

**ACUTE CORONARY SYNDROMES PATIENTS' CHARACTERISTICS:  
OPTIMISING OUTCOMES IN THE PRE-HOSPITAL PHASE OF CARE**

by

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STUDENT NUMBER: 3200-338-2

## DECLARATION

I declare that **ACUTE CORONARY SYNDROMES PATIENTS' CHARACTERISTICS: OPTIMISING OUTCOMES IN THE PRE-HOSPITAL PHASE OF CARE** is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

.....  
SIGNATURE  
(NM CHOKANI-NAMAME)

.....  
DATE

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# DEDICATION

This dissertation is dedicated to  
my parents and grandparents,  
my children Mbiji Anabel and Daphney Allidah,  
my nieces Mocha and Muta,  
Azungu  
and my friends and family

**ACUTE CORONARY SYNDROMES PATIENTS' CHARACTERISTICS:  
OPTIMISING OUTCOMES IN THE PRE-HOSPITAL PHASE OF CARE**

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**ABSTRACT**

Timely management in pre-hospital emergency care enhances the chances of patients' survival or clinical outcomes of an Acute Coronary Syndromes (ACS).

In Botswana nurses serve in the frontline of pre-hospital emergency services as the initial recipients of the emergency reports and situations. Knowledge of the patient's characteristics will assist the nurses as well as the family/others to understand the patient's responses during an ACS situation and therefore enable prompt patient assessment and facilitation of early access to appropriate care. Patient and family involvement in care during cardiac emergencies also influences the patient outcomes.

This is a non-experimental, quantitative, exploratory and descriptive study, designed to explore and describe the characteristics of patients with the experience of an ACS, and the available resources during the pre-hospital phase of emergency care, with the aim of improving patients' clinical outcomes. The results indicated that optimal care by nurses is essential in the chain of care influencing patients' chances of surviving ACS.

**Keywords:** acute coronary syndromes, call centre nurses, coronary nursing, emergency nurses, nursing assessment, patient characteristics, prehospital care, telephone assessment, telephone nursing, telephone triage.

### **List of abbreviations**

AACN	American Association of Critical Care Nurses
ACS	Acute Coronary Syndromes
A&E	Accident and Emergency
AHA	American Heart Association
AMI	Acute Myocardial Infarction
CCTN	Coronary Care-Trained Nurse
CHD	Coronary Heart Disease
CHF	Congestive Heart Failure
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPR	Cardiopulmonary Resuscitation
CVI	Content Validity Index
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
ECG	Electrocardiogram
ED	Emergency Department
ICU	Intensive Care Unit
MI	Myocardial Infarction
MISP	Myocardial Infarction Symptoms Profile
MRIB Ltd	Medical Rescue International Botswana Limited

### **List of abbreviations**

NMC	Nursing and Midwifery Council of the United Kingdom
PHC	Primary Health Care
REACT	Rapid Early Action for Coronary Treatment
SPSS	Statistical Package for Social Sciences
SSA	Sub-Saharan Africa
TNT	Glyceryl Trinitrate
UA	Unstable Angina
UK	United Kingdom
UNISA	University of South Africa
USA	United States of America

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## **CHAPTER 1**

### **INTRODUCTION AND OVERVIEW OF THE STUDY**

#### **1.18**

#### **INTRODUCTION**

This chapter presents an overview of the study and background information about the research problem, rationale underlying the research, the statement of the problem, the research questions and objectives, the aim and significance of the research, the theoretical framework, the research design and methodology and ethical considerations pertaining to the research project.

Pre-hospital mortality occurs in many patients within the first hour of the onset of Acute Coronary Syndromes' (ACS) symptoms, which is crucial to any patient's survival. ACS is the term used to designate the entities of Unstable Angina and Q-wave and non-Q wave Myocardial Infarction (MI), cardiac emergencies, because the initial presentation and early management are similar. Kucia, Taylor and Horowitz (2001:186) note that in Western societies ACS such as Unstable Angina Pectoris and Acute Myocardial Infarction (AMI) are major causes of mortality and morbidity. In the United States of America (USA), the American Heart Association (AHA) (1997-99:9-1) rates ACS as one of the highest causes of death and disability. Holmberg, Holmberg, and Herlitz (1999:88D) write that pre-hospital deaths in about 40% of persons between 25 and 74 years of age in Europe are caused by cardiovascular disease. The number of people who do not survive cardiac arrests is increasing, although death arising from ACS is preventable.

Studies done in other countries indicate that pre-hospital emergency care is a key to improving the chances of patients' survival (Brice, Valenzuela, Ornato, Swor, Overton, Pirrallo, Dunford, Dorneier, 2001:65; Lee, Bahler, Chung, Alonzo & Zeller 2000:125; Holmberg et al 1999:89D). The National Heart Attack Alert programme in the USA has published a series of important recommendations for the rapid identification and management of patients with AMI (National Heart Attack Alert Program Coordinating

Committee 60 minutes to Treatment Working Group 1994:311). The appropriate management of patients with ACS improves their clinical outcomes. The emergency triage and treatment of patients with ACS change the immediate course of AMI and later long-term diagnosis (AHA1997-99:9-1). In the USA every year between 1.7 million and 2 million patients are evaluated for acute chest pain (Rosamond 2002:29). The major manifesting symptom of ACS is chest pain, presenting as an unpleasant sensation creating an impending sense of doom in the severe manifestations, and it is one of the most common reasons why people call for emergency medical assistance.

Pre-hospital emergency care systems are not yet well developed in Sub-Saharan Africa (SSA) due to inadequate health care system infrastructure (Kirsch, Holliman & Hirshon 1997:998) and also as a result of the prohibitive cost in areas where preventive health is more cost-effective than curative care (Mosley, Jamison & Henderson 1990:337). The costs of hospitalisation and treatment of cardiac patients are enormous. Although there are health facilities that operate on a twenty-four hour day, the basic infrastructure for the management of ACS in the pre-hospital phase of care, remains inadequate in most health facilities in Botswana. It is therefore important to look at ways in which the livelihood of persons with risk factors for ACS can be enhanced, thus mitigating its potential and actual complications. Considering that the essence of management of ACS in the pre-hospital phase of care revolves around time, the nurses' interventions pertain to the rapid identification and management of patients during emergency situations. The nurses' intervention in the reduction of pre-hospital mortality revolves around the appropriate assessment of patients and the facilitation of access to definitive care. Therefore, for nurses to be able to rapidly identify and recommend or initiate further management of patients with chest pain, they require a greater understanding of the needs and characteristics that impact on the patient and significant others (family) in ACS situations. These situations influence patient outcomes. Thompson and Stewart (2002:8) write that in the UK the work of nurses in cardiovascular care is recognised to be effective as "nurse-led interventions" have resulted in the enhanced delivery of services and health outcomes. Nurses working in any setting are required to know the needs and characteristics of patients at risk for ACS, and to take action to help patients

reduce their risk for ACS, while effectively handling these patients during cardiac emergencies.

## **1.2 BACKGROUND TO THE RESEARCH PROBLEM**

ACS is associated with socio-demographic changes and variables such as gender, race, economic level, and educational status. According to Maganu (1996:5) Botswana, like other SSA countries, is undergoing a “health transition” that consists of a demographic transition, an epidemiological transition, and changes in the risk environment and the widening gap in health problems and health needs across social and economic classes. Economic growth is noted by Maganu (1996:6) as a factor contributing to increased risk of cardiovascular and other chronic non-communicable diseases such as diabetes due to changes in diet and lifestyle. This may be relevant to the increased incidence of patients presenting with ACS in Botswana.

The researcher’s experience of working in a medical call centre where air and road ambulances are dispatched to critically ill and injured persons, prompted the interest to investigate the problem of patient collapses associated with chest pain, reported by callers seeking assistance for emergency medical services at Medical Rescue International Botswana Limited (MRIB Ltd). The medical call centre’s records indicate that between January 2004 and June 2005, 105 calls were received and registered, requesting assistance for patients presenting with symptoms of chest pain not related to trauma (MRIB Ltd. 2004-2005). These patients experienced ACS in the homes and workplaces. Of these patients 11 died due to cardiac arrest at the scenes of the incidents and the rest were transported to hospitals where some were treated for insignificant chest pain and were released home, while others who were diagnosed AMI were treated at the receiving hospitals, and some were referred to cardiologists for further management.

In countries where the service is well established, pre-hospital emergency care has increased the chances of medical emergency clients’ survival, and reduced their mortality and morbidity rates. The time from onset of chest pain to definitive cardiac

treatment (Birkhead, Walker, Pearson, Weston, Cunningham & Rickards 2004:1004; Lee, Bahler, Chung, Alonzo & Zeller 2000:126), seeking treatment for symptoms of AMI (DeVon & Ryan 2005:232; Dracup & Moser 1997:256), initiation of pre-hospital emergency care and definitive care (Kyuneh 2003:1153; Mathew, Menown, McCarty, Gracey, Hill & Adgey 2002:162), family support in caring for patients with AMI and coping with AMI (Greenwood, Muir, Packham & Madeley 1996:221; Alonzo 1986:1298) are important determinants of outcomes in ACS patients. Appropriate management during the pre-hospital time is crucial for patients' survival. Early access to emergency medical services is an important link in the chain of survival for ACS patients during the pre-hospital phase of care.

