2006; Perpiñá-Galvañ et al., 2009). Reviews also support the reliability and validity of the State Trait Anxiety Inventory (STAI) to provide normative data for baseline assessment and monitoring of variations in cardiac patients' state anxiety levels in the clinical setting (Ayers et al., 2010; Shen et al., 2011; Trotter et al., 2011). However, as detailed in earlier chapters of this thesis, it may not always be feasible for patients to complete the full 20 item STAI questionnaire. In time poor clinical environments such as the cardiac catheter procedure unit, where limited nursing resources and tight procedural schedules impact on the amount of 'one on one' time nursing staff can spend with individual patients, the shortened 6 item version may be a more suitable tool (Court et al., 2010).

Despite the availability of suitable assessment tools however, without endorsement of these tools and promotion of anxiety assessment as a clinical priority by

health care organisations, nursing staff may fail to understand the importance and clinical relevance of anxiety assessment for patients.

5.9 Standardised Nursing Practice – Anxiety Assessment

The concept and application of “the nursing process” has been incorporated within nursing curriculum, literature and practice guidelines for many years (Estes et al., 2013; Doenges & Moorhouse, 2007). This process, broadly summarising the steps of assessment, diagnosis, planning, implementation and evaluation, is seen as a systematic approach to guide patient care. Detailing the steps within nursing process at a more detailed and granular level; the development of standards of care and practice guidelines provides a focused approach to support standardised clinical practice (NHMRC, 2012). Development and application of clinical guidelines and pathways has shown to be an effective method of supporting clinical decision making and improving patient outcomes (Buchan, 2010). They provide a tool for nursing staff to co-ordinate and provide quality evidence based care and are commonly used within the cardiac acute care environment (Audimoolam, Nair, Gaikwad, & Qing, 2005).

Because of the subjective characteristics of patient anxiety, evidence supports development of work based protocols to support nursing assessment and subsequent appropriate management for patients with anxiety (Suriano et al., 2011). Inclusion of anxiety assessment and corresponding management guidelines within current cardiac specialty clinical pathways and guidelines would signify organisational support for such practices. A primary aim of clinical pathway development is to reduce variations in clinical care and to facilitate early identification of any problems (CHI, 2012). Inclusion of formal anxiety assessment within these guidelines would facilitate a standardised approach to identification of patient anxiety supporting clinical decision making and providing opportunity for prompt intervention if warranted by nursing staff. Furthermore, additional inclusion of broader management plans or strategies and recommendations including both pharmacological and non-pharmacological nursing interventions aligning with anxiety assessment criteria within clinical pathways would facilitate a more comprehensive standardised approach to nursing care and guide clinical decision making.

5.10 Standardised Nursing Practice – Anxiety Management

Whilst nurses in this study identified varying approaches to mitigate and minimise patient anxiety, assessment and evaluation criteria applied to inform nursing management strategies and promote standardised nursing practice were absent in this study. Where one nursing intervention may be appropriate and effective for an individual patient, it may be detrimental and harmful for another. For example administration of oral benzodiazepine may be beneficial for a sixty year old male patient with no history of sleep apnoea or any other co-morbidities, however when administered to an eighty year old female patient, of slight build and with cardiac ischemia or renal impairment, this same medication may have significant sedative effects compromising both her respiratory function and post procedure recovery times (de Visser et al., 2003; Martin & Lennox, 2003; Riley & Lim, 1999; Woodhead et al., 2007).

Webster et al. (2012) warns of the importance of tailoring nursing interventions to suit individual patient needs. Given the experience and level of critical thinking that was evident during discussions with nurse participants it is likely that intuitively, nurses in this study may be following this lead. However, study findings indicated no evidence through documentation analysis or anecdotally that any formal evaluation criteria was applied by nurses within the unit to inform the appropriateness of nursing interventions when caring for anxious patients undergoing cardiac catheter procedures at the research site. This finding highlights inherent risks when patients are cared for by more junior nursing staff that have not yet developed the higher level of clinical reasoning that guides the practice of more experienced nursing staff.

Additionally, the lack of a formal evaluation criteria or measurement tool to assist nursing staff to assess degrees and extent of patient anxiety, gives some explanation to the diverse management practices described by nurses in this study. When reviewing management strategies applied by nursing staff to minimise patient anxiety within this study, a combination of varied approaches were identified. As reflected within similar studies reviewing the phenomenon of patient anxiety, anxiety management strategies applied by nurses in this study fell into the two defined categories of pharmaceutical interventions and non-pharmaceutical interventions

(McCaffrey & Taylor, 2005; Moser, 2007; Weeks & Nilsson, 2011; Woodhead, et al., 2007).

Anecdotal data from this study and findings from similar studies recognises nursing support for pharmacological interventions such as oral temazepam as an effective strategy to manage patient anxiety (Frazier, et al., 2003). Pharmacological interventions are well suited to the medical model of care where treatment of disease states forms a primary focus (Germov, 2002) However, as evident within the literature and within data collected for this study, a number of external factors such as institutional policy, nursing and medical preferences and time constraints tend to influence sedative and analgesic administration even more so than patient anxiety assessment and evaluation (Kennedy et al., 2000; Mott, 1999; Naidu et al., 2012).

When recommending effective methods of addressing patient anxiety whilst ‘on the table’ when undergoing procedure, nurse’s within this study acknowledge the benefits of a combined approach. This is supported within medical research, as noted by Shook and Savage (2009) who recommend that “patient anxiety and fear can be treated with verbal comfort, reassurance, and a small amount of midazolam” (p50). Non-pharmacological options such as guided imagery, pre-procedural education, music therapy, controlled breathing and massage therapy may be seen as an alternative or adjunct to pharmaceutical interventions, to minimise patient anxiety (Argstatter et al., 2006; Guo, East, & Arthur, 2012; Weeks, 2011; Zakerimoghdam, Shanba, Mehran, & Hashemi, 2010).

The importance of family support to assist many patients cope when under emotional duress was a common strategy applied by the nurses in this study. The experience of a loved one undergoing an invasive cardiac catheter procedure can also create anxiety for family members (Trecartin & Carroll, 2011). Therefore dual benefits can be achieved when adopting a family centred care approach in this setting. Additional emotional support through conversation and inclusion of family members in waiting rooms and provision of physical comforters and distractions such as warm blankets or access to television were popular choices noted within this study.

In alignment with current evidence, adequate provision of patient education and information about the procedure was also a key factor that nursing staff attributed to successful patient outcomes when discussing interventions to prevent or minimise

patient anxiety (Walker, 2007). Whilst acknowledging the benefits of effective communication and information sharing in mitigating risks of patient anxiety, nurses within this study noted that time constraints limited the amount of engagement that they would often like to spend with their patients, considering that procedure schedules and heavy and demanding patient loads at times restricted the time that they could commit to these activities.

5.11 Recommendations

A standardised approach to nursing assessment of patient anxiety is needed. A consistent and evidence based approach would facilitate management and delivery of quality and timely nursing care and emotional support to patients undergoing cardiac catheter procedures. Organisational endorsement and support for incorporation of evidence based assessment criteria to evaluate patient anxiety aligning with appropriate management strategies within current and future clinical pathways and guidelines are recommended. Consideration of time constraints should be given when employing new assessment strategies in this clinical environment. Therefore a simple and quick tool or criteria suited to the work environment that aligns with current practices would facilitate a change in practice and a standardised approach to nursing care and documentation.

The emotional impacts for nurses caring for anxious patients also needs to be acknowledged and addressed to develop effective strategies to protect nurses from avoidable work stress. Further investigations to determine the value of social support from peers and supervisors within this clinical environment would be beneficial. Additionally, organisation support through professional development opportunities and workplace initiatives and strategies should be encouraged to support nurses caring for patients and families with high emotional support needs. These should include ongoing training, supportive counseling for personal or work-related issues and education to develop and apply strategies to deal with work conditions. Skill acquisition should include communicating effectively with anxious or challenging patients and stress reduction in order to mitigate risks of compassion fatigue or nurse burnout. Evaluation of these skills should form part of the nursing curriculum and should also be

incorporated into regular performance and appraisal development (PAD) sessions undertaken between nurses and their respective nursing line managers.

In consideration of the fast paced clinical environment and time crucial nature of nursing care administered in the cardiac catheter laboratory environment, nurses also need access to a quick, practical and reliable assessment tool to routinely quantify and monitor patient anxiety in the cardiac catheter procedure environment. Further research to determine the suitability of anxiety assessment tools to support nursing assessment in this acute care environment is required. Additionally, review of patient education provided during pre-admission clinics to evaluate benefits of incorporating appropriate self-management strategies for patients should be considered as this may supplement nursing strategies employed on admission to the catheter procedure unit.

5.12 Limitations and Qualifications

The small sample size of nurse participants undertaking semi-structured interviews was one limitation of the study. Transferability of findings from this study is also representative of the single site where the research was conducted. Whilst the facility was a major tertiary hospital and cardiac diagnostic and interventional services are similar across other hospitals within the state and nationally, replication of the study across other sites with a larger and broader nurse participant sample would be of value. Finally, whilst previous benefits have been highlighted, my close association with the staff and the research setting must also be acknowledged.

5.13 Summary

This study has provided some valuable data which supports findings from similar studies reviewing nursing assessment and management of patient anxiety. In addition to highlighting factors influencing nursing practice in the cardiac catheter day procedure setting it has produced data which has shone a light on possible detrimental effects experienced by both patients and nurses when patient anxiety is heightened or un-managed anxiety. Consequential risks to the nurse/patient relationship have also been found. Recommendations from findings within this study support the development of personal and organisational strategies to protect nurses from avoidable

work stress. Further investigations to determine the value of social support from peers and supervisors within this clinical environment would be beneficial.

The operational requirements and acute care focus and culture of the cardiac catheter day procedure unit may influence nursing assessment and subsequent management of patient anxiety. The fast paced procedural environment which is driven by adherence to tight schedules to ensure completion of patient lists within set timeframes was a major deterrent to consistent nursing assessment and subsequent initiation and provision of ongoing management for patients' anxiety. Additionally, the clinical acuity of many cardiac patients was highlighted as a rationale for precedence of monitoring and managing the physical status of patients over need to assess and manage patients' psychological wellbeing when time was of the essence.

Whilst nurses articulated the importance of assessment of patient anxiety in this setting, lack of a standardised or consistent approach to nursing assessment, documentation or strategies applied to manage patient anxiety was evident. Summation within this thesis highlights the value of incorporating formal assessment of patient anxiety into day to day nursing practice in the cardiac catheter laboratory setting. Furthermore, positive outcomes and significant benefits may be derived for both patients and nursing staff when nurses apply timely and appropriate management strategies to minimise patient anxiety.

APPENDIX 1 – NURSE PARTICIPANT INFORMATION SHEET



The Prince Charles Hospital
Metro North Health Service District



Queensland Government
Queensland Health

NURSE PARTICIPANT INFORMATION SHEET

HREC No:	HREC/09/QPCH/90
Project Title:	Assessment and Management of the Anxious Patient in the Cardiac Catheter Laboratory
Name of Researcher:	Ms Maree Ruge (RN, Master of Nursing - Research Student)

You are invited to participate in a project which is being undertaken by Maree Ruge, a registered nurse currently undertaking her Master of Nursing Research, with the Australian Catholic University. This research aims to identify factors that may influence patient's anxiety levels during cardiac catheterisation.

Results of this study will form part of the researcher's Master's project. Your participation in this study has been sought as you are a nurse working in the selected research location which is The Prince Charles Hospital's Cardiac Investigations Unit, and you may be undertaking admission of patients participating in the study.

Should you choose to participate in this study, you will be required to take part in a semi-structured interview with the researcher where you will be asked some broad questions regarding your assessment and management of anxiety for patients undergoing cardiac catheterisation.

The interview will be conducted outside work hours at your convenience and is estimated to take approximately 1 hour.

Information gathered during interviews will be treated in the strictest confidence and used only for the purpose of research. The interview will be taped. Tapes will be stored in a locked cabinet in the researcher's office and will be accessed by the researcher only. All tapes will be deleted once transcription and analysis has been completed. Pseudonyms will be used on transcriptions from tapes ensuring anonymity of individual participants. You will not be identifiable in any documents resulting from the research including interview transcripts, researcher's thesis or any other publications.

This project is considered to pose minimal additional risk to nurse participants beyond inconvenience of completing interviews outside work hours. All costs for the study will be outlaid by the researcher.

I cannot guarantee that you personally will receive any benefits from this research. Nurses working in the cardiac investigations environment in the future may benefit from this project by gaining a greater understanding of what factors may influence anxiety levels of their patients when undergoing stressful procedures such as coronary angiography. Research results will form part of the researcher's Masters Thesis and may be summarised and appear in publications. Your privacy is valued by the researcher and as such only non-identifying details in the form of aggregated data will be reported in any publications made available to your employer or others. Study findings may be provided to other researchers in a form that does not disclose the identity of the participants in any way.

Participation within this study is voluntary and there will be no incentives, financial payment or reimbursements made to participants. Your decision to participate or not to participate will not have any effect upon your employment with QLD Heath or The Prince Charles Hospital Cardiac Investigations Unit. Should you choose to participate in the study you are free to withdraw your consent and discontinue participation without penalty.

If you have any questions regarding this research project, please feel free to contact:
Student Researcher: Ms Maree Ruge (Clinical Nurse/Master of Nursing Research Student)

Telephone Number:

or

Principal Supervisor: Dr Judith Gonda

Telephone Number:

Campus Address: PO Box 456
Virginia Queensland 4014

Following completion of this study appropriate feedback on the result of the project will be available to participants upon request.

This study has been approved by The Prince Charles Hospital's Human Research Ethics Committee and the Human Research Ethics Committee at Australian Catholic University.

Should you have any complaint or concern about the way you have been treated whilst participating in this study, or if you have any query that the Supervisor and/or Student Researcher have not been able to satisfy, please do not hesitate to contact The Prince Charles Hospital Human Research Ethics Committee, Executive Officer Research and Ethics on 07 3139 4500 or alternatively you may write to the Australian Catholic University, Chair of the Human Research Ethics Committee care of PO Box 456 Virginia QLD 4014 or telephone 07 3623 7429. Your concerns will be treated in confidence and following an investigation by the Research Services Unit/s you will be informed of all outcomes.

If you agree to participate in this project, please sign both copies of the attached Consent Form to indicate that you have read and understand the information provided above, that you willingly agree to participate and that you are not waiving any legal claims or rights. One signed copy of the consent will be retained by the participant and the other will be returned to the Student Researcher.