With the advances in telecommunication infrastructure most patients in Botswana can access the health care system through mobile and fixed-line telephones. However, in many of the peripheral settings, relatives report emergencies in person at the health facilities. This is the initial process in the establishment of the nurse-patient/family relationships, which is the basis for quality health care. The co-responsibility for early access to health care belongs to the patient and family and other lay people who may be present at the time of the onset of the ACS symptoms and on the nurses' ability to identify ACS and initiate early treatment. According to Quinn and Morse (2003:23) assessment of patients with chest pain should assist nurses to recognise patients with all types of ACS. The Botswana health care delivery system recognises the nurse as the major health care provider as nurses comprise the largest group of health personnel in Botswana's health services. Chokani-Namame (2002:8) notes that in Botswana "the registered nurses stationed at all health facilities countrywide (within the clinics and peripheral hospitals) are the initial health professionals in contact with the emergency patient, conducting assessment and stabilisation procedures before escorting the patient to the nearest referral centres by road and air". The researcher observed the following constraints impacting on the care of patients with ACS: registered nurses are not trained in coronary care management; there is no organised data collection process to screen patients who are reported to have collapsed and/or to have chest pain; and cardiac monitoring equipment might be unavailable in the ambulances and/or local clinics.

Through the Primary Health Care (PHC) approach, patients have been encouraged to take a leading role in controlling and directing their health care over the years. The participation of the patients in their own health care is a tool for empowerment of the patients. This requires empowering the patients as consumers of health care through health education. The PHC approach is therefore an important aspect in pre-hospital care delivery. There is a need for patient and public education about the symptoms of AMI to expedite access to definitive cardiac care treatment (Alonzo & Reynolds 1997:263). Participation of the patients/clients in their care prevents them from being regarded as passive recipients of care and their contributory efforts are a driving force in the provision of care delivery. Patient/client participation is enhanced through the establishment of nurse-patient relationships. According to Shurpin and Dumas (1998:1) “the nature of the interactions which nurses have with patients and their families provide an ideal setting in which nurses can learn more about the human experiences and phenomena arising in health care.” The authors continue to state “a greater understanding of human experiences enables nurses to provide care directed at empowering individuals to achieve their optimum levels of health in a system focused on patient outcomes”. The recognition of expertise in nursing practice has long been identified as promoting patient/family outcomes. The researcher assumes that the nurse-patient relationship is very important in the effective management of ACS patients in the pre-hospital phase of care. The American Association of Critical-Care Nurses’ (AACN) Certification Corporation developed the Synergy Model of Patient Care, subsequently referred to as the Synergy Model in this dissertation, proposes that nurses and patients possess characteristics that work in mutually enhancing ways to improve positive patient outcomes when a nurse demonstrates the required competencies in relation to patients’ needs (AACN 2004).

The researcher did not retrieve any studies on the patient characteristics (as defined in the Synergy Model) during an ACS and how these may influence the ability of the patients and/or family to cope with the ACS situation during the pre-hospital phase of care. It is therefore important to conduct a study to identify these characteristics in patients, who experienced ACS situations in the various pre-hospital settings, and to

propose how nurses may use this information in the pre-transportation phase of pre-hospital care towards the achievement of optimal patient outcomes. Nurses need to improve their assessment skills of ACS patients. The Synergy Model can be applied to guide the nurse in the assessment of the ACS patients' needs and characteristics (See Chapter 2 section 2.2.1 for a detailed discussion of the AACN Synergy Model for Patient Care). The goal of this study is to explore and describe the characteristics of ACS patients and to propose how the nurse can utilise this knowledge of patient characteristics to provide effective pre-hospital care for patients encountering ACS situations.

### **1.3 RATIONALE OF THE RESEARCH PROBLEM**

Patients and/or families are expected to be participants in their health care and take responsibility for their own well-being. However, this is a problem when they do not have sufficient knowledge about the needs, characteristics and resources for patients with cardiac problems. This causes patients to delay getting to the health facility or seeking medical help due to a lack of knowledge of the critical nature of the condition. The lack of resources for patients with cardiac emergencies, or the lack of knowledge of the existence of such resources, causes many patients not to seek health care or even to die from undiagnosed ACS. Nurses in Botswana might receive and process emergency calls with minimal knowledge of ACS signs and symptoms and to manage the available resources in the pre-hospital phase of care with inadequate knowledge.

### **1.4 STATEMENT OF THE PROBLEM**

Optimal care for cardiac emergency patients with the best possible outcomes in pre-hospital care is ensured by the links of the chain of survival. The element of "early access" in the chain of survival focuses on public and health care providers' awareness of a cardiac emergency and their ability to initiate early access to cardiac treatment (AHA 1997-99:9-1; ECC Guidelines Part 12 2000:1). However, positive patient clinical outcomes in ACS situations cannot be expected when there is a lack of awareness of patient needs and characteristics, resource availability and the importance of early access to treatment. Patients and their families should have knowledge about the

characteristics of a patient with an ACS situation, should be aware of their needs and the importance of early access to treatment. Nurses, as the first line of health care providers in the pre-hospital phase of care in Botswana, receiving the initial calls for emergency assistance, require appropriate and adequate skills for patient assessment during emergency triage to promptly and efficiently process received cardiac emergency calls. The Synergy Model draws on both resources of the patient and family and the nurse to match the patient's needs and characteristics with the nurse's competencies to enhance positive clinical outcomes. The components of the Synergy Model provide a guideline for nurses in the pre-hospital setting to be able to collect organised data about patient needs and characteristics allowing for early problem identification of ACS and facilitating early access to cardiac treatment.

### **1.5 AIM OF THE STUDY**

The overall aim of this study is to explore, identify and describe the characteristics of patients who experienced ACS events and to explore the available resources for these patients. Based on these identified characteristics and resources, a systematic approach to data collection/assessment by nurses in the pre-hospital phase of care will be proposed that could contribute to more positive clinical outcomes for ACS patients in Botswana.

### **1.6 THE RESEARCH QUESTIONS**

The guiding research question for this study is:

**What are the patients' characteristics of concern to nurses that impact on the clinical outcomes of an ACS patient in the pre-hospital phase of care?**

From the background given, with reference to the Synergy Model the following research questions arise:

- What are the characteristics of patients who have experienced ACS?
- What are the available resources for improving patients' clinical outcomes during an ACS situation in the pre-hospital phase of care?



## 1.7 THE RESEARCH OBJECTIVES

With reference to the patient characteristics and nurse competencies described in the Synergy Model, the research objectives for this study will be to:

- Explore and describe the characteristics of patients who have experienced ACS.
- Make recommendations for an organised data collection guide for use by nurses in the pre-hospital phase of care.
- Assist nurses to make more effective decisions based on the data collected.

## 1.8 SIGNIFICANCE OF THE STUDY

The results of this study will improve the current levels of pre-hospital emergency care for cardiac emergencies by nurses, which may contribute to reduced mortality and morbidity from ACS. Knowledge of the patients' characteristics will assist the nurses to understand patient responses during an ACS situation, to optimise patients' involvement in their care, make adaptations to patient care during ACS emergencies and thereby reduce the mortality and morbidity risk of every patient. An organised approach to data collection will minimise delays in instituting definitive cardiac treatment.

## 1.9 DEFINITIONS OF CONCEPTS USED IN THE STUDY

It is necessary to define the concepts used in this study to establish a common understanding between the researcher and the readers. The conceptual and operational definitions of concepts are given in the following section:

### 1.9.1 Conceptual and operational definitions

For the purposes of this research, the following conceptual definitions were used:

- **Needs** - are things that one needs for a satisfactory or comfortable life. French (1994:13) describes a need as "a lack of some necessary factor or condition that maintains adequate biological, psychological or social functioning" In this research needs refer to things identified as a gap between what is evaluated as a

necessary level or condition by those experiencing or providing a service for patients within an ACS situation, such as a specific deficiency caused by ACS that interferes with the patient's normal cardiovascular functioning.

- **Characteristics** – are referred to as the typical features or qualities of a person or object (Hornby 1994:188). In this research characteristics refer to the qualities or patient's vulnerabilities that are described in the Synergy Model and are peculiar to the individual with symptoms of ACS.
- **Competence** –The UK Nursing and Midwifery Council (NMC) is a professional code of conduct, performance and ethics (2004) section 6.2 describes competence as “the skills and ability to practise safely and effectively without the need for direct supervision”. In this research competence refers to the ability of the nurse to use past and present emergency care experiences and clinical knowledge, to solve clinical problems, and make complex nursing decisions that guide practices/actions in the pre-hospital emergency setting. For instance, being able to collect data appropriately, to identify the atypical symptoms of ACS, or to make informed decisions for patient access to definitive care.
- **Patient outcomes** – Outcomes refer to the results in health care that meet the patient's needs. These are disease-specific outcomes for specific health care problems (Whitman 2004:293). Patient outcomes in this study refer to the anticipated result of the ACS situation, which is the desired level of wellness by the patient, family and nurse. Death is also a possible outcome. In an ACS situation symptom management of chest pain would focus on the control of chest pain or angina discomfort.
- **Pre-hospital phase of care** - is defined as the emergency care provided before hospital arrival. The providers may include nurses, paramedics, emergency medical technicians (EMT), or aero medical personnel [CINAHL® 1993 Database 1997-99/02]. The pre-hospital phase of care refers to the service provided by the

nurse in an emergency outside of the controlled setting of the health facility. In this study the pre-hospital phase of care is a primary health service at preventive and secondary level of care provided to a client within the first hour(s) of trauma, obstetric, medical, psychiatric, industrial and/or environmental emergencies up to the time he/she is handed over to a health facility, or recovers/dies before arrival at the hospital. In this study there are three phases of pre-hospital care namely: the pre-transportation phase involving call screening and processing, medical advice; the on-scene phase involving stabilisation/treatment measures; and the transportation phase involving ongoing treatment/stabilisation and observation measures en route to the hospital/medical facility. This study focuses on the activities of the pre-transportation phase involving call screening and processing, including medical advice by the nurses.

#### **1.10 CONCEPTUAL FRAMEWORK**

This study was guided by the conceptual framework comprising patient characteristics of the Synergy Model, pre-hospital care and the elements of the chain of survival, the nurses' skills of telephonic patient assessment and skills and knowledge of ACS. The combined efforts of the patient and nurse in patient care in an ACS situation enhance positive patient clinical outcomes. To achieve this, the researcher will use the Synergy Model as a framework to optimise patients' outcomes to guide this study. The model addresses patient characteristics and nurse competencies. The focus of this study is on the eight patient characteristics in the model namely: resiliency, vulnerability, complexity, resource availability, stability, predictability, participation in care and participation in decision-making. The model is an excellent organisational framework for patient assessment which helps to remove or minimise disorder in emergency care situations. (See Chapter 2 section 2.2.1 for a discussion of the conceptual model).

#### **1.11 ASSUMPTIONS**

Assumptions are statements that are taken for granted or considered true even though these statements have not been scientifically tested (Burns & Grove 1993:45). According to Mouton (1998:123), assumptions function as essential background beliefs

underlying other decisions in the research process. By stating assumptions and biases the researcher is bracketing personal knowledge with a view to understanding the phenomenon from a different perspective. The researcher made the following assumptions in this study:

#### **1.11.1 Theoretical-Conceptual Assumptions**

- Pre-hospital emergency care bridges the gap between the acute care setting and the incident scene in the community and will thus ensure continuity of care in this area of health service delivery.
- In pre-hospital care, emergencies occur in any setting in the community such as the home, workplace, and roadside. Therefore all nurses from generalist registered nurses to specialist registered nurses should be able to take care of emergency situations in any setting because nursing is practised in any setting.
- Studying the needs and characteristics of patients with ACS and corresponding nurses' competencies in pre-hospital emergency care will have an impact on positive clinical outcomes and enhance the practice of the nurses in this area of health service delivery in Botswana. According to the Synergy Model when patients' characteristics and nurses' competencies match and synergise, the possible outcomes for the patient are optimal.
- Nurses' knowledge of ACS enhances nurses' competencies and will increase the chances of patient survival in cardiac emergencies as nurses provide the initial treatment and stabilisation of most emergency patients before referral to hospitals. These actions may subsequently enhance patient outcomes in the pre-hospital phase of care in Botswana.
- The patients' and families' lack of knowledge of the ACS situation might influence their decisions to delay seeking health care in a timely manner.

- The establishment of therapeutic nurse-patient relationships will enhance optimal patient outcomes.

### **1.11.2 Methodological Assumptions**

- The feelings, opinions and attitudes, as expressed and described by the participants engaged in pre-hospital emergency care, can be better understood in a descriptive and contextual study design.
- The structured interview schedule as a method of data collection is an appropriate means of gathering numerical data in a quantitative study.
- The non-probability sampling method, using the technique of purposive and convenience sampling, will assist the researcher to identify participants who meet the inclusive criteria and who will be able to share their opinions and perceptions of pre-hospital emergency care.

## **1.12 THE RESEARCH DESIGN AND METHODOLOGY**

This section describes the steps, procedures, and strategies for gathering and analysing the data in this study. The research design, sampling, data collection, and data analysis methods and procedures chosen by the researcher to guide the investigation will be described.

### **1.12.1 THE PROCEDURE FOR THE RESEARCH**

The researcher utilised the following steps to conduct a systematic investigation:

- Preparation of a research proposal, after a review of literature, to support the rationale for the study
- Submission of the proposal to UNISA
- Designing of the data collection tool
- Review of the data collection tool by a statistician and nursing peers

- Application for permission to conduct the study and submission of a copy of the research proposal to Botswana's Ministry of Health (Research Unit)
- Requesting permission to access the medical call centre client records of MRI Botswana Ltd
- Telephoning of potential participants for inclusion in the study
- Pre-testing of the tool on potential participants who were excluded from participating in the actual study
- Collecting of data from the 50 participants
- Analysis of the data collected using the Statistical Package for Social Sciences (SPSS) version 12
- Writing of the research report.

### **1.12.2 THE RESEARCH PURPOSE**

The purpose of this research was to explore, identify, and describe the characteristics of patients with the experience of an ACS situation during the pre-hospital phase of care, and to propose a systematic data collection/assessment guide for nurses that facilitates decision making to enhance positive patient clinical outcomes.

### **1.12.3 THE RESEARCH DESIGN**

The researcher used a quantitative, exploratory and descriptive survey to identify, explore and describe the needs and characteristics of patients with an experience of ACS. This is a non-experimental study in which the researcher did not intervene in any way (Polit & Hungler 1999:155). Non-experimental research acknowledges that human characteristics, such as health beliefs and opinions, are not manipulated. (Refer to Chapter 3 section 3.5.4 for further discussion).

#### **1.12.3.1 Quantitative**

In quantitative research methodology there is objective measurement of the data from the patients. Burns and Grove (1997:27) define quantitative research as "a formal, objective, systematic process in which numerical data are utilised to obtain information

and describe variables and their relationships”. (Refer to Chapter 3 section 3.5.4 for further discussion).

### **1.12.3.2 Exploratory and Descriptive Survey**

The researcher used the quantitative explorative descriptive survey to investigate the characteristics of patients with the experience of ACS in the pre-hospital phase of emergency care. A descriptive survey provides the opinions of the participants with reference to the problem being studied. An explorative, descriptive and contextual research design allows for exploration of the topic, to describe situations and events, and to describe and understand events within the concrete, natural contexts in which they occur without attempting to establish any causality or manipulation of variables (Polit & Hungler 1999:16-17, Burns & Grove 1993:29). This research explores and describes the characteristics of the patient during an ACS and the available resources in the pre-hospital phase of care. (Refer to Chapter 3 section 3.5.4 for further discussion).

### **1.12.4 THE POPULATION AND SAMPLING METHODS**

In this research a non-probability sampling approach was used which, according to Parahoo (1997:223) “uses the judgement of the researcher to select those subjects who know the most about the phenomenon and are able to articulate and explain nuances to the researcher”. The assumption is that the participants, who have the experience, will be able to provide the required information.

#### **1.12.4.1 The Research Population Group**

The researcher anticipated that over the period January 2004 to June 2005 a sufficient research population could be identified. The research population for this study were persons who had experienced an ACS situation as a patient. The population was derived from the medical call centre’s records of MRIB Ltd over the period January 2004 to June 2005 as there had been 105 calls during this period, from patients experiencing the ACS of chest pain or discomfort. These 105 calls represent the target population for this study as each call related to a person experiencing chest pain.

#### **1.12.4.2 The sampling process and sample size**

The researcher used purposive and convenience sampling by selecting participants who had the experience of an ACS situation as a patient. The purposive method of sampling assisted the researcher to identify participants who met the following sampling criteria (Holloway & Wheeler 1996:75):

- A live patient who was either a male or female, who had experienced ACS within the preceding 18 months (January 2004 – June 2005).
- The patient and/or family made the initial call for assistance to the medical call centre.
- The participants were willing to participate in the study and to give written consent (see Annexure C).
- The participants were able to understand (verbal) spoken English and to respond to an interview.

#### **1.12.4.3 Generalisation**

This refers to applying results of the research population group to a larger population assuming that the results of the study sample would be the same if every element in the entire population had been studied (Burns & Grove 2001:366). However, with convenience samples there are no grounds for generalisation of any results beyond the research participants (sample).

#### **1.12.4.4 Representativeness**

In order to draw conclusions about the population from which the research group came, the sample must be like the population in ways specified by the inclusive criteria (Burns & Grove 2001:367). Thus the research population comprised only persons who had experienced ACS and contacted the medical call centre. This implies that the research findings might not be generalisable to persons who experienced ACS without contacting the specific call centre.



#### **1.12.4.5 The Use of Records**

To access the research population the researcher used the MRIB Ltd medical call centre client registers from January 2004 to June 2005 to gain the required information. The register provided details of the patients' names, the persons who called for emergency medical assistance, the location of each incident, and the reasons for calling for assistance and the health facilities to which the patients were transported. The reason for calling, or the chief complaint of concern to the researcher was "chest pain" or "reported collapse related to cardiac history". The patient status as noted by the responding medical team such as found patient alive or dead guided the researcher to exclude the "dead" persons from the study population.