.....
Ms Maree Ruge
Student Researcher

.....
Dr Judith Gonda
Principal Supervisor

APPENDIX 2 – NURSE PARTICIPANT CONSENT FORM



The Prince Charles Hospital
Metro North Health Service District



Queensland Government
Queensland Health

NURSE PARTICIPANT CONSENT FORM

HREC No:	HREC/09/QPCH/90
Project Title:	Assessment and Management of the Anxious Patient in the Cardiac Catheter Laboratory
Name of Researcher:	Ms Maree Ruge (RN, Master of Nursing - Research Student)

I agree to participate in the above named project and in so doing acknowledge that:

- I have been informed as to the nature and extent of any risk to my health or well-being.
- I am aware that, although the project is directed to the expansion of medical knowledge generally, it may not result in any direct benefit to me.
- I have been informed of the time requirements for participation in this research.
- I have been informed that my refusal to consent to participate in the study will not affect my work agreement or conditions with QLD Health or The Prince Charles Hospital in any way.
- I have been informed that I may withdraw from the project at my request at any time and that this decision will not affect my work agreement or conditions with QLD Health or The Prince Charles Hospital in any way.
- I have been advised that the Executive Director, The Prince Charles Hospital, on recommendation from The Prince Charles Hospital Metro North Human Research Ethics Committee has given approval for this project to proceed.
- I am aware that I may request further information about the project as it proceeds.
- I understand that, in respect of any information (which may consist of records outside of this hospital) including audiovisual records obtained during the course of the project; confidentiality will be maintained to the same extent as for any medical records and/or employment records. In the event of any results of the project being published, I will not be identified in any way.

- I agree that, if necessary, my contribution and documentation on medical records (in respect of my involvement in this project) may be inspected by a Research Assessor. This assessor may be external to but approved by the Hospital, provided
- that the Assessor does not identify me or my documentation on hospital's medical records in any way to a third party.

I would like to receive a summary of the research findings at the conclusion of the study.

Yes ☐ No ☐

Contact details/postal address:

.....

NAME OF NURSE PARTICIPANT.....
(block letters)

SIGNATURE DATE __ __ / __ __ / __ __ __ __

STUDENT RESEARCHER..... DATE __ __ / __ __ / __ __ __ __
(signature)

WITNESS..... DATE __ __ / __ __ / __ __ __ __
(signature)

APPENDIX 3 – CLINICAL PATHWAY ADULT CARDIAC CATHETERISATION

EPISODE OF CARE RECORD: VERSION 8 ADULT CARDIAC CATHETERISATION – DRG 274

DR _____

NAME	UR
DOB	SEX
	M / F
Affix Patient Label Here	

Preac Date: ____/____/____ Time:____ Admission: ____/____/____ Time:____

Coronary Procedure as per Booking Request

Reason for procedure:_____

BP:____P:____Temp:____BMI:____Weight:____kg Height:____cm

Allergies & Reaction: _____

History _____ Alert on HBCI

PREAC / WARD CHECK LIST:

(Initial)

- ____ Nurse Education Session given
- ____ Pre Procedure Questionnaire reviewed
- ____ ECG (as per Consultant) ____/____/____
- ____ Chest X-ray (as per Consultant) ____/____/____
- ____ FBC / U&E (as per Consultant) ____/____/____
- ____ Creat.____ GFR.____if < 40 patient

to be admitted pre , & 48 hours post procedure

IV fluids pre procedure ordered YES / NO

Mucomyst ordered YES / NO

Renal Information sheet given YES/ NO

____ Procedure Pulse palpable. Rating:____

____ Distal pulses checked R____ L____

____ On Metformin YES/ NO withhold day of procedure

____ IDDM Full or ½ insulin (circle)

____ Patient lives alone YES/NO

(discuss options) record details in variance

Smoking ☐ Never ☐ Stopped smoking ____/____/____
☐ Currently ____ per day since

____ On Warfarin YES/NO Date Ceased ____/____/____

____ INR Result ____/____/____

____ Consent signed

____ Score per Waterlow Assessment

____ Score per Falls Risk Assessment Tool

____ MRSA swabs (inter-hospital T/F)

____ Discharge Arrangements

☐ Family ☐ Taxi ☐ Ambulance

____ Day of procedure Contact Ph.____

____ Patient advised to bring medications and

medicare card to hospital

____ Family agree to same day discharge

____ Other Forms to be signed before discharge

☐ Medical Certificate

☐ Travel Form

☐ Sickness benefits

Pre-Admission/ Ward

Nurse _____

Signature:

ADMISSION CHECKLIST:

(Initial)

- ____ ID Band
- ____ Allergies recorded
- ____ IVT Cannula inserted Gauge ____ Site
- ____ NBM time: Food:____ Sips of water allowed
- ____ Procedure Site Clipped
- ____ Distal pulses Foot checked (0-4) R____ L____

____ Procedure pulse Rating:____

____ **Diabetics: NIDDM OR IDDM (circle)**

____ **Mane Insulin YES or NO (circle)**

Full or ½ Insulin (circle)

____ BSL ____mmols (> 15 notify RMO)

____ IVT Cannula inserted Gauge ____ Site

____ AM Medications taken

____ Clopidogrel Loading Dose:____mg

____ Aspirin

____ Pre-med – administered and signed

____ Consent signed and filed in chart

____ Clexane given day of procedure YES /NO if yes notify Dr.

____ Creat.____ GFR.____

____ IV fluids pre proc ____ Mucomyst pre procedure.____

____ Glasses insitu / Contact lenses removed

____ Hearing aid insitu

____ Dentures ☐ Upper / ☐ Lower left insitu

____ Jewellery _____

____ Ambulance required YES /NO

____ **Additional Orders see variance sheet**

____ Voided prior to procedure

____ INR Result ____/____/____

Admission Nurse: _____

Signature:

Pulse scale absent full
0 1 2 3 4

Final Check by: _____

Signature:

Procedure Cath Lab

☐ Patient orientation ☐ Education ☐ Positioning

Procedure performed _____

☐ Contrast administered Estimated Volume: _____ ml Concentration _____

Ultravist Visipaque

Radiation

Dose area Product exceeded (DAP) ☐ Yes ☐ No

If yes patient to have OPD in six weeks

AIMS form to be completed

Medications

Clopidogrel given ☐ Yes ☐ No Loading dosemg Date:.....

Aspirin given ☐ Yes ☐ No

PROCEDURE CODES

COMPLICATION CODES

Post Procedural Results Orders:

--

Patients with critical left main disease or critical aortic stenosis to have IVC inserted and monitored before sheath is removed. Sheath is to be removed by an experienced RN.

Management & Discharge:

☐ Does not have multiple medical co-morbidities that may impact on discharge

☐ Patient family agreeable to same day discharge

☐ Same day discharge

☐ Admit

Quarantined bed ☐ Yes ☐ No **If "NO", contact Bed Management**

☐ Surgical review as inpatient

☐ Surgical review as outpatient

☐ Medical Therapy

☐ Elective PCI **BOOKING OFFICE NOTIFIED YES /NO**

☐ Cardiology OPD

Additional tests required ☐ Booked

Scout: _____ Signature: _____

Scrub: _____ Signature: _____

Var. No	DATE & TIME	CODE	DETAILS	ACTION	OUTCOME	Sign & Designation

1. Cardio-Vascular
 - 1.1 Haemodynamically, Unstable (P.BP)
 - 1.2 Unstable cardiac rhythm
 - 1.3 Chest pain
 - 1.4 Inadequate diuresis
 - 1.5 Other

2. Respiratory Compromise
 - 2.1 Dyspnoea/SOB
 - 2.2 Pneumothorax
 - 2.3 Other

3. Pain
 - 3.1 Procedure site
 - 3.2 Back pain
 - 3.3 Other

4. Wound Complications
 - 4.1 Bleeding
 - 4.2 Bruising
 - 4.3 Haematoma (describe: soft on palpation; Firm, Neither soft or hard etc)
(Check for bruise) fill in reportable adverse events form
 - 4.4 Other

5. Infection/Allergic Reactions
 - 5.1 Fever >37.5
 - 5.2 Allergic reaction
 - 5.3 Other

6. GI / GU
 - 6.1 Inability to tolerate diet
 - 6.2 Nausea & vomiting
 - 6.3 Diarrhoea
 - 6.4 Unstable blood sugar level
 - 6.5 Urinary retention
 - 6.6 Food refusal
 - 6.7 Fluid refusal
 - 6.8 Other

7. Neurologic /psychiatric
 - 7.1 Headache
 - 7.2 Anxiety
 - 7.3 Other

8. Patient / Family
 - 8.1 Patient preference
 - 8.2 Patient refusal
 - 8.3 Patient unable to speak/read English
 - 8.4 Other

9. Community
 - 9.1 Transportation
 - 9.2 Home environment
 - 9.3 Other

10. Caregiver / Clinician
 - 10.1 Additional order for tests
 - 10.2 Additional order for consults
 - 10.3 Additional order (other)
 - 10.4 Delay in order
 - 10.5 Delay in D/C planning
 - 10.6 Delay in education
 - 10.7 Delay in procedure
 - 10.8 Omission of order
 - 10.9 Omission of pt. Education
 - 10.10 Omission of treatment
 - 10.11 Omission of procedure
 - 10.12 Failure to notify appropriate personnel
 - 10.13 Patient staying alone night of procedure
 - 10.14 Other

This clinical pathway is a general guideline. Patient care continues to require individualisation based on patient needs and responses.

APPENDIX 4 – DOCTOR’S REQUIREMENTS (EXAMPLE 1)

DR (REQUIREMENTS for Coronary Angiogram [ANGIO])

Clinical Situation
Patient undergoing Coronary Angiogram

Special Instructions

Dementia Patients

If the patient has dementia then their consent must be signed by their Legal Guardian

Refer to "Dr Requirements for Renal Impairment/ Insulin & Non-Insulin Dependant Diabetic/ Allergy to Iodine" where applicable for specific pre and post procedure requirements.

Tests Required

- Chest X-ray within the last 6 months
 - ECG at Preadmission (EPAC)
 - FBC and U & E's within 30 days of procedure
 - Check INR if on Warfarin N.B. Refer to Booking Form (in chart) for Warfarin instructions else contact Cardiology Booking Officer EXT 4716
 - B-HCG for all females if child bearing age
- Other
- Consent patient for: Coronary Angiogram and advise patient procedure will be done under local anaesthetic with sedation if required.
-

Pre-operative Medications

- Temazepam 10mg orally if patient requests or is anxious
- Panadol PRN

NO Enoxaparin given the morning of procedure

Treatment Order

- Prepare procedural site
 - Insert an IVC only if patient has Renal Impairment, Aortic Stenosis, Insulin Dependent Diabetic or requested in chart
 - Confirm INR < 2.0 N.B. If >2.0 advise Dr.
-

Follow up required

- Sheath to be removed when ACT < 175 seconds
- Rest in bed (RIB) 2 hrs post sheath removal prior to mobilisation (N.B. If closure device used minimum 1 hr RIB)

Discharge medication and follow up appointments should be organized prior to discharge.
ALL patients are to be reviewed by Dr before discharge.

N.B. This document is a guide for residents and registrars to facilitate the correct and efficient preparation of patients undergoing cardiac procedures in CIU. Nursing staff should obtain medical orders (written or verbal depending on the circumstances) before implementing tests or treatments.

APPENDIX 5 – DOCTOR'S REQUIREMENTS (EXAMPLE 2)

DR (REQUIREMENTS for Coronary Angiogram [ANGIO]

Clinical Situation
Patient undergoing Coronary Angiogram

Special Instructions

Dementia Patients

If the patient has dementia then their consent must be signed by their Legal Guardian

Refer to "Dr Requirements for Renal Impairment/ Insulin & Non-Insulin Dependant Diabetic/ Allergy to Iodine" where applicable for specific pre and post procedure requirements.

Tests Required

- Chest X-ray within the last 6 months
 - ECG at Preadmission (EPAC)
 - FBC and U & E's within 30 days of procedure
 - Check INR if on Warfarin N.B. Refer to Booking Form (in chart) for Warfarin instructions else contact Cardiology Booking Officer EXT 4716
 - B-HCG for all females if child bearing age
- Other
- Consent patient for: Coronary Angiogram and advise patient procedure will be done under local anaesthetic with sedation if required.
-

Pre-operative Medications

- Temazepam 10mg orally if patient requests or is anxious
- Panadol PRN

NO Enoxaparin given the morning of procedure

Treatment Order

- Prepare procedural site
 - Insert an IVC only if patient has Renal Impairment, Aortic Stenosis, Insulin Dependent Diabetic or requested in chart
 - Confirm INR < 2.0 N.B. If >2.0 advise Dr.
-

Follow up required

- Sheath to be removed when ACT < 175 seconds
- Rest in bed (RIB) 2 hrs post sheath removal prior to mobilisation (N.B. If closure device used minimum 1 hr RIB)

Discharge medication and follow up appointments should be organized prior to discharge.
ALL patients are to be reviewed by Dr before discharge.

N.B. This document is a guide for residents and registrars to facilitate the correct and efficient preparation of patients undergoing cardiac procedures in CIU. Nursing staff should obtain medical orders (written or verbal depending on the circumstances) before implementing tests or treatments.

APPENDIX 6 – DOCTOR'S REQUIREMENTS (EXAMPLE 3)

Clinical Situation

Patient undergoing Coronary angioplasty and Stenting.

Special Instructions

Dementia Patients

If the patient has dementia then their consent must be signed by their Legal Guardian

Refer to Dr Requirements for Renal Impairment/ Insulin & Non-Insulin Dependant Diabetic/ Allergy to Iodine where applicable for specific pre and post procedure requirements.

Confirm prior to scheduling

- ☑ If patient on Warfarin. N.B. Consult with Dr : Letter "Warfarin to Enoxaparin" to be sent to GP
- ☑ If patient has had a CABG in the past the CABG report is required

Tests Required

- ☑ Chest X-ray within the last 6 months
- ☑ ECG at Preadmission (EPAC)
- ☑ FBC and U & E's within 30 days of procedure
- ☑ INR if on Warfarin
- ☑ B-HCG for all females if child bearing age

Other

- ☑ Consent patient for Coronary Angioplasty and Stenting and advise the patient that the procedure will be done under local anaesthetic with sedation if required.

Pre-operative Medications

- ☑ Aspirin 300mg the morning of their procedure
- ☑ Clopidogrel 75mg to commence 5 days prior to procedure alternatively 600mg loading dose of Clopidogrel to be administered with Pre medication

Warfarin

Contact Dr regarding specific instructions, in Dr absence contact the Senior Registrar responsible for the procedure. Generally if Warfarin has not been ceased consider a radial approach or a closure device if a femoral approach undertaken. If Warfarin has been ceased for > 48 hours prior to the procedure then IV Heparin cover may be required, aiming for an APPT between 50 – 80 alternatively Clexane 1mg/kg BD may be required. Clexane is to be ceased 12 hours prior to the procedure.