#### **1.12.5 DATA COLLECTION**

The process of collecting data for this study is discussed in detail in Chapter 3 section 3.7. The following is an outline of the data collection process:

##### **1.12.5.1 The data collection method**

All the patients who had called the MRIB Ltd medical call centre for emergency assistance for a patient with a complaint of chest pain or a history of collapse related to cardiac history between January 2004 and June 2005 comprised the population for this study. Through the use of the telephone contacts, those persons who were accessed were asked for consent to participate in the study. The appointment date and time were set when the interview would be conducted. The researcher collected the data using the interview schedule from the willing participants. Ethical considerations were respected as discussed in detail in chapter 3 section 3.9 of this dissertation.

##### **1.12.5.2 The data collection instrument**

The researcher used a structured interview schedule to collect data. The interview schedule is a self-report instrument requiring the participant to answer questions asked while the researcher completes the structured interview schedule according to the responses of the participant. Polit and Hungler (1999) state that the interview schedule

assists the researcher to gather self-report information from the respondents regarding their attitudes, knowledge, beliefs and feelings. According to De Vos (2002:174) and Polit and Hungler (1999:259) interview schedules are economical and less time consuming than unstructured interviews.

The interview schedule comprised two sections: the demographic section and the conceptual section. Both open and close-ended questions were used. The content for the items for the interview schedule was formulated from the review of literature pertaining to ACS management and the focus of the questions was guided by the patient characteristics from the conceptual framework of the Synergy Model. Due to failure to identify an existing tool a new instrument was designed.

#### **1.12.5.3 Process of developing the structured interview schedule**

- The information required was determined after reviewing the Synergy Model and conducting a literature search on the topic under study.
- Questions were developed.
- Assistance to review the structured interview schedule was sought from nurses working in the emergency rooms and in the medical call centres in Botswana for their input on the relevance of the data to be collected. The appointed statistician also reviewed the tool to appraise it for feasibility of statistical analysis.
- The interview schedule was pre-tested by the researcher on 3-4 people who met the criteria to participate in the study, and who were excluded from participation in the actual study.

#### **1.12.6 DATA ANALYSIS**

The data were analysed using the computer programme for quantitative data analysis, SPSS version 12 (See Chapter 3 section 3.10 for further discussion on data analysis and Chapter 4 on discussion of the results). A statistician, identified by the Department of Health Studies, at UNISA analysed the data.

### **1.13 RELIABILITY AND VALIDITY OF THE RESEARCH STUDY**

The following section outlines the issues of reliability and validity pertaining to this study. Chapter 3 section 3.11 has a detailed discussion of the attributes of reliability and validity.

#### **1.13.1 Reliability**

The reliability of an instrument is the degree of consistency with which it measures the attributes it is supposed to be measuring (Polit & Hungler 2006:324). The measures that are used to ensure reliability of the tool are namely stability, consistency and equivalence.

#### **1.13.2 Validity**

The validity of an instrument is the degree to which it measures what it is supposed to be measuring (Polit & Hungler 1997:299). The measures that are used to ensure validity of the tool are namely content validity, criterion-related validity and construct validity.

### **1.14 ETHICAL CONSIDERATIONS**

The research observed the following ethical considerations:

- Permission to conduct the study from Botswana's Ministry of Health (Research Unit) as well permission from MRIB Ltd to access client records was obtained in accordance with guidelines for conducting research in Botswana.
- Informed consent was observed by explaining to the participants the purpose of the study, methods of data collection and the significance of the study. To maintain anonymity the participants were expected to provide written consent but they were not requested to specify their names on the consent forms. The researcher used codes for the individual participants.
- The research did not require the participants to provide any form of identification for confidentiality.

- The researcher informed the participants that there would be no payment for participation in the study.
- No harm was caused by manipulation of the subjects, as this would be a non-experimental study.
- The results of the study assisted the researcher to contribute to the existing knowledge of the management of patients with chest pain related to ACS during the pre-hospital phase of care.

A more detailed discussion on how ethical considerations were observed in this study will be presented in Chapter 3 section 3.9.

## **1.15 SCOPE AND LIMITATIONS OF THE STUDY**

Limitations are restrictions in a study that may decrease the generalisability of the findings and may be theoretical and methodological (Burns & Grove 1993:46).

### **1.15.1 Methodological limitations**

- The researcher recognises the restrictions in the study that may limit the credibility of the findings and restrict the population to which the findings can be generalised.
- The sample might not be representative of the population under study as many calls are directed to the Botswana government clinics. Lack of documentation hinders access to such patients, as contact telephones do not appear in records of these patients who were assisted during their ACS situations by government clinics.
- Being an initial exploratory study in such an area, the instrument used for data collection might have limited credibility because it has not been tested previously.
- This study done in Botswana may not be generalisable to other countries.
- The study does not include other health facilities where patients can also call with medical emergencies, such as the local clinics. It focused only on MRIB Ltd.

### **1.15.2 Theoretical limitations**

- The researcher recognises that there could be a possibility of weaknesses in the conceptual and operational definitions that might restrict the generalisations of the findings.

## **1.16 ORGANISATION OF THE REPORT**

The dissertation comprises of the following chapters:

- Chapter 1 – Introduction and overview of the study
- Chapter 2 – Review of the literature
- Chapter 3 – Description of the research methodology used in this study
- Chapter 4 – Data analysis and discussion of research results
- Chapter 5 – Summary, limitations, conclusions, recommendations pertaining to the research findings
- List of references – Literature sources used in the study
- Annexures – The copies of the official correspondence requesting permission to conduct this study proof of permission granted to conduct this study, the correspondence to potential participants and the data collection tool.

## **1.17 SUMMARY**

Data from various studies revealed that timely management in the pre-hospital phase of emergency care enhances the chances of patients' survival and improve clinical outcomes of ACS situations. There are many people who are experiencing chest pains in various settings. Delays in accessing appropriate emergency care are largely due to patients', family members' and nurses' lack of knowledge of patients' needs and characteristics as well as the available resources. Nurses require adequate knowledge of the patients' needs and characteristics in an ACS situation to provide the appropriate care. Knowledge of the patients' characteristics could assist nurses to better understand a patient's responses during an ACS situation. Patient and family involvement in care, during cardiac emergencies, also influences the patient outcomes. The Synergy Model guides the nurses in their performance of patient assessments and management. An

organised approach to data collection minimises delays to commence definitive cardiac treatment. This is a non-experimental, quantitative, exploratory and descriptive study, designed to explore and describe the characteristics of patients with the experience of an ACS. The focus of the study is on the characteristics of the patients with ACS during the pre-hospital phase of emergency care with the aim of improving patients' clinical outcomes.

This chapter focused on the background of the study concerning patients' characteristics influencing the outcomes of an ACS emergency situation in the pre-hospital phase of care. The chapter introduced the problem statement, the research purpose, objectives and significance as well as research questions and assumptions. The research methodology is outlined, the conceptual definitions are provided and the scope, limitations and ethical considerations are described. The review of the literature will be discussed in Chapter 2.

## **CHAPTER 2**

### **REVIEW OF THE LITERATURE**

#### **2.1 INTRODUCTION**

The nurse in Botswana is the patient's first line of contact with any health facility and is responsible for making rapid decisions to facilitate patient access to definitive care during emergencies such as ACS situations during the pre-hospital phase of care. The overall aim of this study was to explore, identify and describe the characteristics of patients who experienced ACS events and to explore the available resources for these patients. Based on these identified characteristics and resources, a systematic approach to data collection/assessment by nurses in the pre-hospital phase of care will be proposed that could contribute to more positive clinical outcomes for ACS patients in Botswana.

Reviewing of the literature was necessary for the researcher to identify baseline data on what is known about this subject and to gain in-depth understanding of the existing management of these patients. The researcher reviewed the theoretical, empirical and professional nursing literature to determine the background of the phenomenon and the methodological aspects of studies done in relation to the phenomenon. The researcher conducted a literature review with the aid of the following computer assisted data based bibliographies, namely: Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Medline.