Treatment Order

- ☑ Prepare procedural site
- ☑ Insert an IVC
- ☑ Commence IV Normal Saline at a rate of 100mls/ hr for 4 hours prior to the procedure *N.B. If the patient has indications of Left Ventricular Failure do not administer*
- ☑ Confirm INR < 2.0 if femoral access site designated
- ☑ Confirm INR < 2.5 if radial access site designated

Follow up Required

- ☑ Sheath to be removed when ACT < 175 seconds
- ☑ ECG on return to recovery
- ☑ Rest in bed (RIB) 2 hrs post sheath removal prior to mobilisation (*N.B. If closure device used minimum 1 hr RIB*)
- ☑ Prior to transfer to ward patients will require; their ECG checked, med sheet, discharge script, blood request (CK, Tnl @ 0600hrs next day)
- ☑ Patients on ReoPro or Aggrastat will require FBC 2 hours post procedure and again at 0800 hrs the following day.

Refer to D memo detailing Guidelines for Discharging Patients Post PCI

Discharge medication and follow up appointments should be organized prior to discharge.

ALL patients are to be reviewed by Dr before discharge.

N.B. This document is a guide for residents and registrars to facilitate the correct and efficient preparation of patients undergoing cardiac procedures in CIU. Nursing staff should obtain medical orders (written or verbal depending on the circumstances) before implementing tests or treatments.

APPENDIX 7 – WORK UNIT GUIDELINE STEMI



XXXX

- WORK UNIT GUIDELINE -

TITLE	Management of STEMI
DESCRIPTION	To provide direction on diagnosis, assessment and management of STEMI patients.
TARGET AUDIENCE	Medical and nursing staff within XXXX Cardiology & Emergency Department

Management of STEMI

Definition of STEMI:

- At least 20 minutes of cardiac sounding pain and ST segment elevation of $\geq 1\text{mm}$ in ≥ 2 inferior or lateral leads, or $\geq 2\text{mm}$ in ≥ 2 anterior leads, not relieved by nitrates.
- Or
- new left bundle branch block.

Aspirin: 300mg aspirin (non enteric coated) should be given immediately (50 lives saved per 1000 treated, ISIS-2 study)

Reperfusion strategy

The preferred reperfusion strategy at TPOCH is primary PCI for all STEMI patients presenting within 12hrs from onset of the chest pain.

Door to balloon time should be aimed at <90 minutes and should be documented.

Primary PCI

It is expected that catheter lab staff will be present in the hospital within 30 minutes of activation of the infarct angioplasty team. Intervention is generally undertaken only on the infarct related vessel unless evidence of cardiogenic shock.

Rationale for Primary PCI

A meta-analysis of 23 randomized trials (Keeley et al, Lancet 2003) involving nearly 8000 patients demonstrated that **primary PCI is superior to thrombolysis**.

Short term (4-6/52) benefits

reductions in death, non fatal re-infarction, stroke and combined death/non fatal re-infarction/stroke

Long term (6-18/12) benefits

reductions in death, non fatal MI, and combined death/non fatal re-infarction/stroke

The most impressive difference was the significant reduction of recurrent ischaemia from 21% with thrombolysis to 6% with primary PCI ($P < 0.0001$) in the short term and also during the long term follow up (39% vs 22%, $P < 0.0001$).

Medications prior to angiography

All patients should receive **Aspirin** and pain relief.

Medications immediately pre intervention/during intervention

IV/IA Heparin (70-100 IU/kg)

Clopidogrel 600mg orally

GP IIb/IIIa inhibitors (Tirofiban or Reopro) – at the discretion of the operator (Reopro is the best studied

GP IIb/IIIa inhibitor in this setting).

CCU Stay

Uncomplicated primary PCI patients (no ongoing chest pain, no ventricular arrhythmias and no evidence of left ventricular failure) can be transferred to the ward after 24-36 hrs.
Transfer of patients from other centres for primary PCI is not undertaken at present given the delays associated with such transfers.

Rescue PCI

It is preferable to transfer the patient immediately after thrombolysis rather than waiting for 90 minutes to assess the success of lysis if the patient referred from a peripheral hospital has high risk features (large anterior infarct, cardiogenic shock/hypotension and evidence of heart failure).

Once the patient is transferred, patient should be reassessed by the registrar and discussed with the consultant regarding the need for PCI.

Criteria for Rescue PCI

Failure to achieve >50% ST segment resolution in the lead with maximum ST segment elevation at baseline, assessed at 90 minutes post thrombolysis (Syed et al AHJ 2004) associated with ongoing chest pain/electrical or haemodynamic instability. GP IIb/IIIa inhibitors (Tirofiban or Reopro) should generally be avoided in the setting of rescue PCI.

The absence of chest pain has been shown to not be a reliable predictor of reperfusion-persistent ST elevation alone is sufficient to make the diagnosis.

In relation to anticoagulation:

- Patients on heparin infusion should have the infusion ceased in the lab
- ACT can be checked and heparin administered depending on level of the ACT.
- 60-70 units per kg is the usual minimum for patients with an ACT in the normal range particularly if concomitant IIb/IIIa is to be used.
- Further heparin may be given to maintain an ACT >250sec.
- Up to 100 units per kg may be given in situation where the ACT is normal, thrombus burden is high and IIb/IIIa is not used.

In patients administered enoxaparin within the last 8 hours further heparin/enoxaparin is not normally required

Thrombolysis

Thrombolysis may be considered in following situations at TPCH

1. Significant renal impairment (Cr >300) and not on dialysis
2. Known anaphylactic reaction to contrast agents
3. Presentation is less than 3 hours from symptom onset and there is a delay in invasive strategy of over 90 minutes.

Benefits:

According to Fibrinolytic Therapy Trialists' analysis, those presenting within 6 hrs of symptom onset and ST segment elevation or bundle branch block, 30 deaths are prevented per 1000 treated or 20 patients per 1000 if between 7-12 hrs. There is no survival benefit beyond 12 hrs.

Benefits of thrombolysis are limited by inadequate perfusion and or reocclusion in 25% patients.

Risks:

There are 3.9 extra strokes per 1000 treated. Advanced age, female gender, lower weight, prior CVA and hypertension on admission are significant predictors of intracranial bleeding.

Contraindications

Absolute (ACC/AHA guidelines 2004)

1. Any prior intracranial haemorrhage
2. Known structural cerebral vascular lesion (e.g., AV malformation)
3. Known malignant intracranial neoplasm
4. Ischaemic stroke within 3 months
5. Suspected aortic dissection
6. Active bleeding or bleeding diathesis (excluding menses)
7. Significant closed-head or facial trauma within 3 months

Relative (ACC/AHA guidelines 2004)

1. History of chronic, severe, poorly controlled hypertension
2. Severe uncontrolled hypertension on presentation (SBP >180 mmHg or DBP >110 mmHg)

3. History of prior ischaemic CVA >3/12 ago, dementia or known intracranial pathology not covered in contraindications
4. Traumatic or prolonged (greater than 10 mins) CPR or major surgery (within <3/52)
5. Recent (within 4/52) internal bleeding
6. Noncompressible vascular puncture
7. For streptokinase: prior exposure (more than 5 days ago) or prior allergic reaction
8. Pregnancy
9. Active peptic ulcer
10. Current use of anticoagulants

Which Thrombolytic:

GUSTO trial demonstrated that accelerated t-PA with concomitant heparin resulted in 10 fewer deaths per 1000 patients treated over streptokinase. However there were 3 additional strokes per 1000 patients. There has been no superiority shown among various fibrin specific thrombolytics (t-PA, r-PA, TNK-tPA).

A fibrin specific thrombolytic is encouraged in most situations except when the risk of CVA is high (ex: age >75, hypertension on presentation, previous CVA).

TNK or rPA Protocols:

Absolute indication:

If there has been previous exposure to streptokinase (greater than 5 days and less than 2 years previously), then further exposure to streptokinase may:

- (a) produce a severe reaction/anaphylaxis
- (b) be ineffective (neutralising antibodies)

TNK protocol

IV bolus injection depending on weight:

<u>Weight (kg)</u>	<u>TNK dose</u>
< 60	30mg
61-70	35mg
71-80	40mg
81-90	45mg
>90	50mg

LMWH/Heparin

Administer with 30mg IV enoxaparin.

Administer 1mg/kg enoxaparin SC and continue this BD for 48-72hrs.

Alternatively Heparin can be given as per CCU nomogram (ASSENT-3 trial demonstrated reduced in-hospital re-infarction and refractor ischaemia using enoxaparin compared with heparin. There was no significant increase in bleeding)

r-PA Protocol

1. 10 units of r-PA over 2 minutes, followed by a 10ml flush of N saline.
2. 30 minutes later a further 10 units of r-PA over 2 minutes, followed by a 10ml flush of N saline.

Heparin

- Commence simultaneously with 1st bolus, full intravenous heparinisation as per CCU nomogram.
- Continue IV heparin for 48 hrs

Streptokinase Protocol:

Streptokinase therapy is contraindicated if there has been any exposure to streptokinase greater than 5 days and less than 2 years previously (instead intravenous TNK or rPA should be administered).

Procedure:

1,500,000 U streptokinase is infused via a peripheral intravenous line in 30-60 minutes (in 100mls normal saline). The infusion rate should be reduced if there is hypotension.

LMWH:

Administer subcutaneous enoxaparin sodium 1mg/kg BD for 48-72 hrs. First dose to be administered 8-12 hours following completion of streptokinase.

For any lytic agent:

Commence haemodynamic observations every 10 minutes for 1 ½ hours following injection.

If severe side effect occurs (haemorrhage, hypotension or allergic reaction), stop infusion and treat as required.

Door to needle time

Thrombolytic should be administered within 30 minutes of presenting to the hospital and should be documented.

Failure to reperfuse with thrombolysis:

See rescue PCI

Thrombolysis – facilitated primary PCI

There is no role for thrombolysis facilitated PCI.

Late presentation STEMI (>12hrs from onset of pain)

Thrombolytics in this group does not reduce infarct size or preserve LV function and therefore is not indicated.

There is no current recommendation for primary PCI in this group (ESC guidelines 2005), although there may be a possible beneficial effect. However **patients with cardiogenic shock should be considered for primary PCI**. Patients with ongoing pain may also be considered for primary PCI.

STEMI with successful lysis

Even in patients who have had successful lysis, there is a significant rate of re-infarction. Therefore routine angiography should be undertaken post thrombolysis (ESC guidelines 2005) prior to discharge.

Management of major bleeding (including intracranial bleeding) after thrombolytic therapy:

- Cease further thrombolytic therapy, heparin and aspirin.
- Reverse heparin with protamine sulphate
- 2 units of FFP
- Blood transfusion as necessary
- For intracranial haemorrhage, consider aminocaproic acid 5 grams administered by slow intravenous infusion.
- CT Scan for suspected IC bleed, and consider neurosurgical consult (RBH)

Medical Management of STEMI

1. Aspirin

All patients 100-150mg daily.

2. Clopidogrel

In thrombolysis:

CLARITY and COMMIT trials involved nearly 50,000 patients and showed that clopidogrel improved the patency rate of the infarct related artery, mortality and morbidity. There was no significant excess bleeding even when patients required CABG.

Dose: loading of 600mg followed by 75mg daily commenced as soon as possible.

Duration: data is available only for 1 month. However results from NSTEMI management can be extrapolated to suggest 9-12 months. If DES is used in subsequent PCI, then = 12 months.

In primary PCI:

No large studies for primary PCI available.

Dose: 600mg in the cath lab followed by 75mg daily.

Duration: 9-12 months. If DES is used in PCI, then = 12 months.

3. UFH/LMWHs

In primary PCI:

There is no requirement for ongoing UFH/LMWH in the setting of primary PCI (except during the procedure) unless specifically requested by the operator.

In thrombolysis:

See thrombolysis protocol above for recommendations in this group.

4. Beta Blockers

All STEMI patients should receive oral beta blockers as soon as possible. Initially IV beta blockers can be used in the hypertensive and tachycardiac patient (5mg repeated up to 15mg over 30 minutes). Exceptions for early beta blocker use:

- significant bradyarrhythmia
- severe asthma/COPD
- CCF requiring IV furosemide
- hypotension/cardiogenic shock

5. Statins

All patients should ideally be commenced on a statin prior to hospital discharge irrespective of their cholesterol level. Clear benefits have been shown in early administration of a statin in acute

coronary syndromes (MIRACL trial using 80mg Atorvastatin). The type and the dose of statin remain controversial.

6. GP IIb/IIIa Inhibitors

Used at the discretion of the operator at the time of primary PCI or immediately post PCI. Reopro is the best studied GP IIb/IIIa Inhibitor in this setting.

7. Other anti-anginal medications (long acting Nitrates, Ca channel blockers and Nicorandil)
As required

8. ACE inhibitors

Most useful in LV impairment, DM and HT. In addition ACE inhibitors may be used for secondary prevention (HOPE – ramipril, EUROPA - perindopril).

9. Proton Pump Inhibitors

In the first 48hours may reduce GI bleeding contributed to by stress ulcers and anticoagulation

MARKETING/COMMUNICATION

Marketing/Communication Responsibility	Cardiology Management Team
Marketing/Communication Strategy	<ul style="list-style-type: none"> Email notification to medical and nursing staff XXXX Cardiology Units Tabled for discussion at Cardiology Unit Meetings. Inclusion in Unit Policies, Procedures and Work Unit Guidelines Folder

AUDIT STRATEGY

Level of Risk	Medium Risk
Audit Strategy	
Audit Tool Attached	No
Audit Date	
Audit Responsibility	
Key Elements/Indicators/Outcomes	

REVIEW STRATEGY

Minor Review Date 1	May 2011
Minor Review Date 2	
Major Review Date	
Review Responsibility	Cardiology Management Team.

PUBLISHING INFORMATION

Version	2
Version Date	May 2009
Effective Date	May 2009
Author/s, Position & Business Area	<ul style="list-style-type: none"> XXXX, Director of Cardiology
Key Stakeholders who reviewed <i>this version</i> , Position & Business Area	<ul style="list-style-type: none"> XXXX, Director of Cardiology XXXX, Director of Coronary Care (acting) XXXX, Director of Emergency NUMs CCU, ED, CIU CCL EPL & Recovery, CNC CCL & EPL, CNC ED. Nursing Director Cardiology. Nursing Director Emergency Department
Replacement For	Version 1
Information Source	

SEARCH INFORMATION

Key Words	STEMI
EQuIP and other Standards	

Endorsement

Signature Date

XXXX

Director Coronary Care (acting).

Approval

Signature Date

XXXX

Medical Director Cardiology Program.