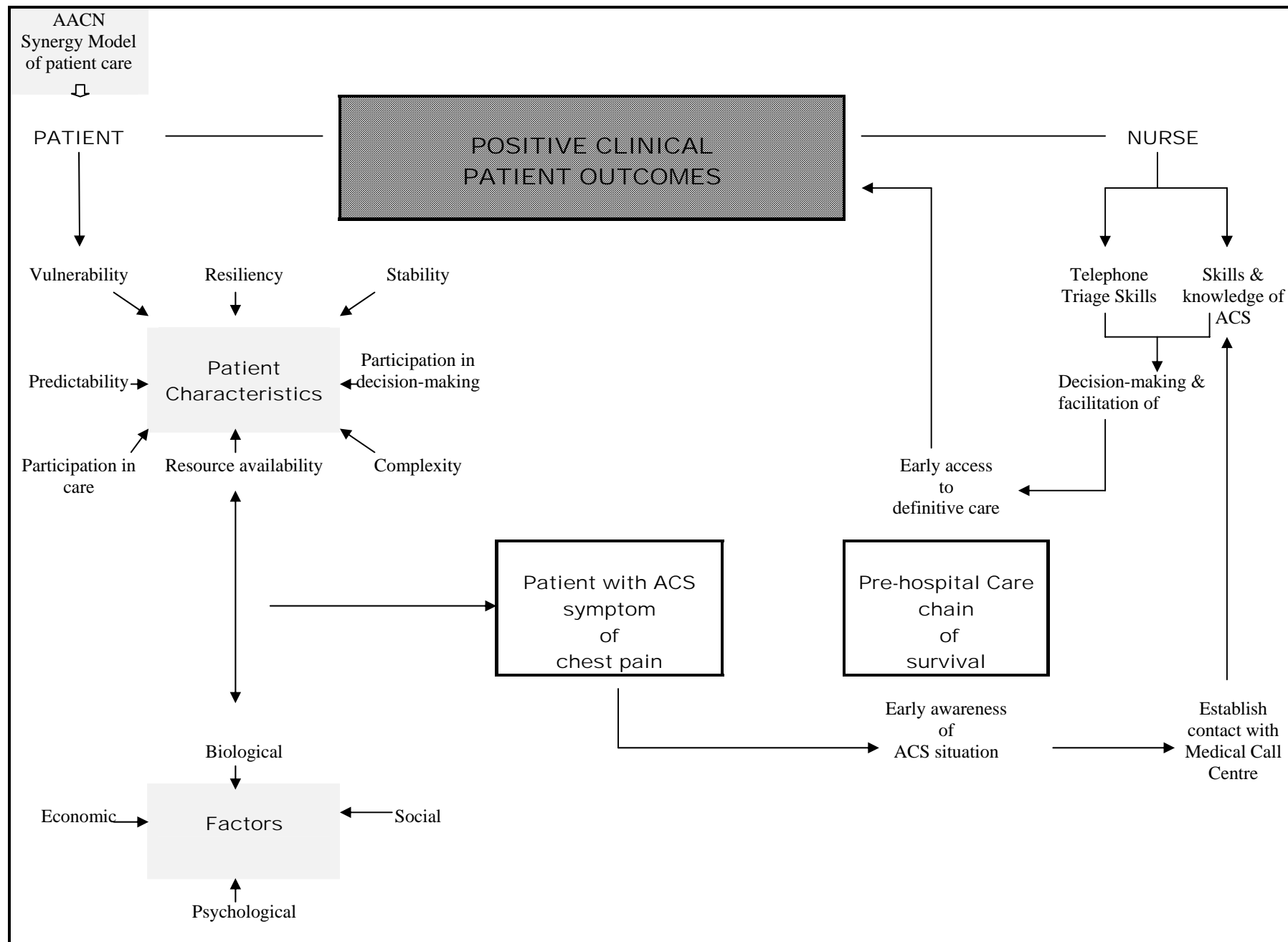
In order to place the study problem into perspective the conceptual model guided the literature review of the characteristics of the patient as defined in the Synergy Model, searching for information on the manifestations and management of ACS in the pre-hospital phase of care, the ability of the nurse to manage patients with ACS, patient outcomes, the patient and family knowledge about an ACS and the factors influencing decisions to seek care was done. The review revealed that, although there was a considerable amount of literature available on ACS, management of ACS in the pre-hospital phase of care, nurse-patient interactions, and patient outcomes, there was

limited literature pertaining to the maximisation of patient clinical outcomes of ACS during the pre-hospital phase of care by nurses in Botswana. However, the researcher had to select the literature that would add more value to this particular study's focus. The following are the keywords used in this search: Acute Coronary Syndromes, coronary nursing, emergency nursing, nurse-patient interactions, patient assessment, patient clinical outcomes, pre-hospital care, synergy, telephone nursing and telephone triage.

## **2.2 CONCEPTUAL FRAMEWORK**

In this study the conceptual framework comprises patient characteristics of the Synergy Model, the elements of the chain of survival in pre-hospital care, the nurses' skills of telephonic patient assessment and skills and knowledge of ACS. The conceptual framework guides the researcher to use the patient characteristics of the Synergy Model to explore, identify and describe the profile of the patient who contacted the MRIB Ltd medical call centre in Botswana with an ACS during the pre-hospital phase of care. With the results the researcher would make recommendations for the development of a data collection guide for use during the call-screening process. Figure 2.1 depicts the conceptual framework, and the various aspects of the conceptual framework are described in the following sections of this chapter.





**Figure 1: Conceptual model guiding the study on Acute Coronary Syndromes patient characteristics: Optimising patient outcomes in the pre-hospital phase of care**

### **2.2.1 The AACN Synergy Model of patient care**

The researcher decided to use the Synergy Model to guide this study because the patient is at the center of nursing practice and the model is applicable to patients in all settings. The model links practice and outcomes. The AACN Certified Corporation (2004) describes the Synergy Model as follows: the core concept of the model is that “the needs or characteristics of patients and families influence and drive the characteristics or competencies of nurses. Synergy results when the needs and characteristics of a patient, clinical unit or system are matched with a nurse's competencies”. According to the model the concept of synergy is an evolving concept occurring when individuals act in mutually engaging ways to promote positive outcomes for patients. Positive patient outcomes will occur when patient needs and characteristics and nurse competencies work in mutually enhancing ways ensuring that optimal outcomes will occur if the nurse demonstrates the competencies in relation to a patient's needs. In the Synergy Model, patients present to health facilities with various vulnerabilities. Vulnerabilities are the needs or characteristics that the patient experiences. Patients have similar needs that are experienced across the continuum from health to illness, with the levels ranging from minimal/less severe to complex/critical. There are four tenets of the Synergy Model namely:

- Patients' characteristics of concern to nurses
- Nurses' competencies important to patients
- Patients' outcomes that result when patients' characteristics and nurses competencies are mutually enhancing
- Creation of a safe passage for patients through the health care system allows nurses to contribute significantly to quality of patient care, cost containment and enhanced patients' outcomes.

The following assumptions regarding the patient and families and nurses guide the Synergy Model:

- Patients are biological, psychological, social and spiritual entities who present at a particular developmental stage. The whole patient (body, mind and spirit) must be considered.
- The patient, family and community all contribute to providing a context for the nurse-patient relationship.
- Patients can be described by a number of characteristics. All characteristics are connected and contribute to each other. Characteristics cannot be looked at in isolation. These characteristics are described in detail in section 2.2.2.1.
- Similarly, nurses can be described according to a number of dimensions. The interrelated dimensions paint a profile of the nurse. There are eight nurse competencies focusing on the characteristics of the professional role of nursing namely: clinical judgement, clinical inquiry, facilitator of learning, collaboration, systems thinking, advocacy and moral agency, caring practices and response to diversity. The nursing competencies are derived from the needs and characteristics of the patient. These competencies are a reflection of the integration of knowledge, skills, experience, and attitudes required by the nurse to meet the patients' needs and optimise patients' outcomes. However, for purposes of this study the characteristics of the nurse will not be discussed in detail as they fall beyond the scope of the current study.
- The goal of nursing is to restore a patient to an optimal level of wellness as defined by the patient. Death can be a possible outcome. The patient and family need to realise that death is imminent, enabling them to realise that death is a possible outcome.

The researcher found this model useful for continued patient assessment because the course of illness of patients with ACS evolves all the time. For example, during an ACS event the patient's condition may alter from being stable to being highly unstable.

Information from already researched details on the characteristics of a person with ACS can be a guide to the nurses to determine the level of need or vulnerability for each patient on the Synergy Model. Biological, social, economic and psychological factors such as the degree of healthy behaviour, age, socio-economic status, life style such as smoking, alcohol intake, medical history of diabetes and hypertension, may also influence the patients' degree of vulnerability in an ACS situation.

#### **2.2.1.1 Patient characteristics in the Synergy model**

To develop further understanding of the Synergy Model the researcher referred to Curley (1998:64) and Kaplow (2003:27). The Synergy Model further explicates that patient characteristics in the Synergy Model refer to the vulnerabilities, which patients may present during the course of their illness/situation. The patient and his/her family are unique entities with various capacities for health and vulnerability to illness. The individual's capacity for health is derived from his/her genetic and biological makeup influenced by various degrees of healthy behaviours such as diet, exercise, stress reduction and the environmental social structures such as societal infrastructure, physical environment, cultural characteristics and population perceptions. All these aspects influence the nursing care required by a particular patient and family. In a health care situation, the patient is on a continuum of personal characteristics, which evolve over time. The characteristics vary in terms of the level of need for each patient, ranging from high through moderate to low on a scale of 1-3-5. There are eight patient characteristics namely: resiliency, vulnerability, stability, complexity, predictability, resource availability, participation in care as well as participation in decision-making.

The patient characteristics in the Synergy Model are described in the following terms:

- **Resiliency** – the capacity to return to a restorative level of functioning by using compensatory/coping mechanisms or the ability to bounce back quickly after an insult. Persons with low levels of resiliency may have failed compensatory mechanisms while the person with high levels of resiliency is able to maintain a

response. In an ACS situation the urgency of the situation is determined by compensatory/coping mechanisms of the patient. For example:

- Is the patient able to cope with the effects of an ACS?
- What is the level of resiliency portrayed by an individual during an ACS situation as described by the patient and/or family?
- What factors facilitate or impede the patient's ability to cope with the ACS situation?
- The level of resiliency or coping capabilities is also influenced by various degrees of health behaviours such as diet, exercise, and stress reduction, avoidance of risky behaviours for instance smoking or alcoholism and substance abuse.