APPENDIX 8 – WORK UNIT GUIDELINE (NON-STEAC)



XXXX

- WORK UNIT GUIDELINE -

TITLE	Management of High Risk Non-ST Elevation Acute Coronary Syndromes
DESCRIPTION	To provide direction on diagnosis, assessment and management of Non-ST Elevation Acute Coronary Syndrome patients.
TARGET AUDIENCE	Medical and nursing staff within XXXX Cardiology & Emergency Department

Management of high risk non ST elevation Acute Coronary Syndromes

Following initial clinical and biochemical marker assessment, **high risk patients** (judged to have a high risk for progression to MI and death) are identified and these **should ideally undergo inpatient cardiac catheterization** with a view to mechanical revascularization. ESC guidelines, TIMI risk score and stress testing are the most commonly used tools for risk stratification.

High Risk Patients (ESC guidelines 2005)

1. Recurrent rest pain
2. Dynamic ST segment changes: ST segment depression $\geq 0.1\text{mV}$ or transient ($<30\text{min}$) ST segment elevation $\geq 0.1\text{mV}$
3. Elevated Troponin -I, Troponin -T or CK-MB levels
4. Haemodynamic instability within the observation period
5. Major arrhythmias (VT or VF)
6. Early post infarction unstable angina
7. Diabetes mellitus

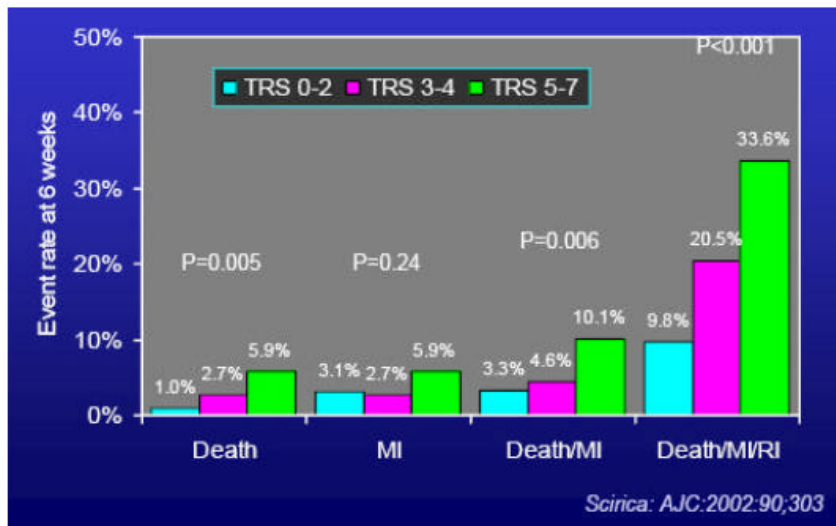
Risk Stratification using TIMI Risk Score (Antman, JAMA 2000)

In addition to above, TIMI risk score can be used for prognostic and therapeutic decision making. One point is given for each of the risk predictors and the total score can be used to predict the combined risk of mortality, MI or severe recurrent ischaemia requiring urgent revascularization. The score has been validated in a number of large multi centre trials.

Risk Predictors

1. Age $\geq 65\text{yrs}$
2. ≥ 3 risk factors for IHD
3. Prior coronary stenosis of $\geq 50\%$
4. ST segment deviation on ECG at presentation
5. At least 2 anginal events in the prior 24hrs
6. Use of aspirin in the prior 7 days
7. Elevated troponins or CK-MB

Prediction of Events at 6 weeks using the TIMI Risk Score



TRS – TIMI risk score

RI – recurrent ischaemia requiring urgent revascularization

All patients transferred from other centres for coronary angiography should have TIMI score recorded.

Patients who are admitted with chest pain and who have a subsequent positive stress test should also undergo either inpatient or outpatient angiography.

Invasive vs Conservative Management

Randomized trials have demonstrated both short (FRISC II, TIMI 18, RITA 3) and long term (RITA 3, at 5 years) benefit in early invasive management (**ideally within 48hrs from admission**) over conservative management for high risk unstable angina and NSTEMI.

Medical Management of NSTEMI/high risk ACS

1. Aspirin All patients 100-150mg daily indefinitely.

2. Clopidogrel

Ideally should be commenced in all patients as soon as possible (ESC Guidelines 2005, CURE). **However in view of the higher risk of bleeding if CABG is required, Clopidogrel may be withheld until after the angiography** (in such situations GP 11b/111a inhibitors such as Tirofiban may provide desired platelet inhibition until the time of angiography).

Dose: loading of 600mg followed by 75mg daily.

Duration: 9-12 months (CURE, PCI-CURE).

If DES used in PCI, then = 12 months.

3. UFH/LMWHs

Enoxaparin is commenced and continued in all patients for 48-72hrs.

In unstable patients who may require urgent angiography heparin is preferred. If enoxaparin is used, morning dose should not be omitted on the day of angiography. (check with the operator) Heparin can be continued in the lab.

Enoxaparin dose: should be modified in the renal failure patients and may be in elderly patients to reduce bleeding complications.

All therapeutic enoxaparin prescriptions must be made after reference to the creatinine clearance calculator on the computer desktops and that patients with CrCl between 30 and 50 ml/min, whose therapy is to extend beyond 48 hours *must* have an anti-Xa done.

In the cath lab further enoxaparin is usually not required within 8 hours of the last subcut dose. Beyond 8 hours 0.3mg per kg can be given IV at the commencement of the procedure.

4. Beta Blockers
All high risk acute coronary syndrome patients should receive oral Beta blockers unless contraindicated.
5. Statins
All patients should ideally be commenced on a statin prior to hospital discharge irrespective of their cholesterol level. Clear benefits have been shown in early administration of a statin in acute coronary syndromes (MIRACL trial using 80mg Atorvastatin). The type and the dose of statin remain controversial.
6. GP IIb/IIIa Inhibitors
Pre catheterization (Tirofiban)
Most useful in patients with refractory ischaemia (while on LMWH/UFH) awaiting angiography. Patients are usually treated with concomitant UFH, although LMWH may also be used.
Should also be considered in high risk patients when clopidogrel is not initiated until after angiography.
Duration: 48-72hrs.
During or immediately post PCI (Tirofiban or Reopro)
Generally only during complex or complicated PCI
Duration: Tirofiban (24hrs), Reopro (12hrs)
7. Other anti-anginal medications (long acting Nitrates, Ca channel blockers and Nicorandil)
As required
8. ACE inhibitors
Most useful in LV impairment, DM and HT. In addition ACE inhibitors may be used for secondary prevention (HOPE – ramipril, EUROPA - perindopril).
9. Proton Pump Inhibitors
In the first 48hours may reduced GI bleeding contributed to by stress ulcers and anticoagulation.

MARKETING/COMMUNICATION

Marketing/Communication Responsibility	Cardiology Management Team
Marketing/Communication Strategy	<ul style="list-style-type: none"> Email notification to medical and nursing staff XXXX Cardiology Units Tabled for discussion at Cardiology Unit Meetings. Inclusion in Unit Policies, Procedures and Work Unit Guidelines Folder

AUDIT STRATEGY

Level of Risk	Medium Risk
Audit Strategy	
Audit Tool Attached	No
Audit Date	
Audit Responsibility	
Key Elements/Indicators/Outcomes	

REVIEW STRATEGY

Minor Review Date 1	May 2011
Minor Review Date 2	
Major Review Date	
Review Responsibility	Cardiology Management Team.

PUBLISHING INFORMATION

Version	2
Version Date	May 2009
Effective Date	May 2009
Author/s, Position & Business Area	<ul style="list-style-type: none"> XXXX, Director of Cardiology
Key Stakeholders who reviewed <i>this version</i> , Position & Business Area	<ul style="list-style-type: none"> XXXX, Director of Cardiology XXXX, Director of Coronary Care (acting) XXXX, Director of Emergency NUMs CCU, ED, CIU CCL EPL & Recovery, CNC CCL & EPL, CNC ED. Nursing Director Cardiology. Nursing Director Emergency Department
Replacement For	Version 1
Information Source	

SEARCH INFORMATION

Key Words	Non- STEMI, Acute Coronary Syndrome
EQUIP and other Standards	

Endorsement

Signature Date

XXXX

Director Coronary Care (acting).

Approval

Signature Date

XXXX

Medical Director Cardiology Program.

APPENDIX 9 – CHECKLIST CORONARY ANGIO PREP & POST CARE

Coronary Angiography – Checklist

CHECKLIST FOR CORONARY ANGIOGRAPHY PREPARATION AND POST CARE

Coronary angiography is a procedure performed on patients in order to diagnose coronary artery disease. The procedure requires the following:

1. Preparation.

- Baseline observations. T, P, R and BP peripheral pulses and circulation observations. The circulation observations should comprise of bilateral femoral, popliteal and pedal pulses, colour, warmth, movement and sensation.
- Height and weight recorded.
- Refer to Doctor's Preferences for consultant preferences in relation to the following tests.
 - Current ECG
 - Current pathology results (U&E's, FBC)
 - Chest X-ray within the last 6 months
 - Informed consent
- Patients fast from food for approximately 2 hours pre-procedure with sips of fluid allowable until commencement of the procedure.
- A pre-procedure clip (A4 paper size) surrounding the arterial access site. Predominantly the right femoral artery is the access site; however, radial and brachial access sites may also be used. This will be documented in the patient's chart.
- Pre-procedure patients should shower with own soap and dress in theatre gown and shorts.
- There is no need for patients to remove spectacles or dentures. The patient can wear wedding band, hearing aid and make up however contact lenses must be removed.
- Some patients require a pre-medication that should be administered following a signed medication order.
- The patient should continue to take most medications including Aspirin. Please check with the operator (i.e. Consultant or Senior Registrar) regarding hypoglycaemics, particularly **Metformin**, insulin, diuretics and warfarin.
- Low molecular weight Heparin should be withheld the morning of the procedure.
- Diabetic patients should have an intravenous cannula inserted prior to the procedure.

2. Post procedure Patient care

The care of the patient post angiogram procedure should follow the clinical pathway.

- The femoral sheath will be removed immediately following the procedure by a nurse who is competent in this procedure.
- Observations pulse, respiration and blood pressure, circulation to the affected limb, wound and chest pain assessment.
 - ½ hourly for 2 hours
 - hourly for 2 hours.
- On return from the catheter laboratory the patient may be elevated 30 degrees.
- The patient may mobilise 2 hours post procedure providing there have been no complications.
- Water/fluids should be encouraged on return from the procedure to help clear the system of contrast used during the procedure. Approximately 1 litre over the first 2 hours post procedure (2 litres over 4hrs).
- Diet may be resumed upon return from the catheter laboratory with the exception of those patients who have a lesion of > 80% in the left main artery.
- The band-aid which has been applied to the arterial access site may be removed prior to patient discharge from hospital.

APPENDIX 10 – CHECKLIST FOR ADMISSION

CHECKLIST - ADMISSION OF A PATIENT IN RECOVERY

CHECKLIST FOR ADMISSION

- Ask patient name and D.O.B
- Check for allergies to iodine; shell fish, medication or any mobility/ health problems
- Check details and UR number on medical records/ notes and ID band (remember allergy red band, risk of falls blue band). Put ID band on patient. Sign pathway
- Record on pathway what time patient last ate. Sign pathway
- If patient is diabetic; what medication used to control it; record BSL; if medication a FORMIN make sure not taken that day and record. Sign pathway
- Ask patient if taken usual AM medications (most should be taken). Sign pathway
- Check if pre-med ordered
- Check correct consents signed by patient and doctor; patient to confirm their signature. Sign pathway
- Check if patient on warfarin; when ceased taking and what INR level; while checking INR level review, bloods for creatinine level, and if Mucomyst required. Sign pathway
- Check if patient wears glasses/contacts; dentures; hearing aids. Sign pathway
- If wearing jewellery remove or tape record on. Sign pathway
- Ask patient how they are going to travel home
- Ask if any forms need signing; medical certificate, travel form
- Ask patient to undress, put on gown explaining that opening goes to the back
- Ask patient to lie on bench; locate, record and mark pedal pulses (if required). Sign pathway
- Shave required area for procedure. Sign pathway
- Escort patient to lockers and place belongings in one. Put key in envelope with patient sticker on front for safe keeping at nurse station
- Ask patient if they want to use toilet, if they do record on. Sign pathway
- Escort patient to waiting area and sit in recliner
- Report to Team Leader patients requirements/problems ie. IVC; Diabetic; premed ordered; INR/creatinine level/Mucomyst; mobility problems; allergies

APPENDIX 11 – CHECKLIST HANDOVER INTO CCL

CHECKLIST - HANDOVER OF PATIENT INTO CCL

CHECKLIST FOR HANDOVER OF PATIENT INTO CCL

- Must have patient pathway, **signed consent form**, medication / fluid sheet, bloods results, recent ECG for handover to Lab Staff
- Orientate patient to lab - Introduce patient to all team members
- Patient's name
- Procedure to be performed
- Identified **allergies**
- Co-morbidities ie diabetes (BSL), previous CABG, AAA, limitations in ROM
- Renal status (indicate Cr and GFR – if outside normal ranges then identify if Mucomyst and IV fluids administered)
- Identify if patient has received aspirin today and if clopidogrel has been administered if PCI (note if loading dose has been administered – how much, when?)
- Identify if patient has been receiving Warfarin / Clexane (if so when was the last dose administered, dose administered?)
- If patient has been taking Warfarin identify today's INR
- If patient has been transferred from CCU identify anticoagulation status (Tirofiban, heparin etc) and time ceased.
- Educate patient re: procedure process etc

APPENDIX 12 – CHECKLIST HANDOVER CCL TO RECOVERY

CHECKLIST - HANDOVER FROM CCL TO RECOVERY

CHECKLIST FOR HANDOVER FROM CCL TO RECOVERY

- Must have patient pathway and medication sheet for handover to Recovery Staff
 - Patient's name
 - Doctor (team) patient is under
 - Doctor who performed procedure
 - Procedure performed
 - Sheath size and site/s
 - Check groin with Recovery Nurse during handover
 - Identify any cath lab variances / complications ie Access (multiple punctures, haematomas, vasovagals, headaches, chest pain, increased anxiety)
 - Confirm all variances have been entered on Heart Lab (ensuring they are entered under Cath Lab Complications)
 - Result of procedure
 - All medications given in lab:
 - identify if heparin given (how much)
 - contrast used
 - sedation
 - ***NB: Check all drugs have been documented and signed for.***
 - Doctor's orders:
 - monitoring requirements (for how long)
 - blood tests
 - changes or additions to medications
 - appointments required (surgical review in-patient or out patient)
 - discharge orders (can they go home)
 - do they require review by team prior to discharge
 - Identify any pre-existing medical conditions (eg diabetes)
 - Hand over to Team Leader (or enter details on patient log/board)
-

APPENDIX 13 – CHECKLIST POST PROCEDURE RECOVERY

CHECKLIST - CARE OF THE PATIENT POST PROCEDURE IN RECOVERY

CHECKLIST FOR CARE OF THE PATIENT POST PROCEDURE IN RECOVERY

NB: Nursing Staff must have successfully completed the CIU Sheath Removal Package before undertaking unsupervised arterial or venous sheath removal.