Question items 54, 55, 56, 57, 58 and 59 (Part B section G) in the interview schedule address the patient's level of resiliency.

- **Vulnerability** – the susceptibility to actual or potential stressors that may adversely affect patient outcomes. A highly vulnerable patient is susceptible without protection while the minimally vulnerable patient is less susceptible. In an ACS situation this characteristic will determine what factors make the patient susceptible, the nature of the actual or potential stressors, and the consideration of what other important or urgent intervention ought to be done. The degree with which the patient possesses risk factors to ACS could make the patient highly vulnerable or minimally vulnerable. Part B section B question items 20 to 31; address the risk factors that may increase the patient's level of vulnerability.
- **Stability** – the person's ability to maintain a steady-state equilibrium. A minimally stable patient is someone who is unsteady, not responsive to therapy while a highly stable patient responds well to therapy. In an ACS situation, although the patient is in a critical condition, it should be determined whether or not the patient is stable. Factors contributing to the patient's responsiveness to interventions will be considered. For instance in pre-hospital care the administration of medication such as aspirin at the onset of chest pain may relieve the discomfort and assist to stabilise the patient's situation. Part B section F addresses the patient's level of stability with regard to:

- Perceived level of responsiveness to treatment addressed by question item 51
  - Perceived risk of death addressed by question item 52
  - Perceived risk of developing complications addressed by question item 53.
- **Predictability** – is a summative patient characteristic that allows the nurse to expect a certain trajectory of illness. An uncertain patient has no critical pathway for predicting a patient's condition while a highly predictable patient follows the critical pathway. In an acute coronary situation the survival chances will be determined by the urgent initiation of pre-hospital interventions such as aspirin, Glyceryl Trinitrate (TNT) or oxygen and also determine the level of critical care required as well as the possible patient outcome. The first few moments of nurse-patient interaction might influence the course of the patient clinical outcome. Part B section H questions 60 and 61 addresses the clinical outcomes of the patient's experience of the ACS.
  - **Complexity** – is the intricate entanglement of two or more systems such as body or family or therapies. The minimally complex patient is straightforward and has a simple or clear-cut presentation while the highly complex patient has vague and intricate presentations. In an ACS situation the factors posing a threat to the patient or those considered to complicate the situation will be considered from the patient's medical and social history. Part B section C addresses complexity on three aspects: psychological functioning, ability to communicate with others in an emergency – question items 33 to 36; family dynamics are explored by question 37 to 38; other issues that may complicate the situation such as alternate therapies are explored by question 39 to 42.
  - **Resource availability** – imply the resources the patient, the patient's family, and the community bring into a care situation, comprising personal, social, technical, and fiscal resources. The patient with low-level resource availability has few skills and low knowledge and few social system resources, while the high-level resources patient has extensive knowledge and skills, available financial resources, and strong social systems support. For the management of an ACS situation it is necessary to

determine the resources that are available to the patient in terms of adequacy, accessibility and appropriateness in order to enhance the patient outcomes. Questions that should be asked to determine a patient's resource availability include:

-Are there any family members?

-What are the available social support systems?

-How well do your patient and family recognise the critical nature of the situation?

Part A question items 1 to 11 help to create a demographic profile of the patient and also the contributory factors to vulnerability risk factors. The patient's knowledge of the illness is addressed by Part B section A question items 1 to 7. Patient's access to health care in terms of available health care facilities and transportation issues in an emergency are addressed by question items in Part B section A question items 8 to 15.

- **Participation in decision-making** – is the extent to which the patient and the patient's family engage in decision-making. The patient with limited capacity for decision-making requires an advocate or surrogate. In full participation the patient and family have the capacity to make decisions for themselves. In an acute coronary situation early decision making, for seeking assistance, enhances patient outcomes. It needs to be determined who takes the leading role in making decisions and whether the patient or another family member makes decisions regarding care. Rapid decision-making facilitates patient access to early treatment that is early initiation of medications and early transportation to hospital. Part B section D question items 43 to 46 helped the researcher to determine early access to care, and whether or not rapid decision making by patient or family took place.
- **Participation in care** – is the extent to which the patient and the patient's family engage in aspects of care. When there is no participation, the patient and family are unable or unwilling to participate in care; while full participation requires the patient and family to participate actively throughout the care rendering process. In an acute coronary situation determination of other care sources, that need to be recruited for this patient, will be made, including whether the patient and/or family members get

involved in care issues. Someone has to take responsibility to ensure that the patient has early access to treatment, encouraging the patient to seek medical care or to seek health care on behalf of the patient, provide consent on behalf of patient for care to be given, or to carry out the instructions in the home while waiting for transport or emergency medical services to arrive. Determining the ability of the patient or the family to carry out the verbal (telephone) instructions, the actions taken by the patient or family in an emergency situation, and the presence or absence of family or others to assist during the emergency, are addressed by question items 48 to 50 in Part B section E of the interview schedule.

The Synergy Model views patients within the context of their respective environments and as active participants in the care process. (The Synergy Model also addresses nurses' characteristics or competencies but this study focuses only on patient characteristics).

#### **2.2.1.1 An example of the application of the AACN Synergy Model of Patient Care in an ambulatory care setting**

Hardin and Hussey (2003:73) utilised the AACN Synergy Model of Patient Care to guide the case study of a chronic heart failure (CHF) patient. Hardin and Hussey (2003:73) acknowledge: "Not all acute care is conducted within the walls of the hospital setting". With the dynamic changes in the health care environment many patients with serious diseases are now being nursed in homes and nurse-run clinics. The authors state that the Synergy Model provides a framework for nurses to manage patients in ambulatory clinics. This study can be used as an example to guide the researcher to identify and describe the needs and characteristics of ACS patients with reference to the patient characteristics described in the Synergy Model.

In order to enhance patient access to health facilities and improve outcomes specialised clinics were developed by advanced practice nurses to provide ambulatory patient care to patients with CHF. The services include primary care, counselling education and patient follow-up. Nurses use their professional knowledge and skills to integrate



various aspects of care, which is an important factor in the holistic approach to care enhancing positive outcomes. In the case study of a patient with CHF Hardin and Hussey (2003:75) elaborate how the patient's characteristics in the Synergy Model assist the nurse to identify the vulnerabilities of each patient. In being able to recognise the patient's characteristics and how they alter with each situation, the nurse will be able to employ her appropriate competencies to achieve optimal patient outcomes. The nursing competencies co-exist within the continuum of each patient characteristic and this determines the level of priority of each competency.

Due to the flexibility of the Synergy Model it can be applied to various settings and patient care situations. The following nurse competencies can guide the nurse in the pre-hospital setting phase of call screening and initial care before arrival at the health facility. The nurse uses clinical inquiry, which means "observing, questioning, smelling, sensing intuitively, listening and integrating findings into oneself for the benefit of the patient," (Hardin & Hussey 2003:75). The researcher can infer this to the nurse in the call centre dealing with an ACS situation or call, whereby the nurse employs questioning, intuition, and listening skills when interrogating the caller to get more insight about the emergency situation. With this background knowledge, the nurse then collaborates with the available resources to provide the required emergency assistance. In meeting the needs of the patient, the nurse according to Hardin and Hussey (2003:76) "develops, integrates, applies and evaluates a variety of strategies to meet the patient's needs, while observing patient diversity".

### **2.2.2 Acute Coronary Syndromes**

The incidences of ACS continue to rise and claim more lives in spite of various measures to modify population risk factors and the primary prevention of atherosclerosis. Rosamond (2002:29) describes the pathobiological factors that take place in ACS, the strategies and technologies that are useful for accurate diagnosis and identification of patient risks. Acute coronary chest pain syndromes are due to coronary vessel obstruction and thrombotic occlusion. Patients with chest pain may be categorised as low, intermediate or high risk. Some patients presenting at the

emergency department might not be adequately evaluated for acute chest pain and sent home without proper assessment. According to the Rosamond (2002:32) 15% of patients reporting to the emergency department in the USA due to chest pain had an acute MI while 35% had unstable angina. In most of these patients, the electrocardiogram (ECG) was diagnostic, but for the rest of the patients' assessment of cardiovascular risk was very important. There is a high mortality rate, in spite of measures to diagnose ACS that indicates the need for tools, which are more sensitive and specific to guide patient management.

Rosamond (2002:32) states that the accurate diagnosis of ACS should begin with careful history taking and a physical examination, with particular emphasis on the categorisation of a patient's level of risk. During the initial clinical evaluation, economic, medical and professional stakes should be considered to minimise unnecessary admissions, avoid legal suits due to misdiagnosis and mismanagement. Rosamond (2002:34) further states that a key factor in the management of ACS will be the refinement and development of strategies to define and distinguish an intermediate risk category of patients who need urgent admission and treatment as opposed to those who can be expeditiously discharged to outpatient follow up.