ON RETURN TO RECOVERY

- Receive hand over from the lab nurse
- Record baseline observations
- Blood pressure / Pedal pulses / Heart rate and rhythm
- Document any haematoma/bleeding from puncture site
- Heparin; if so ACT what time
- Chest pain
- Sheath size, location, venous/arterial

POST SHEATH REMOVAL INSTRUCTIONS

- You will be in bed for the next 2-4 hours depending on procedure and access
- During that time we ask that you keep your head on the pillow, keep your effected leg straight and not raise your arms above your head (PPM and ICD not to move top part of arm of procedure site)
- We will ask you to drink 1 ½ litres of water to flush the dye used out of your kidneys
- You will need to pass urine before you get up
- After bed rest we will get you up and mobilise for 30 minutes or take you up to the ward
- After 30 minutes we will check groin if all ok we will get you dressed and go home
- How will you get home? No driving for today or tomorrow (48 hrs)
- When you go home take it easy for rest of day
- No shower tonight but shower in the morning. Just remember to remove band aid before or during shower because this can become a source of infection
- When you go home still at risk of bleeding or haematoma
- Do you know what I mean by haematoma? It's basically bleeding from the puncture site under the skin and comes up as a hard lump and tender to touch

- If bleeding/haematoma occurs at home lie somewhere firm and flat and get someone to make a fist and apply pressure to groin or into haematoma for 10 minutes
- If after 10 minutes bleeding has stopped or haematoma has dispersed lie flat for an hour and take it easy for the rest of the day
- If unable to stop bleeding call an ambulance
- If haematoma still present seek medical advice or go to GP
- Also observe for sign of infection; red; sore; swollen or discharge any sign of infection seek medical advice or go to GP, also if any change in sensation to effected leg ie. Pins and needles or numb seek medical advice or see GP
- We will check your groin and observations every 30 minutes while you're in bed
- You need to check puncture site every 10 minutes yourself, this is done by touch and I will show you how
 - feel around band aid we are feeling for hard lumps if you find one apply pressure and use nurse call button
 - feel along band aid look at fingers any blood if yes apply pressure along the band aid press nurse call button
 - if you're not sure about a lump or bleed apply pressure and press nurse call button
- If you're going to cough, sneeze or laugh for the next 2-4 hours apply pressure over band aid if possible
- Apply same pressure when asked to support your groin
- No sports, strenuous exercise, heavy lifting or gardening for a week
- Lift nothing heavier than a 2 litre bottle of milk
- Do you have any questions?

CARDIAC CATHETER LABORATORY

PROCEDURE CHECK LIST

Revised June 2009

CORONARY ANGIOGRAM

Femoral Approach

EQUIPMENT LIST

Angiogram Pack
ACIST Set Up
10ml Luer Lock Syringe (D Walters – Lignocaine)

Water for Irrigation 1000mls x 1
Normal Saline 1000mls x 1
Lignocaine 1% 20mls x 1
Heparin 5000 units x 2

6Fr Sheath
6Fr Multi Diagnostic Packet

PRIOR TO PROCEDURE

Confirm with CIU Team Leader that all pre procedural work up has been completed as per the Consultants requirements.

DURING PROCEDURE

Prepping: Ensure patient is prepped from umbilicus to knee. This is in case of the need of a balloon pump.

CORONARY ANGIOGRAM

Radial Approach

EQUIPMENT LIST

Radial Angiogram Pack	Normal Saline 1000mls x 1
ACIST Set Up	Water for Irrigation 1000mls x 1
10ml Leur Lock Syringe x 2	Lignocaine 1% 20mls x 1
Radial Drape x 1	Heparin 5000 units x 4
35 x 175 J Wire x 1	GTN 200mcg
TR Band <i>*Size dependent on patient</i>	Verapamil 2.5mg
Small Tegaderm x 1	
5 Fr Cook Sheath Insertion Kit	5Fr TIG (Brachial Catheter)
	5Fr Pigtail Diagnostic Catheter

xxxx preference

Micropuncture Set
5Fr Sheath
Tape hand to board with wrist facing upwards
No tegaderm

PRIOR TO PROCEDURE

Confirm with CIU Team Leader that all pre procedural work up has been completed as per the Consultants requirements and that the Consultant or Registrar has performed an Allen's Test on the patient to determine perfusion from the ulnar artery.

The *Scrub* Nurse will draw up in a 10ml Syringe; GTN 200mcg (4mls), Verapamil 2.5mg (1ml) and remaining 5mls of Heparinized Normal Saline.

The *Scout* Nurse will place the arm board and sandbag on the right side of the table, so that when the patients arm is out straight there is approximately 15cm of the sandbag showing past the finger tips.

DURING PROCEDURE

Prepping the patient – Ensure patient's arm is prepped to mid upper arm in case brachial puncture is required. Leave fingertips unpainted

POST PROCEDURE

The *Scout* Nurse will document the time the sheath was removed, the amount of air injected into the TR band to obtain haemostasis on the CCL procedure sheet. They will also input into Heart Lab the person who removed the sheath, time of removal and type of occlusion device used.

Check the patient's circulation in the affected hand prior to transfer to CIU Recovery. Ensure that the patient has the control syringe for the TR Band.

CORONARY ANGIOGRAM [LHC] +/- PCI

Femoral Approach

Standard Equipment Required

Standard Adult Cardiac Catheter Pack
ACIST Set Up
10ml Leur Lock Syringe x 2
10ml Slip Lock Syringe x 1
2ml Slip Lock Syringe x 1 (ACT)

Coronary Angiogram

6Fr Sheath
6Fr Multi Diagnostic Packet

Medications & Fluids Required

Normal Saline 1000mls x 1
Water for Irrigation 1000mls x 1
Lignocaine 1% 20mls x 1
Heparin 5000 units x 4
GTN 50mcg/ml (at least 25mls)
Atropine 600mcg

PCI Equipment

Sterile Material Drapes
Suture Set (Needle Holders & Scissors)
Suture Material (Silk O)
Indeflator
Y Adaptor Pack (Torque Device, Wire Introducer
Tuohy-Borst Y adaptor)
Guide Catheter **Dependent on lesion*
Guide Wire **Dependent on lesion*
Compliant Balloon **Dependent on lesion*
Stent **Drug Eluting DS or Bare Metal Dependent
On lesion & Cardiologist preference*
Non Compliant Balloon **Dependent on lesion*
Large Tegaderm x 1
Dead End x 1

Emergency Case

Prep Tray
5Fr Sheath
5ml Syringe x 1 (Venous Access)

PRIOR TO PROCEDURE

Confirm with CIU Team Leader that all pre procedural work up has been completed as per the Consultants requirements.

If in an emergency both femoral groin sites are prepared and the multifunction pacing/defibrillation pads may need to be applied.

DURING PROCEDURE

The *Scrub* Nurse will dilute 20mls of Contrast with 20mls of Heparinized Saline for use in the Indeflator and contrast syringe. The *Scout* Nurse will ensure IV fluids and oxygen are commenced.

The *Scout* Nurse may be required to give a bolus of ReoPro or Tirofiban and commence an infusion.

POST PROCEDURE

The *Scout* Nurse will input into HeartLab the person who removed the sheath, time of removal if done in the CCL. If an occlusion device used, this will also be recorded on the CCL Procedure Sheet as well as in HeartLab.

CORONARY ANGIOGRAM [LHC] +/- PCI

Radial Approach

EQUIPMENT LIST

Standard Equipment Required

Standard Adult Cardiac Radial Catheter Pack
ACIST Set Up
10ml Leur Lock Syringe x 3
10ml Slip Lock Syringe x 1
2ml Slip Lock Syringe x 1 (ACT)

Radial Approach Equipment

Radial Drape x 1
35 x 175 J Wire x 1
TR Band **Size dependent on patient*
Small Tegaderm x 1
6Fr Sheath Insertion Kit
xxxx preference
Micropuncture Set
5Fr Sheath
Tape hand to board with wrist facing upwards
No tegaderm
Coronary Angiogram
5Fr TIG (Brachial Catheter)
6Fr Pigtail Diagnostic Catheter

Medications & Fluids Required

Normal Saline 1000mls x 1
Water for Irrigation 1000mls x 1
Lignocaine 1% 20mls x 1
Heparin 5000 units x 4
GTN 50mcg/ml (at least 25mls)
Verapamil 2.5mg

PCI Equipment

Sterile Material Drapes
Suture Set (Needle Holders & Scissors)
Suture Material (Silk O)
Indeflator
Y Adaptor Pack (Torque Device, Wire Introducer)
Tuohy-Borst Y adaptor
Guide Catheter **Dependent on lesion*
Guide Wire **Dependent on lesion*
Compliant Balloon **Dependent on lesion*
Stent **Drug Eluting DS or Bare Metal Dependent on lesion & Cardiologist preference*
Non Compliant Balloon **Dependent on lesion*

PRIOR TO PROCEDURE

Confirm with CIU Team Leader that all pre procedural work up has been completed as per the Consultants requirements and that the Consultant or Registrar has performed an Allen's Test on the patient to determine perfusion from the ulnar artery.

The *Scrub* Nurse will draw up in a 10ml Syringe; GTN 200mcg (4mls), Verapamil 2.5mg (1ml) and remaining 5mls of Heparinized Normal Saline and prepare both the radial and femoral groin sites.

The *Scout* Nurse will place the arm board and sandbag on the right side of the table, so that when the patients arm is out straight there is approximately 15cm of the sandbag showing past the finger tips.

DURING PROCEDURE

The *Scrub* Nurse will dilute 20mls of Contrast with 20mls of Heparinized Saline for use in the Indeflator and contrast syringe. The *Scout* Nurse will ensure IV fluids and oxygen are commenced.

POST PROCEDURE

The *Scout* Nurse will document the time the sheath was removed, the amount of air injected into the TR band to obtain haemostasis on the CCL procedure sheet. They will also input into HeartLab the person who removed the sheath, time of removal and type of occlusion device used.

Check the patient's circulation in the affected hand prior to transfer to CIU Recovery. Ensure that the patient has the control syringe for the TR band.

APPENDIX 15 – ETHICS APPROVAL



District Research Governance

19 January 2010

Enquiries to:
Phone:
Fax:
Our Ref:
E-mail:

Queensland Health

6
cathlab@qm.au

Ms Maree Ruge
Rode Road
Chernside QLD 4032

Dear Ms Ruge,

HREC reference number: HREC/09/QPCH/90 SSA reference number: SSA/10/QPCH/6
Project title: Assessment and Management of the Anxious Patient in the Cardiac Catheter Laboratory

Thank you for submitting an application for authorisation of this project. I am pleased to inform you that authorisation has been granted for this study to take place at the following site(s):

The following conditions apply to this research proposal. These are additional to those conditions imposed by the Human Research Ethics Committee that granted ethical approval.

1. Proposed amendments to the research protocol or conduct of the research which may affect the ethical acceptability of the project are to be submitted to the HREC for review. A copy of the HREC approval/rejection letter must be submitted to the RGO;
2. Proposed amendments to the research protocol or conduct of the research which only affects the ongoing site acceptability of the project, are to be submitted to the research governance officer;
3. Proposed amendments to the research protocol or conduct of the research which may affect both the going ethical acceptability of the project and the site acceptability of the project are to be submitted firstly to the HREC for review and then to the research governance officer after a HREC decision is made.

On behalf of the Research, Ethics & Governance Unit, we wish you every success with your research project.

Yours sincerely

Australian Catholic University
Brisbane Sydney Canberra Ballarat Melbourne



Human Research Ethics Committee

Committee Approval Form

Principal Investigator/Supervisor: Dr Judith Gonda Brisbane Campus
Co-Investigators: Dr Paula Schultz Brisbane Campus
Student Researcher: Ms Maree Ruge Brisbane Campus

Ethics approval has been granted for the following project:
Assessment and Management of the Anxious Patient in the Cardiac Catheter Laboratory.
for the period: 23 October 2009 to 31 December 2010
Human Research Ethics Committee (HREC) Register Number: Q2009 38

The following ~~standard~~ conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans* (2007) apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 - security of records
 - compliance with approved consent procedures and documentation
 - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 - proposed changes to the protocol
 - unforeseen circumstances or events
 - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed: (Research Services Officer, McAuley Campus) Date: 23 October 2009

APPENDIX 16 – SEMI STRUCTURED INTERVIEW QUESTIONS

Semi-Structured Interview Questions
Do you assess patient anxiety in your role as a nurse in the cardiac cath lab environment?
Can you explain for me in your own words your thoughts and perceptions around how you assess and do you assess patient anxiety in your role as a nurse in the cardiac cath lab environment?
Your nursing assessment of the patient, would it be the same every time?
Can you give me a description about the processes and are they the same every time or do they vary?
Is there anything different about assessment in the cath lab or do you think assessment is the same for most patients that are going into hospital?
Is there any particular time in your nursing care, I understand that you actually care for patients right throughout that procedure and even follow up in your role, are there any particular times that nursing assessment is undertaken for anxiety?
So, you have referred specifically to the pre admission prior to procedure, would that be the primary time or is there a particular time more so than others that you would assess for patient anxiety?
So with those cues, and assessment from a nursing perspective is there any particular time or set of behaviours that you look for when you are engaging the patient or at a particular time in the patient care that you would focus on assessment of anxiety more than any other time?
Is it [anxiety assessment] something that you would consider is embedded in your care?
You have referred to patients identifying or showing they are anxious. What types of things can you tell me a little bit about as an experienced nurse what you would look for? How would you identify a patient is anxious?
And I would like to explore a little more when you mentioned again that patients display differently?
You mentioned that some people aren't possibly as overt at showing they're anxious?
As a nurse working in the cath lab environment and working with other nurses, do you think all nurses undertake similar assessments?
I understand that you are relatively new to the environment compared to some of your nursing colleagues who have worked in the environment for quite some time. Do you think that most of the team assess in a similar way?
You mentioned that it [anxiety assessment] tends to be a people trait, do you find as an experienced nurse, with nurses that you have worked with, that it is something that comes naturally with most people?
And are you comfortable with your assessment style?
In general, do you see the assessment processes that you follow, as being what you would like them to be?
Are there any other things that you rely? You mentioned physical cues and blood pressure?
Are there any influencing factors that might effect, specifically in the cath lab environment, nursing assessment for anxiety?
And do you think there are any particular influencing factors in the cardiac cath environment as opposed to possibly and other clinical environments such as a ward or outpatients; is there any particular influencing factors in this environment that you work in that may impact firstly assessment?
Do you think this environment is the same as any where else you have worked?
Is it [anxiety assessment] something that would happen every day the same way?
Do you identify the degree of [your patient's] anxiety in any way?
You mentioned right at the start of our talk that some patients show more anxiety than others?

Semi-Structured Interview Questions
Can you explain that a little more?
There are a few things I would like to draw out from what you have mentioned. Firstly with a focus on the patient you mentioned the patient being more susceptible to pain or they experience pain more. Can you tell me a little more about that and also how that impacts possibly on their day or the procedure?
What are some of the outcomes you see when your patient is anxious?
You mentioned actually two things I'd like to explore a little more. First of all the differences you have expressed that some patients may appear calm and others may appear more nervous. Do you, or how do you indentify that level of anxiety, and how does that influence or does it influence any of the outcomes once you have identified them.
So effectively you have mentioned that we are looing at expressed behaviours. For yourself as a nurse, are there any other indicators to you that you would look for with assessment other than those overt behaviours? Is there anything else or are they primarily the key?
Do you find that the assessment for the patient includes a determination or evaluation of the extremity of the anxiety?
So you mentioned placing comments in a system, is that a computer system that is used?
And those comments are they then made available? Is that system accessed then by staff that are seeing the patient in the pre-procedure area?
Are there any influencing factors that might make nursing assessment in this environment any different to any where else in the clinical setting?
So nursing assessment for anxiety for you and its' relevance in day to day care within the cath lab where do you place it as a priority?
Could you describe for me a little bit of a difference between somebody that displayed something overtly and somebody that didn't?
Would there be any different approach to your assessment with those people?
What do you feel influences nursing assessment in this environment?
So you said that it is those timeframes that tend to take priority or drive in a procedure?
So do you see the way prep is done and even the informed consent is one of the influencing factors?
Do you think that every day is the same or are there particular times that anxiety may not be assessed or managed because of other factors. Is it the same on every day?
Does it [patient anxiety] impact your relationship [with your patient] and also does it impact your day if at all?
You mentioned "frustrating" can you expand a little more on that?
Do you get very many positive experiences?
What are some of the next steps or some of the outcomes we will with see from that identification [that a patient is anxious]?
You have just mentioned that it will affect the procedure. Can you expand on that?
In your experience what impacts when the patient has been anxious and it hasn't been managed have you seen?
Does the cath lab environment influence the type of management you might be able to provide or would like to provide in any way?
You mentioned pre meds and talking to them, does that vary depending on how anxious they are what does influence your management strategy or is it the same for everybody?
You mentioned that some of the management strategies are pre meds or talking. Do you see any different outcomes for patients depending on what management strategies you use?
Do you have a preference of management style?
Are there any indicators or presentations that would influence the outcomes or the next steps once you have identified?
What happens next if you do assess and identify a patient is anxious? What are the options

Semi-Structured Interview Questions
for what happens next?
What happens after some of those nursing strategies are applied are the outcomes the same depending on the management strategies are applied or are some of them different?
You mentioned that you try and allocate different staff so as a senior nurse responsible for staff allocation are there any particular nursing traits or attributes that you would tend to draw on with your team if you had an anxious patient?
Is the resourcing adequate enough to be able to always place the best nurse with the patient at all time or does resourcing something become a challenge?
Do you see any differences in the outcomes for patients that might take the sleeping tablet compared to possibly those that may not?
You mentioned that one of the things you might organise if it is identified early enough that the patient has anxiety that a premed may be offered. Can you describe for me that process and what's involved around the premedication options?
So further from "the process" as you say a lot of the work that occurs and the care that is given is process driven. Where do you see in your nursing practice that assessment of anxiety fits in that process?
So you mentioned that pre-medication is one of the possible management strategies?
And you mentioned that some of your management strategies were that you would talk to the patients and educate them, can tell me more about those strategies?
And as a nurse, can you share your experiences when your patients are feeling anxious?
Does it [patient anxiety] affect your day?
Do you find as a nurse yourself, does it influence or effect your relationship with your patient if they are particularly anxious and it is unmanaged?
You mentioned it has an emotional toll. Can you share some of your experiences where it has had an emotional toll on you?
Tell me a little bit about your feelings and experiences when your patient is anxious?
So the patient experience is one that influences or affects you in your work day?
And what about as a nurse, Is it any different for you when you have a patient who is quite calm and seems to be coping and on the other hand you have a patient who appears quite anxious?
As a nurse is that relationship you have with either one of those patients different and does it affect you in any way?
Can you see what you could possibly include in your practice and in others practice in this setting that might help make assessment become more of a routine? Or do you see that that would be effective or do you see that it will always be reactive? Is that correct in what I have been hearing that it tends to be more reactive?
So you think that possibly a tool that would assist staff. Can you think of any other benefits that might be derived from a tool that can be used by everybody, any other benefits at all?
You mentioned it would be good from a nursing perspective to have support. Are there any supports or systems or tools that would benefit you or that you currently apply to help with assessment?
And so by making our lives easier [if anxiety is identified and managed] is that something you would consider an incentive from a nursing perspective for yourself?
Is there anything else you would like to add from your perspective on the topic of assessment and also management in this setting?
Is there anything else you might like to add before we finish?

REFERENCE LIST

- Al-Busaidi, Z.Q., (2008). Qualitative research and its uses in health care. *Sultan Qaboos University Medical Journal*, 8(1), 11-19.
- Amarasekera, K. (1980). Temazepam as a premedicant in minor surgery. *Anaesthesia*, 35, 771-774.
- American Pain Society. (2009). Study shows anxiety increases pain intensity, disability. *Medical News Today*. Retrieved from <http://www.medicalnewstoday.com/releases/146780.php>.
- Appleton, J., & King, L. (1997). Constructivism: a naturalistic methodology for nursing enquiry. *Advances in nursing science*, 20(2), 13.
- Archibald, M. M. (2012). The holism of aesthetic knowing in nursing. *Nursing Philosophy*, 13(3), 179-188.
- Argstatter, H., Haberbosch, W., & Bolay, H. V. (2006). Study of the effectiveness of musical stimulation during intracardiac catheterization. *Clinical Research In Cardiology: Official Journal Of The German Cardiac Society*, 95(10), 514-522.
- Aroney C, A. P., Kelly AM, Chew DPB, Clune E. (2006). Guidelines for the management of acute coronary syndromes 2006. *Med. J. Australia*, 184, S1–30.
- Arthur, H. M., Daniels, C., McKelvie, R., Hirsh, J., & Rush, B. (2000). Effect of preoperative intervention on preoperative and postoperative outcomes in low-risk patients awaiting elective coronary artery bypass graft surgery: A randomized, controlled trial. *American College of Physicians*, 133(4), 253-262.
- Astin, F., Jones, K., & Thompson, D. R. (2005). Prevalence and patterns of anxiety and depression in patients undergoing elective percutaneous transluminal coronary angioplasty. *Heart & Lung: The Journal of Acute and Critical Care*, 34(6), 393-401.
- Astley, C., Chew, D., Aylward, P., Molloy, D., & De Pasquale, C. (2008). A randomised study of three different informational AIDS prior to coronary angiography, measuring patient recall, satisfaction and anxiety. *Heart Lung Circ*, 17(1), 25-32.
- Audimoolam, S., Nair, M., Gaikwad, R., & Qing, C. (2005). *The role of clinical pathways in improving patient outcomes*. Retrieved August, 2011 from <http://web.cs.dal.ca/~asharma/OWL/Role%2520of%2520Clinical%2520Pathways.pdf>
- Austin, W. J. (2011). The incommensurability of nursing as a practice and the customer service model: an evolutionary threat to the discipline. *Nursing Philosophy*, 12(3), 158-166.

- Australian Institute of Health and Welfare. (2011). *Cardiovascular disease: Australian facts 2011*. Canberra: AIHW
- Ayers, S., Joeekes, K., & Copland, C. (2010). Recognizing anxiety and post-traumatic stress disorder in cardiac patients. *British Journal of Cardiac Nursing*, 5(3), 118-122.
- Baker, S. & Edwards, R. (2012). How many qualitative interviews is enough? Expert voices and early career reflections on sampling and cases in qualitative research. National Centre for Research Methods discussion paper
<http://eprints.ncrm.ac.uk/2273/>
- Bauer, B. A., Cutshall, S. A., Anderson, P. G., Prinsen, S. K., Wentworth, L. J., Olney, T. J., et al. (2011). Effect of the combination of music and nature sounds on pain and anxiety in cardiac surgical patients: a randomized study. *Alternative Therapies in Health & Medicine*, 17(4), 16-23.
- Beckerman, A., Grossman, D., & Marquez, L. (1995). Cardiac catheterization: the patients' perspective. *Heart & Lung*, 24(3), 213-219.
- Beddoes, L., Botti, M., & Duke, M. M. (2008). Patients' experiences of cardiology procedures using minimal conscious sedation. *Heart & Lung: The Journal of Acute and Critical Care*, 37(3), 196-204.
- Beechey, A. P. G., Eltringham, R. J., & Studd, C. (1981). Temazepam as premedication in day surgery. *Anaesthesia*, 36, 10-15.
- Benotsch, E., Lutgendorf, S., Watson, D., Fick, L., & Lang, E. (2000). Rapid anxiety assessment in medical patients: Evidence for the validity of verbal anxiety ratings. *Annals of Behavioral Medicine*, 22(3), 199-203.
- Bryman, A. (2012) Social research methods, fourth edition. Oxford: Oxford University Press.
- Bowen, G. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40.
- Boyd, M. & Witt, J. (2012). Cardiac clinical skills development for registered nurses. *Journal for Nurses in Staff Development*. 28(2), E1
- Bravata, D. M., Gienger, A. L., McDonald, K. M., Sundaram, V., Perez, M. V., Varghese, R., et al. (2007). Systematic Review: The comparative effectiveness of percutaneous coronary interventions and coronary artery bypass graft surgery. *Annals of Internal Medicine*, 147(10), 703-716.
- Bride, B. E., Robinson, M. M., Yegidis, B., & Figley, C. R. (2004). Development and validation of the secondary traumatic stress scale. *Research on Social Work Practice*, 14(1), 27-35.
- Brosan, L., Hoppitt, L., Shelfer, L., Sillence, A., & Mackintosh, B. (2011). Cognitive bias modification for attention and interpretation reduces trait and state anxiety

- in anxious patients referred to an out-patient service: Results from a pilot study. *Journal of Behavior Therapy and Experimental Psychiatry*, 42(3), 258-264.
- Buchan, H., Currie, K., Lourey, E., & Duggan, G. (2010). Australian clinical practice guidelines - a national study. *Medical Journal of Australia*, 192(9), 490-494.
- Caldwell, P., Arthur, H., Natarajan, M., & Anand, S. (2007). Fears and beliefs of patients regarding cardiac catheterization. *Social Science & Medicine*, 65(5), 1038-1048.
- Carabine, U. A., Milligan, K. R., & Moore, J. A. (1991). Adrenergic modulation of preoperative anxiety: A comparison of temazepam, clonidine and timolol. *Anesth Analg*, 73, 633-637.
- Carlson, J. A. (2010). Avoiding traps in member checking. *The Qualitative Report*, 15(5), 1102-1113.
- Caroleo, O. (2002). Facing the self: The magic of qualitative methodology. *Therapeutic Recreation Journal*, 36(4), 382-382.
- Carper, B. (1978). Fundamental patterns of knowing in nursing. *Advances in Nursing Science*, 1(1), 13-23.
- Caumo, W., Schmidt, A. P., Schneider, C., N., Bergmann, J., Iwamoto, C. W., Bandeira, D. et al. (2001). Risk factors for preoperative anxiety in adults. *The Acta Anaesthesiologica Foundation*, 45(3), 298-307.
- Centre for Healthcare Improvement (CHI). (2012). *Clinical pathways*. Queensland Government. Retrieved <http://www.health.qld.gov.au/psq/pathways/faq.asp>
- Chair, S. Y., & Thompson, D. R. (2005). Patient teaching prior to coronary angiography in Hong Kong: a pilot study. *Journal of Clinical Nursing*, 14(1), 114-115.
- Chan, D. S. K., & Cheung, H. W. (2003). The effects of education on anxiety among Chinese patients with heart disease undergoing cardiac catheterization in Hong Kong. *Contemporary Nurse: A Journal for the Australian Nursing Profession*, 15(3), 310-320.
- Chew, D.P, Aroney C.N, Aylward P.E. et al. (2011). Addendum to the National Heart Foundation of Australia/Cardiac Society of Australia and New Zealand Guidelines for the management of acute coronary, syndromes (ACS) 2006. *Heart Lung Circ* 2011, 20(8),487-502
- Chung., D. J. M. A. (2004). Anxiety is not manifested by elevated heart rate and blood pressure in acutely ill cardiac patients. *European Journal of Cardiovascular Nursing*, 3(3), 247-253.
- Clark, G., Erwin, D., Yate, P., Burt, D., & Major, E. (1982). Temazepam as premedication in elderly patients. *Anaesthesia*, 37, 421-425.

- Clements, P. T., & Averill, J. B. (2004). Patterns of knowing as a method of assessment and intervention for children exposed to family-member homicide. *Archives of Psychiatric Nursing*, 18(4), 143-150.
- Cope, C. (2004). Ensuring validity and reliability in phenomenographic research using the analytical framework of a structure of awareness. *Qualitative Research Journal*, 4(2), 5-18.
- Copland, C., Joeke, K., & Ayers, S. (2011). Anxiety and post-traumatic stress disorder in cardiac patients. *British Journal of Wellbeing*, 2(1), 21 – 25.
- Court, H., Greenland, K., & Margrain, T. H. (2010). Measuring patient anxiety in primary care: Rasch analysis of the 6-item Spielberger State Anxiety Scale. *Value In Health: The Journal Of The International Society For Pharmacoeconomics And Outcomes Research*, 13(6), 813-819.
- Coyle, A. (2010). Qualitative research and anomalous experience: A call for interpretative pluralism. *Qualitative Research in Psychology*, 7(1), 79-83.
- Crouch, M., & McKenzie, H. (2006). The logic of small samples in interview-based qualitative research. *Social Science Information*, 45(4), 483-499.
- De Jong, M. J., & Hall, L. A. (2006). Measurement of anxiety for patients with cardiac disease: A critical review and analysis. *Journal of Cardiovascular Nursing*, 21(5), 412-419.
- De Jong, M. M., An, K., McKinley, S., Garvin, B. J., Hall, L. A., & Moser, D. K. (2005). Using a 0-10 scale for assessment of anxiety in patients with acute myocardial infarction. *Dimensions of Critical Care Nursing*, 24(3), 139-146.
- De Jong, M. J., Moser, D. K., An, K., & Chung, M. L. (2004). Anxiety is not manifested by elevated heart rate and blood pressure in acutely ill cardiac patients. *European Journal of Cardiovascular Nursing*, 3(3), 247-253.
- De Jong-Watt, W. J., & Arthur, H. M. (2004). Anxiety and health-related quality of life in patients awaiting elective coronary angiography. *Heart & Lung: The Journal of Acute and Critical care*, 33(4), 237-248.
- De Luca, G., Casseti, E., & Marino, P. (2009). Percutaneous coronary intervention-related time delay, patient's risk profile, and survival benefits of primary angioplasty vs lytic therapy in ST-segment elevation myocardial infarction. *American Journal of Emergency Medicine*, 27(6), 712-719.
- Denzin, N. (1970). *The research act in sociology: A theoretical introduction in research methods*. London: Butterworth.
- Denzin, N. & Lincoln, Y. (2005) Introduction: The discipline and practice of qualitative research, in: N. Denzin & Y. Lincoln (Eds), *The Sage Handbook of Qualitative Research* [3rd Ed]. Thousand Oaks, CA: Sage Publications
- Devers, K., & Frankel, R. (2000). Study design in qualitative research-2: Sampling and data collection strategies. *Education for Health*, 13(2), 263-271.