#### **2.2.2.1 Atypical and Typical Symptoms of ACS**

Although chest pain is the major symptom of ACS the signs and symptoms of ACS vary among patients. Brieger, Eagle, Goodman, Steg, Budaj, White and Montalescot (2004:461) concur that ACS are challenging to health care providers during assessment because of their variable typical and atypical symptoms. They analysed the characteristics, treatment practices, and hospital outcomes of patients who presented without chest pains (atypical symptoms) in comparison with the patients who presented with chest pain (typical symptoms). Brieger et al (2004:461) write that atypical or silent manifestations of AMI are recognised as a manifestation of coronary heart disease, which is associated with unfavourable outcomes. This poses a great challenge to the health care providers such as the nurses in the health care call centres during the call screening and call processing activities of the pre-hospital phase of emergency care.

The study results on patient characteristics by Brieger et al (2004:464) were used in the current study to compare results on patient demographics and characteristics as defined in the Synergy Model.

Devon and Zerwic (2004:6) in the USA, conducted a study to examine whether the symptoms, experienced by patients with unstable angina (UA), were different from the symptoms experienced by patients with myocardial infarction (MI). The study was done following the American Heart Association's (AHA) estimates in 2002 that the number of patients living with coronary heart disease (CHD) was very high at about 12.6 million and that 650, 000 people would experience a new MI or sudden death or would have their first episode of unstable angina during that year. In the USA, ACS comprises unstable angina, non-ST elevation MI, and ST elevation MI. Individuals at high risk of ACS could only get medical attention if they recognised the symptoms as being serious. ACS symptoms focused more on MI rather than unstable angina. It is important for health care providers to differentiate symptoms of ACS to accurately triage patient, diagnose and treat patients. The symptoms of ACS related to unstable angina are: chest tightness, chest pain with little exertion, pain at rest, jaw, neck, ear, arm or epigastric discomfort, sweating, nausea, vomiting.

Ryan, DeVon and Zerwic (2005:34) stress the importance of nurses' knowledge about these typical and atypical ACS symptoms to facilitate diagnosis and treatment. The patients and family/other(s) should also have knowledge about the symptoms of ACS to be able to recognise the urgency of their situation. According to Ryan et al (2005:34) the "lack of prompt recognition of symptoms may lead to delay in treatment or misdiagnosis and inappropriate treatment". The following are some of the typical or atypical symptoms of ACS noted by Ryan et al (2005:34):

- Classic or typical symptoms of ACS are sub-sternal or left sided chest pain or discomfort described by the patient as pressure or heaviness often radiating to neck, jaw, shoulder or arms, accompanied by diaphoresis, shortness of breath and nausea.

- Atypical symptoms include chest pain other than sub-sternal or left sided pain accompanied with numbness, burning, tingling. Other patients present without chest pain, complain of discomfort between the shoulders, axilla, and neck, fatigue, weakness, numbness or tingling in upper extremities, palpitations, indigestion, loss of appetite or unusual fear.

Patients experience ACS in the presence of family members, friends, and lay others. In a study conducted by Zerwic (1998:75-81) the researcher sought to identify the lay public's expectations of the symptoms of AMI. According to the research findings, the following symptoms were expected by the public: chest pain, irregular heartbeats, inability to move and shortness of breath. The discomfort was described as tight, pressure, heaviness. It was shown that the lay public have both accurate and inaccurate expectations about the symptoms of AMI.

#### **2.2.2.2 Predisposing factors of ACS**

Grundy (1999:988) notes that the intensity of preventive efforts should match the patient's risk of developing ACS. The risk factors for CHD are important for guiding assessment and also for planning interventions. The predisposing risk factors significant for the purposes of this study are identified as cigarette smoking, high blood pressure, obesity (overweight), physical inactivity, and family history of premature CHD, male gender, and behavioural (life habits), diet composition, socio-economic and ethnic factors. Identification of patient's risk factors requires history taking of these predisposing risk factors.

#### **2.2.2.3 Psychosocial aspect of ACS and ACS typical and atypical symptoms recognition**

Symptom perception according to Carney, Fitzsimons and Dempster (2002:238) "is the process of noticing and reporting symptoms {which} is a key element in the maintenance of homeostasis". Individuals need knowledge about the variability of symptoms in ACS as this influences their decision to report symptoms or seek help. The

value that one places on his/her health helps to predict health behaviours. The experience of ACS brings about psychological responses such as fear, denial, panic and anxiety in the affected person, his/her family and or others who are available at the time of the emergency. Carney et al (2002:238) note that denial of the situation influences the decision to delay seeking EMS during cardiac events. It is said that individuals attempt to subconsciously suppress any reminder of the initial trauma if it is a reoccurrence. Denial is very common in cardiac patients who do not want to acknowledge the gravity of their situation. Carney et al (2002:241) stress the importance of the “psychological factor of attribution”. Individuals should be assisted to understand the various symptoms of MI so that they should recognise the symptoms that are appropriate to cardiac pain. These actions also ensure that individuals take responsibility for their actions that can delay or hasten their access to life saving measures. This information is relevant to this study because the patient and/or family are experiencing fear and are very anxious during a cardiac emergency. The patient's and/or family member's call to health care call centres anticipate immediate resolution of the reason for calling. Nurses dealing with the patient need to be aware of and knowledgeable about the psychological or emotional status of the patient and/or family or others present during an ACS episode. Nurses can be involved in influencing these psychological factors by assisting the patients with appropriate coping responses, providing knowledge of the symptoms of ACS and assisting with behavioural lifestyle changes.

Greenwood, Muir, Packham and Madeley (1996:221) conducted literature reviews to establish the role of psychosocial factors (namely social support and life stress) on the incidence and mortality of CHD. Social support was found to have an influence on CHD. Social support refers to “the supportive interaction between humans” for emotional support while life stress refers to the upset caused by outside forces such as home demands or work setting. Social support is relevant to health professionals in the early management of heart disease because they will be able to identify individuals at risk of CHD and help minimise the risk. According to various studies in their review Greenwood et al (1996:222) found that men with high levels of perceived psychological stress have higher incidence rates of heart disease. The role of the family in providing love and

support is associated with decreased incidences of heart disease. Reduced emotional support and poor social integration are predictors of the incidence of coronary events.

In attempting to cope with the stress and other lifestyle behaviours, that are contributory to the development of cardiac disease and also impact on the recovery of the patient, after a cardiac event, Kreitzer and Snyder (2002:73) discuss the complementary therapies and other healing practices used by patients that contribute to reduction of stress and other life style patterns. Complementary and alternative medicines have developed parallel to conventional biomedicine. They comprise the following domains: alternative medical systems, mind-body interventions, biologically based treatments, manipulative and body based methods, and energy therapies. Patients in emergency situations often delay seeking help because they might resort to complementary and alternative medicine before resorting to conventional emergency care. Nurses in the call centre should have knowledge about the various therapies used by the patients such as prayers, meditations, and herbal treatments before they might contact the medical call centre.

#### **2.2.2.4 Examples of an empirical study on cardiac disease**

Devon and Zerwic (2004:7) conducted two prospective exploratory descriptive studies. One study focused on exploring gender differences in the symptoms of UA and the other one examined the factors influencing delays in seeking treatment during MI. A convenience sample of 338 patients diagnosed with UA and MI were recruited through the computerised census data from coronary care units and cardiac units. Eligibility for the study was based on the admitting diagnosis of MI or UA, ECG changes consistent with ST elevation or Q waves for MI and ST depression or ST elevation for UA, positive serum cardiac markers for MI and negative serum cardiac markers for UA, be of 21 years of age and above, fluent in English, having been admitted via the emergency department, having been pain free for a minimum of 12 hours and having had pain for a minimum of 12 hours. The researchers used structured interviews to identify the type, location and qualitative symptoms experienced by patients during UA and MI and the severity of the discomfort. All interviews were conducted in the patient's hospital room

following written informed consent. The data collection tool for the UA patients was a questionnaire designed by the researchers based on an extensive literature review and focused on the chest discomfort symptoms noting the severity, intensity through yes/no questions and rating scales. The MI patients were interviewed using the Myocardial Infarction Symptoms Profile (MISP) a tool designed to gather data related to the symptoms and sequence of events from the onset of discomfort to the time of access to emergency care. Both questionnaires were examined to identify comparable items. The content validity of the UA survey questionnaire was supported by literature and by computing a content validity index (CVI) based on a review of the items by experts in the field of cardiovascular nursing. The CVI for tool was 0.88. The content validity of MISP was based on testing the instrument on 22 individuals admitted to hospital with acute MI or suspected coronary heart disease. These responses assisted to facilitate comprehension and a complete description of the symptom experience. The instrument was further assessed by experts in the field of cardiology to ascertain whether the instrument was a measure of the typical and atypical symptoms experienced during the prodromal and acute stages of MI.