- De Visser, S. J., van der Post, J. P., de Waal, P. P., Cornet, F., Cohen, A. F., & van Gerven, J. M. (2003). Biomarkers for the effects of benzodiazepines in healthy volunteers. *British Journal of Pharmacology*, 55, 39-50.
- Dillon, P. M. (2007). *Nursing health assessment: A critical thinking case studies approach*. Philadelphia, PA: FA Davis Company
- Dixon, K. (2007). Working in the cardiac catheterization laboratory. *British Journal of Cardiac Nursing*, 2(6), 278 - 281.
- Doenges, M.E., Moorhouse, M.F., Murr, A.C., & Geissler-Murr, A. (2006). *Guidelines for individualizing client care across the life span*. Dumont: F. A. Davis Company
- Easterby-Smith, M., Golden-Biddle, K., & Locke, K. (2008). Working with pluralism: Determining quality in qualitative research. *Organisational Research Methods*, 11(3), 419-429.
- Ehrenfeld, M. & Cheifetz, F. (1990). Cardiac nurses: coping with stress. *Journal of Advanced Nursmg*, 15, 1002-1008
- Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders*, 15(3), 231-245.
- Erickson, R. & Groves, W. (2008). Why emotions matter: Age, agitation, and burnout among registered nurses. *OJIN: The Online Journal of Issues in Nursing*, 13(1).
- Estes, M., Calleja, P., Theobald, K., & Harvey, T. (2013). *Health assessment and physical examination*. Melbourne, VIC: Cengage Learning Australia Pty Limited.
- Finesilver, C. (1978). Preparation of adult pateints for cardiac catheterization and coronay cineangiography. *Int J Nurs Stud*, 15, 211-221.
- Flick, U. (2008). *Designing qualitative research*. London: Sage Publications.
- Francis, J. J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M. P., et al. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology & Health*, 25(10), 1229-1245.
- Frank, J. J., Kamalakannan, D., Kodenchery, M., Savoy-Moore, R. T., & Rosman, H. (2010). Retroperitoneal hematoma in patients undergoing cardiac catheterization. *Journal of Interventional Cardiology*, 23(6), 569-574.
- Franklin, B. (1974) *Patient anxiety on admission to hospital: The study of nursing care project reports*. Series 1. No. 5. Royal College of Nursing, London
- Fraser, A. G. (1984). Do patients want to be informed? A study of consent for cardiac catheterisation. *British Heart Journal*, 52(4), 468-470.

- Frazier, S. K., Moser, D. K., Daley, L. K., McKinley, S., Riegel, B., Garvin, B. J., et al. (2003). Critical care nurse's beliefs about and reported management of anxiety. *American Journal of Critical Care*, 12, 19-27.
- Frazier, S. K., Moser, D. K., Riegel, B., McKinley, S., Blakely, W., Kim, K. A., et al. (2002). Critical care nurses' assessment of patients' anxiety: Reliance on physiological and behavioral parameters. *American Journal of Critical Care*, 11(1), 57-64.
- Freise, H. & Van Aken, H. (2011). Risks and benefits of thoracic epidural anaesthesia. *British Journal of Anaesthesia*, 107(6), 859-868.
- Freud, S. (1920). *General introduction to psychoanalysis*. New York: Boni & Liveright.
- Frost, N., Nolas, S., Gordon, B., Holt, C., Mehdizadeh, L., & Shinebourne, P. (2010). Pluralism in qualitative research: the impact of different researchers and qualitative approaches on the analysis of qualitative data. *Qualitative Research*, 10(4), 1-20.
- Gallagher, R., Trotter, R., & Donoghue, J. (2010). Preprocedural concerns and anxiety assessment in patients undergoing coronary angiography and percutaneous coronary interventions. *European Journal of Cardiovascular Nursing*, 9(1), 38-44.
- García, G., & Calvo, J. (2012). Emotional exhaustion of nursing staff: influence of emotional annoyance and resilience. *International Nursing Review*, 59(1), 101-107.
- Germov, J. [Ed] (2002). Second opinion: An introduction to health sociology [2nd Ed]. Melbourne, VIC: Oxford
- Gerrish, K., & Lacey, A. (2010). *The research process in nursing* [6th Ed]. West Sussex, UK: Wiley-Blackwell
- Genzuck, M. (2003). A synthesis of qualitative research. Occasional papers series. *Center for Multilingual, Multicultural Research (Eds.)*. Retrieved http://www-bcf.usc.edu/~genzuck/Ethnographic_Research.html
- Ghetti, C. M. (2011). *Effect of music therapy with emotional-approach coping on pre-procedural anxiety in cardiac catheterization*. Ph.D. University of Kansas, United States
- Gilmartin, K. (2006). Gaining access: Arterial intervention techniques and special patient needs [Electronic Version]. *Cath Lab Digest*, 14, 12-14.
- Glaser, B.G., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine.
- Goodman, H. (2009). Patient education around cardiac surgery. *British Journal of Cardiac Nursing* October, 4(10), 483 – 488.

- Goyal, D., Ratib, K., Narain, R., & Nolan, J. (2010). Cardiac catheterization. *Medicine*, 38(7), 390-394.
- Grieve, R. J. (2002). Day surgery preoperative anxiety reduction and coping strategies. *British Journal of Nursing*, 11(10), 670-678.
- Gruchevsky, M., Manubens, C., Sandeep, B., Baiju, P., Scala, L., Reddy, K., et al. (2006). Rapid haemostasis leading to early ambulation in diagnostic cardiac and peripheral angiography patients using V+Pad in conjunction with manual digital pressure at Florida cath lab. *Cath Lab Digest*, 14, 34-36.
- Guba, E. & Lincoln, Y. (1998) Competing paradigms in qualitative research, in: N. K. Denzin & Y. S. Lincoln (Eds), *The landscape of qualitative research: Theories and issues*. Thousand Oaks, CA: Sage Publications, 195–220.
- Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Newbury Park, CA: Sage.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough?: An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82.
- Gulanick, M., Bliley, A., Perino, B., & Keough, V. (1997). Patient's responses to the angioplasty experience: a qualitative study. *American Journal of Critical Care*, 6(1), 25-32.
- Gulanick, M., & Naito, A. (1994). Patients' reactions to angioplasty: realistic or not? *American Journal of Critical Care*, 3(5), 368-373
- Guo, P., East, L., & Arthur, A. (2012). A preoperative education intervention to reduce anxiety and improve recovery among Chinese cardiac patients: A randomized controlled trial. *International Journal of Nursing Studies*, 49(2), 129-137.
- Hamel, W. J. (2001). The effects of music intervention on anxiety in the patient waiting for cardiac catheterization. *Intensive & Critical Care Nursing*, 17(5), 279-285.
- Hanifi, N., Ahmadi, F., Memarian, R., & Khani, M. (2005). Comparative study on two methods, Benson relaxation Vs premedication, and their effect on respiratory rate and pulse rate of patients experiencing coronary angiography [Farsi]. *HAYAT: The Journal of Tehran Faculty of Nursing & Midwifery*, 11(3-4), 112-112.
- Harb, A. W. (2011). Expanding the role of the cardiac cath lab nurse. *Journal of the Saudi Heart Association*, 23(3), 196-197.
- Hatler, C. W. (2006). Influence of hospital context on cost and length of stay following cardiac catheterization. *Nursing Economics*, 24(5), 246-252, 227.
- Heikkila, J., Paunonen, M., Virtanen, V., & Laippala, P. (1998). Fear of patients related to coronary arteriography. *Journal of Advanced Nursing*, 28(1), 54-62.

- Herrmann, K. S., & Kreuzer, H. (1989). A randomized prospective study on anxiety reduction by preparatory disclosure with and without video film show about a planned heart catheterization. *European Heart Journal*, 10, 753-757.
- Hewitt-Taylor, J. (2001). The use of constant comparative analysis in qualitative research. *Nursing Standard*, 15(42), 39-42.
- Higginbottom, G. (2004). Sampling issues in qualitative research. *Nurse Researcher*, 12(1), 7-10.
- Higgins, M., Dunn, S. V., & Theobald, K. (2001). Preparing for coronary angioplasty: the patient's experience. *Australian Critical Care*, 14(2), 64-70.
- Higgins, M., Theobald, K., & Peters, J., (2008). Vascular access and cardiac complications after PCI : in- and out-of-hospital outcome issues. *British Journal of Cardiac Nursing*, 3(3), 111-116.
- Hindoyan, A., Cao, M., Cesario, D., Shinbane, J., Saxon, L. (2011). Act of relaxation training on patient-perceived measures of anxiety, pain, and outcomes after interventional electrophysiology procedures. *Pace*, 34, 821-826.
- Horikawa M, & Yagi, A. (2012) The Relationships among trait anxiety, state anxiety and the goal performance of penalty shoot-out by university soccer players. *PLoS ONE*, 7(4), e35727.
- Hunt-Shanks, T., Blanchard, C., Reid, R., Fortier, M., & Cappelli, M. (2010). A psychometric evaluation of the Hospital Anxiety and Depression Scale in cardiac patients: Addressing factor structure and gender invariance. *British Journal Of Health Psychology*, 15(Pt 1), 97-114.
- Hutchinson, S. A. (2001). The development of qualitative health research: Taking stock. *Qualitative Health Research*, 11(4), 505-521.
- Johnson, M., Long, T., & White, A. (2001). Arguments for 'British pluralism' in qualitative research. *Journal of Advanced Nursing*, 33(2), 243-249.
- Joinson, C. (1992). Coping with compassion fatigue. *Nursing*. 22(4), p 166. 118-9, 121.
- Kanto, J. (1986). The use of oral benzodiazepines as premedications: The use of temazepam. *Acta Psychiatrica Scandinavica* [Suppl. 332], 74, 159-166.
- Kanto, J., Watanabe, H., & Namiki, A. (1996). Pharmacological premedication for anaesthesia. *Acta Psychiatrica Scandinavica*, 40(2), 982-990.
- Kantor, L., Endler, N., Heslegrave, R., & Kocovski, N. (2001). Validating self-report measures of state and trait anxiety against a physiological measure. *Current Psychology*, 20(3), 207-215.
- Kasper, S., den Boer, J.A., & Ad Sitsen, J.M.(Ed). (2003). *Handbook of depression and anxiety*, [2nd rev.ed.]. New York: Marcell Dekker, Inc

- Kassarjian, H. H. (1977). Content analysis in consumer research. *Journal of Consumer Research*, 4(1), 8-18.
- Kazemisaeid, A, Zeinali, A., Davoodi, G., Armirzadegan, A., Jam, M., & Abedini, M.. (2007). Premedication for coronary angiography; effects on anxiety and haemodynamic status. *Indian Heart Journal*, 59(6), 454-458.
- Keeling, A. W., Bourguignon, C., Sarembock, I. J., & Turner, M. (2006). Predictors of vascular complications post diagnostic cardiac catheterization and percutaneous coronary interventions. *Dimensions of Critical Care Nursing*, 25(3), 137-142.
- Keller, S. R., Engen, D. J., Bauer, B. A., Holmes Jr, D. R., Rihal, C. S., Lennon, R. J., et al. (2012). Feasibility and effectiveness of massage therapy for symptom relief in cardiac catheter laboratory staff: A pilot study. *Complementary Therapies in Clinical Practice*, 18(1), 4-9.
- Kennedy, P. T., Kelly, I. M. G., Loan, W. C., & Boyd, C. S. (2000). Conscious sedation and analgesia for routine aortofemoral arteriography: A prospective evaluation. *Radiology*, 216, 660-664.
- Ketterer, M. W., Bekkouche, N. S., Goldberg, A. D., Krantz, D. S., & McMahon, R. P. (2011). Symptoms of anxiety and depression are correlates of angina pectoris by recent history and an ischemia-positive treadmill test in patients with documented coronary artery disease in the pimi sudy. *Cardiovascular Psychiatry & Neurology*, 1-7.
- Kingdon, C. (2005). Reflexivity: Not just a qualitative methodological research tool. *British Journal of Midwifery*, 13(10), 622 - 627
- Kinsman, L., Rotter, T., James, E., Snow, P., & Willis, J. (2010). What is a clinical pathway? Development of a definition to inform the debate. *BMC Medicine*, 8(1), 31-33.
- Kollner, V., & Bernardy, K. (2006). How to reduce stress and anxiety in patients undergoing cardiac catheterization? *Clinical Research In Cardiology: Official Journal Of The German Cardiac Society*, 95(10), 511-513.
- Kornerup, H., Zwisler, A., & Prescott, E. (2011). No association between anxiety and depression and adverse clinical outcome among patients with cardiovascular disease: Findings from the DANREHAB trial. *Journal of Psychosomatic Research*, 71(4), 207-214.
- Lambert, V., Glacken, M., & McCarron, M. (2011). Employing an qualitative approach: key characteristics. *Nurse Researcher*, 19(1), 17-24.
- Lapan, S. D., Quartaroli, M. T., & Riemer, F. J. (2011). *Qualitative research : An introduction to methods and designs*. Retrieved from <http://QUT.ebib.com.au/patron/FullRecord.aspx?p=817325>
- Leahy, M. (2006). Primary angioplasty for acute ST-elevation myocardial infarction. (Cover story). [Article]. *Nursing Standard*, 21(12), 48-56.

- Leech, B. (2002). Asking questions: Techniques for semistructured interviews. *PS: Political Science and Politics*, 35(4), 665-668.
- Lempp, H., & Kingsley, G. (2007). Qualitative assessments. *Best Practice & Research Clinical Rheumatology*, 21(5), 857-869.
- Liamputtong, P. [Ed] (2011). *Research methods in health: foundations for evidence based practice*. Melbourne, VIC: Oxford University Press
- Liamputtong, P. (2009). Qualitative data analysis: Conceptual and practical considerations. *Health Promotion Journal of Australia*, 20(2), 133-139.
- Lincoln, Y., & Guba, E. (1989). *Fourth generation evaluation*. Thousand Oaks: Sage
- Lombardo, B. & Eyre, C. (2011). Compassion fatigue: A nurse's primer. *OJIN: The Online Journal of Issues in Nursing*, 16 (1), Manuscript 3.
- Lundén, M., Bengtson A, & Lundgren, S. (2006). Hours during and after coronary intervention and angiography. *Clinical Nursing Research*, 15(4), 274-289.
- Luttik, M. L. A., Jaarsma, T., Sanderman, R., & Fleer, J. (2011). The advisory brought to practice: Routine screening on depression (and anxiety) in coronary heart disease; consequences and implications. *European Journal of Cardiovascular Nursing*, 10(4), 228-233.
- Lyons, A. C., Fanshawe, C., & Lip, G. Y. H. (2002). Knowledge, communication and expectancies of cardiac catheterization: the patient's perspective. [Article]. *Psychology, Health & Medicine*, 7(4), 461-467.
- Macdonald, L. (2001). Nurse talk: Features of effective verbal communication used by expert District Nurses. Master Thesis.
- Marley, C. (2012). Transforming emergency cardiac treatment. *Nursing Times*, 108, 22-23.
- Martin, M. L., & Lennox, P. H. (2003). Sedation and analgesia in the interventional radiology department. *Journal of Vascular and Interventional Radiology*, 14, 1119-1128.
- Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum: Qualitative Social Research*, 11(3).
- Maxwell, J. A. (2005). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage.
- McCabe, J. L., & Holmes, D. (2009). Reflexivity, critical qualitative research and emancipation: a Foucauldian perspective. *Journal of Advanced Nursing*, 65(7), 1518-1526.
- McCaffrey, R., & Taylor, N. (2005). Effective anxiety treatment prior to diagnostic cardiac catheterization. *Holistic Nursing Practice*, 19(2), 70-73.

- McGrandles, A., & Duffy, T. (2012). Assessment and treatment of patients with anxiety. *Nursing Standard*, 26(35), 48-56.
- Medicus. (2011). Medical history: The first cardiac catheterisation [online]. *Medicus*, Vol. 51(9), 43.
- Mills, M. (2008). Comparative analysis. In L. Given (Ed.), *The SAGE encyclopedia of qualitative research methods*. . Thousand Oaks, CA: SAGE Publications, Inc.
- Moser. (2007). "The rust of life": impact of anxiety on cardiac patients. *American Journal of Critical Care*, 16(4), 361-369.
- Moser, Chung, M. L., McKinley, S., Riegel, B., An, K., Cherrington, C. C., et al. (2003). Critical care nursing practice regarding patient anxiety assessment and management. *Intensive & Critical Care Nursing: The Official Journal Of The British Association Of Critical Care Nurses*, 19(5), 276-288.
- Mott, A. M. (1999). Psychologic preparation to decrease anxiety associated with cardiac catheterization. *Journal Of Vascular Nursing: Official Publication Of The Society For Peripheral Vascular Nursing*, 17(2), 41-49.
- National Heart Foundation of Australia. (2012). *A system of care for STEMI: Reducing time to reperfusion for patients with ST-segment elevation myocardial infarction*. Melbourne. Victoria: National Heart Foundation of Australia
- Naidu, S. S., Rao, S. V., Blankenship, J., Cavendish, J. J., Farah, T., Moussa, I., et al. (2012). Clinical expert consensus statement on best practices in the cardiac catheterization laboratory: Society for cardiovascular angiography and interventions. *Catheterization and Cardiovascular Interventions*, 80(3), 456-464.
- Nekouei, Z. K., Yousefy, A., Manshaee, G., & Nikneshan, S. (2011). Comparing anxiety in cardiac patients candidate for angiography with normal population. *ARYA Atherosclerosis*, 7(3), 1-5.
- Newton, B., Rothlingova, Z., Gutteridge, R; LeMarchand, K & Raphael, J. (2012). No room for reflexivity? Critical reflections following a systematic review of qualitative research. *Journal of Health Psychology*, 17 (6), 866-885.
- NHMRC. (2012). *How NHMRC develops its guidelines*. Canberra, ACT: Australian Government
- NHMRC. (2007). *National statement on ethical conduct in human research*. Canberra, ACT: Australian Government
- Nightingale, J. J., & Norman, J. (1988). A comparison of midazolam and temazepam for premedication of day case patients. *Anaesthesia*, 43(2), 111-113.
- O'Brien, J. L., Moser, D. K., Riegel, B., Frazier, S. K., Garvin, B. J., & Kim, K. A. (2001). Comparison of anxiety assessments between clinicians and patients with acute myocardial infarction in cardiac critical care units. *American Journal of Critical Care*, 10(2), 97-103.

- O'Mahony, N. (2011). Nurse burnout and the working environment. *Emergency Nurse*, 19(5), 30-37.
- Oliffe, J. (2005). Demystifying nursing research. Why not ethnography? *Urologic Nursing*, 25(5), 395-399.
- Paulson, S. (2011). The Use of Ethnography and narrative interviews in a study of cultures of dance. *Journal of Health Psychology*, 16(1), 148-157.
- Panella, M., Marchisio, S., & Di Stanislao, F. (2003). Reducing clinical variations with clinical pathways: do pathways work? *International Journal for Quality in Health Care*, 15(6), 509-521.
- Perpiñá-Galvañ, J., & Richart-Martínez, M. (2009). Scales for evaluating self-perceived anxiety levels in patients admitted to intensive care units: A review. *American Journal of Critical Care*, 18(6), 571-580.
- Plotnik, R. (2002). *Introduction to psychology* [6th Ed]. Pacific Grove, CAL: Wadsworth Group
- Poghosyan, L., Clarke, S. P., Finlayson, M., & Aiken, L. H. (2010). Nurse burnout and quality of care: cross-national investigation in six countries. *Research in Nursing & Health*, 33(4), 288-298.
- Porter, S. (2010). Fundamental patterns of knowing in nursing: The challenge of evidence-based practice. *Advances in Nursing Science*, 33(1), 3-14
- Pritchard, M.J. (2009). Managing anxiety in the elective surgical patient. *British Journal of Nursing*, 18(7), 416-419.
- Pritchard, M. J. (2011). Using the hospital anxiety and depression scale in surgical patients. *Nursing Standard*, 25(34), 35-41.
- Queensland Government. (2012). *STEMI management plan* [Form]. Brisbane, Queensland: Queensland Health
- Radford, K. A. (2009). *Exploration of the quality of three measures for assessing state anxiety in hospitalized cardiac patients*. Ph.D., University of Rhode Island.
- Rasmussen, P., Muir-Cochrane, E., & Henderson, A. (2012). Document analysis using an aggregative and iterative process. *International Journal of Evidence-Based Healthcare*, 10(2), 142-145.
- Ratcliff, A., Indalo, A. A., Bradshaw, E. G., & Rye, R. M. (1989). Premedication with temazepam in minor surgery. *Anaesthesia*, 44, 815-815.
- Ratner, C. (2002). Subjectivity and objectivity in qualitative methodology. *Forum : Qualitative Social Research*, 3(3)
- Reddy, K., Jaggar, S., & Gillbe, C. (2006). The anaesthetic and the cardiac catheterisation laboratory. *Anaesthesia*, 61(12), 1175-1186.

- Riley, R. H., & Lim, W. (1999). Premedication for surgery: A survey of Australian practice. *The Australian Journal of Hospital Pharmacy*, 29(4), 206-209.
- Roberts, S. B., Bonnici, D. M., Mackinnon, A. J., & Worcester, M. C. (2001). Psychometric evaluation of the Hospital Anxiety and Depression Scale (HADS) among female cardiac patients. *British Journal Of Health Psychology*, 6(4), 373-383.
- Roberts, T. (2009). Understanding ethnography. *British Journal of Midwifery*, 17(5), 291-294.
- Rolley, J. X., Salamonson, Y., Wensley, C., Dennison, C. R., & Davidson, P. M. (2011). Nursing clinical practice guidelines to improve care for people undergoing percutaneous coronary interventions. *Australian Critical Care*, 24(1), 18-38.
- Sabo, B. (2006). Compassion fatigue and nursing work: Can we accurately capture the consequences of caring work? *International Journal of Nursing Practice*, 12, 136-142.
- Saldana, J. (2011). *Fundamentals of qualitative research*. Retrieved from <http://QUT.ebib.com.au/patron/FullRecord.aspx?p=665394>
- Siegrist, R. B., Gutkin, M., Levtzion-Korach, O., & Madden, S. (2009). Improving patient flow in the cath lab. *Healthcare Financial Management*, 63(4), 92-96, 98.
- Shen, B.-J., Eisenberg, S., Maeda, U., Farrell, K., Schwarz, E., Penedo, F., et al. (2011). Depression and anxiety predict decline in physical health functioning in patients with heart failure. *Annals of Behavioral Medicine*, 41(3), 373-382.
- Shook, D., & Savage, R. (2009). Anesthesia in the cardiac catheterization laboratory and electrophysiology laboratory. *Anesthesiology Clinics*, 27(1), 47-56.
- Smith, N., Mitton, C., & Peacock, S. (2009). Qualitative methodologies in health-care priority setting research. *Health Economics*, 18(10), 1163-1175.
- Spielberger, C. D. (1966). *The effects of anxiety on complex learning and academic achievement*. In: C.D. Spielberger (Ed), *Anxiety and behaviour* (p 361 – 398). New York: Academic Press.
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory*. Palo Alto, CA: Consulting Psychologists Press, Inc
- Stecker, M., & Stecker, M. (2012). The effect of education on nurses' assessments in an epilepsy monitoring unit. *Canadian Journal of Neuroscience Nursing*, 34(2), 23-32.
- Stirling, L. (2006). Reduction and management of perioperative anxiety. *British Journal of Nursing*, 15(7), 359-361.

- Suri, H. (2011). Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal*, 11(2), 63-75.
- Suriano, M. L. F., Michel, J. M., Zeitoun, S. S., Herdman, T. H., & de Barros, A. L. B. L. (2011). Consensual validation of the nursing diagnoses fear and anxiety identified at the immediate preoperative period in patients undergoing elective surgery. *International Journal of Nursing Terminologies and Classifications*, 22(3), 133-141.
- Taylor, J. (2012). ESC guidelines on acute myocardial infarction (STEMI). *European Heart Journal*, 33(20), 2501-2502.
- Taylor-Piliae, R. E., & Molassiotis, A. (2001). An exploration of the relationships between uncertainty, psychological distress and type of coping strategy among Chinese men after cardiac catheterization. *Journal of Advanced Nursing*, 33(1), 79-88.
- Thurmond, V. A. (2001). The point of triangulation. *Journal of Nursing Scholarship*, 33(3), 253-258.
- Torrance, H. (2012). Triangulation, respondent validation, and democratic participation in mixed methods research. *Journal of Mixed Methods Research*, 6(2), 111-123.
- Tough, J. (2006). Primary percutaneous coronary intervention in patients with acute myocardial infarction. (Cover story). [Article]. *Nursing Standard*, 21(2), 47-56.
- Tovilovic, S., Novovic, Z., Mihic, L., & Jovanovic, V. (2009). The role of trait anxiety in induction of state anxiety. *Psihologija*, 42(4), 491 – 504.
- Trecartin, K., & Carroll, D. L. (2011). Nursing interventions for family members waiting during cardiac procedures. *Clinical Nursing Research*, 20(3), 263-275.
- Trotter, R., Gallagher, R., & Donoghue, J. (2011). Anxiety in patients undergoing percutaneous coronary interventions. *Heart & Lung: The Journal of Acute and Critical Care*, 40(3), 185-192.
- Ünsal A, Ünalı C, Baytemir Ç. (2011). Anxiety and depression levels of inpatients in the city centre of Kırşehir in Turkey. *International Journal of Nursing Practice*, 17, 411–418
- Uzun, S., Vural, H., Uzun, M., & Yokusoglu, M. (2008). State and trait anxiety levels before coronary angiography. *Journal of Clinical Nursing*, 17(5), 602-607.
- Viars, J. Anxiety and open heart surgery. Clinical Practice. *MedSurg Nursing*. 18(5), 283-291.
- Walker, J. (2012). The use of saturation in qualitative research *Canadian Journal of Cardiovascular Nursing*, 22(2), 37–41.
- Walker, J. A. (2007). What is the effect of preoperative information on patient satisfaction? *British Journal of Nursing*, 16(3), 27-31.

- Walker, K. J. & Smith, A. F. (2009). Premedication for anxiety in adult day surgery (Review). *The Cochrane Collaboration* (4).
- Webster, S., Gallagher, S., Brown, P., Evans, J., Flynn, M., Lopez, V. (2012). The perceptions of nurses in their management of patients experiencing anxiety. *Journal of Nursing Education and Practice*, 2(3).
- Weeks, B. P., & Nilsson, U. (2011). Music interventions in patients during coronary angiographic procedures: A randomized controlled study of the effect on patients' anxiety and well-being. *European Journal of Cardiovascular Nursing*, 10(2), 88-93.
- Wimbush, F. B., Thomas, S. A., Friedmann, E., Sappington, E., & Lynch, J. J. (1986). Cardiovascular responses to communication during catheterization. *Dimensions of Critical Care Nursing*, 5(4), 244-250.
- Wolf, Z. R., Miller, P. A., & Devine, M. (2003). Relationship between nurse caring and patient satisfaction in patients undergoing invasive cardiac procedures. *MEDSURG Nursing*, 12(6), 391-396.
- Woodhead, J., Harding, S. A., Simmonds, M., Dee, S., & McBride-Henry, K. (2007). Premedication for cardiac catheterization and percutaneous coronary intervention: does it increase vascular access site complications? *The Journal Of Cardiovascular Nursing*, 22(6), 466-471.
- Wu, C., & Chen, S. (2005). Interpretive research: An assessment and relevance in nursing. *Tzu Chi Nursing Journal*, 4(4), 8-13.
- Ylinen E.R, Vehvilaˆinen-Julkunen, K., & Pietilaˆ, A.M. (2009) Effects of patients' anxiety, previous pain experience and non-drug interventions on the pain experience during colonoscopy. *Journal of Clinical Nursing* 18, 1937–1944.
- Young, Q., Ignaszewski, A., Fofonoff, D., & Kaan, A. (2007). Brief screen to identify 5 of the most common forms of psychosocial distress in cardiac patients: validation of the Screening Tool for Psychological Distress. *Journal of Cardiovascular Nursing*, 22(6), 525-534.
- Zipori-Beckenstein, P., Schechtman, E., Socholitsky, Z., Rath, S., & Kaplinsky, E. (1999). The relationship between pre-treatment attitudes and recovery: the cardiac catheterization example. *Psychology, Health & Medicine*, 4(4), 377-385.
- Zolfaghari, M., Haztati, M., & Sameh, G. H. R. (2012). The effects of therapeutic touch on anxiety and cardiac dysrhythmia in cardiac catheterization clients. *European Psychiatry*, 22, Supplement 1(0), S290.