The demographic data in this study were analysed using descriptive statistics. The association between diagnosis and baseline characteristics (age, gender, race, educational level, history of CHD, income, and risk factors) were analysed using descriptive statistics for nominal data and *t* tests. The Chi-square was used to identify symptom differences and diagnoses. According to the results the average age of the subjects was 62 years with a standard deviation of 12.6. There were no differences between the UA and MI subjects in age, gender, race, marital status, or education. The risk factor information from patients with UA, during the interview, indicated that these patients were more likely to have a history of diabetes and a prior history of CHD. The risk factor information from MI patients' medical records indicated that patients were likely to be current smokers and have a family history of early heart disease. Chest discomfort was the most frequently reported symptom in both samples for UA and MI. This is a classic symptom for ACS. However, there is a need to inform the public about the other symptoms so that patients do not delay seeking treatment because they have no symptoms of chest pain or discomfort. The researchers concluded that an accurate

model of the symptoms of UA and MI might help to identify a subset of patients that would also accelerate diagnosis and treatment when patients present to the ED. The research findings suggest that a delay from ACS symptom onset to treatment is an important and potentially avoidable risk factor for death. The experience of chest pain in adults is associated with cardiac health problems such as ACS. This is the same complaint that the callers to the MRI Botswana medical call desk reported when requesting for medical assistance.

The researcher did not find many literature studies done on the patients' knowledge about ACS. However, ACS being a cardiac problem the researcher retrieved the following study on the patients' knowledge about their heart failure as it has applicability for this current study focus. Artinian, Magnan, Christian and Lange (2002:200-208) conducted a study on the knowledge of patients about their heart failure. The purpose of the study was to describe the patient's knowledge about heart failure and related treatment in a diverse group of patients and to explore factors associated with higher levels of knowledge. According to the results positive health outcomes for patients such as those with heart failure depend on patient participation in the selection and use of appropriately focused heart failure self-care. Knowledge of heart failure was important for patients to manage their problems. The researchers concluded that for "nurses to be instrumental in assisting heart failure patients achieve positive health outcomes, creative strategies to provide information and increase the knowledge necessary to produce heart failure self-care needed to be developed and tested". The study conducted by Artinian et al (2002) is significant for this research because ACS is a health condition that has great potential for prevention through modifiable risk factors such as behavioural and lifestyle changes. The nurse already plays a major role in the prevention of ACS and its complications in their efforts of health education to patients with disease risk factors such as hypertension and diabetes. Artinian et al used the following methodology in the study. The study was guided by a descriptive correlational design. Eligible patients were screened through chart reviews and interviews. The patients were given detailed explanations of the study and opportunities to ask questions. The participating patients gave written consent and completed the data collection instrument, in writing. The questionnaire was an investigator developed tool



comprising two sections: the first section was on socio-demographic factors such as age, gender, level of education and the second section was the conceptual basis of the instrument on the Heart Failure Knowledge Test.

### **2.2.3 Pre-hospital phase of care and the chain of survival**

In this study the pre-hospital phase of care is a primary health service at preventive and secondary level of care provided to a client within the first hour(s) of the medical emergency ACS up to the time he/she is handed over to a health facility, or recovers/dies before arrival at the hospital. This study focuses on the first phase of pre-hospital care namely: the pre-transportation phase involving calls screening and processing, and medical advice given by the nurses. Pre-hospital emergency care is important because it bridges the gap between the acute care setting and the incident scene in the community and will thus ensure continuity of care in this area of health service delivery.

There are four links in the chain of survival described by the Emergency Cardiac Care (ECC) Guidelines (2000:102:I-358) but this study focuses on the first link namely: early access, an essential component of the chain of survival. One of the principles of the chain of survival concept is that “recognition of the emergency and initiation of the chain is essential” for optimal survival. Improving the systems in the chain of survival can optimise patients’ survival from heart attacks. In this study early awareness of an emergency situation and early access to definitive care are considered to be important elements contributing to the enhancement of positive clinical patient outcomes as they influence the morbidity and mortality rates. Early access comprises the events that occur when the emergency is recognised or experienced till the arrival of emergency personnel to stabilise the patient. At this level, the patient’s or family’s and/or other(s)’ abilities to recognise the early warning signs and symptoms of a cardiac emergency to the activation of an emergency response system is a vital aspect of this link. Part of the early access link involves establishing contact with the health care facility or emergency medical service. Health care call centres receiving the emergency call should be staffed with appropriately trained personnel to process medical emergency calls appropriately.

The survival of a patient during an ACS situation is time dependent. Several studies have been done to establish sources of the delays that occur in the first link of the chain of survival during the pre-hospital phase of care. The recommendations from these studies emphasised the importance of educating the public about the importance of contacting emergency call centres or health facilities to access emergency care in the event of a cardiac emergency.

The chances of survival following an out-of-hospital cardiac emergency were very poor if there was no early access to emergency medical services (EMS) according to Calle, Vanhoute, Lagaert, Houbrechts, and Buylaert (1994:145) in a study conducted to evaluate the first link in the chain of survival in Ghent, Belgium. The researchers analysed the call processes in the EMS dispatch centre as these contributed to the outcome of the patients' cardiac emergency. The results of their study revealed that emergency dispatch centres also contributed to delays in sending the ambulance for the following reasons:

- Minimal information was available for the EMS system.
- The dispatchers underestimated the urgency of the emergency call.
- The general practitioner underestimated the pre-alarm signs.

These study results are relevant to the current study because in the medical call centre in Botswana, the nurses are engaged in call processing and are going through the same problems hence the need to conduct this study to assist with the development of procedures for improving the call screening processes.

#### **2.2.3.1 Reasons for delays in the pre-hospital phase of emergency care and suggestions for decreasing such delays**

Johansson, Stromberg, and Swahn (2004:291-300) conducted a study on Swedish patients with suspected myocardial infarction. There were 403 patients with a mean age of 64 years recruited into the study, which focused on factors related to delay times in

patients with suspected AMI. The objective of the study was to describe symptoms, symptom management, patient delay times in seeking treatment for suspected AMI, and to find explanatory factors influencing the decision making time. According to the study results, 84% of the patients indicated that the symptoms emanated from the heart. The Multiple Regression Analysis revealed that patients who perceived the “dull pain” to be nothing serious and just contacted the general practitioner and this subsequently delayed the access to definitive care. The other patients who immediately contacted the emergency services shortened the delay time. The researchers concluded that the subjective feelings of patients regarding symptom severity are an important predictor of delay times. The researchers made a recommendation for public awareness of the appropriate responses to AMI symptoms that is to call for an ambulance instead of a general practitioner.

Herlitz, Engdahl, Svensson, Young, Angquist and Holmberg (2003:1750) conducted a study in Sweden “to describe the relative impact on survival of the delay from estimated time of collapse to call for an ambulance among patients who suffer from a bystander witnessed out-of-hospital cardiac arrest of a cardiac aetiology”. From their study it was concluded that an increased delay in contacting the ambulance service decreased the patients’ chance of survival. The researchers recommended the shortening of the first link in the chain of survival by educating the public on the importance of calling emergency numbers like “112” in the event of a suspicion of acute chest pain or signs of a cardiac arrest and stressing the importance of phoning first when training lay people for cardiopulmonary resuscitation.

Meischke, Eisenberg, Schaeffer, Damon, Larsen and Henwood (1995:11) in the USA conducted a study to examine patient characteristics and situational and clinical factors that affect the utilisation of emergency medical services for symptoms of AMI. The areas of concern in the study were patient demographics, coping strategies, situational factors, prior cardiac history, perceived symptom severity, beliefs about the nature of the condition, and method of transportation to the hospital during the emergency. According to the study results almost half of the participants called EMS and there was a relationship between the utilisation of EMS with patients’ education level, medical

history of angina, severity of symptoms, the age of the patient (those who were older), suspicion of heart attack during rest, and the presence of family members and/or other(s).

Dracup and Moser (1997:253-262) conducted a study to determine the impact of socio-demographic, clinical, cognitive, emotional and social factors on patient delays in seeking treatment for symptoms of AMI that is from symptom onset to arrival. According to the study, patients who delayed to seek care for symptoms of AMI were older, had lower incomes, diabetes, symptoms were on an off, wanted to wait for symptoms, were worried about troubling others, feared what might happen if they sought treatment and did not realise the importance of the symptoms. From this study delay is related to how the patient views the seriousness of the symptoms. The severity of the symptoms and the knowledge of the symptoms were not related. Both cognitive and emotional responses affected the patients' decisions to seek treatment.

In another study by Meischke, Ho, Eisenberg, Schaeffer and Larsen (1995:193) in the USA, the researchers sought to determine the reasons why patients who were admitted in King County, Washington, over a 15-month period with AMI delayed seeking medical care or did not call 911. Using the hospital records Meischke et al (1995:194) looked for information on potential participants in the following areas: patient demographics, cardiac history, symptoms, time of acute symptom onset, time of emergency department arrival, method of transportation, discharge diagnosis, and hospital outcome. Telephone interviews were then conducted with the participants to determine the background information on the events preceding hospitalisation, reasons why patients delayed seeking care and did not call the emergency numbers 911 for urgent medical assistance. The patients who were interviewed gave the following information as reasons for delay:

- Patients thought that the symptoms would go away
- The symptoms were not severe enough
- Symptoms were caused by another illness

The following information was given as reasons for not calling 911:

- Symptoms were not severe enough
- Did not think of calling 911
- They thought self-transport would be faster because of the close location to the hospital.

Meischke et al (1995:196) state that the knowledge of reasons of a patient's delay in seeking medical care or not to call 911 can assist health care providers to focus more on how to improve or enhance patient access to definitive treatment for AMI.

Many studies have been conducted on how to shorten the time between onset of symptoms and treatment at the clinic or hospital. A study by Alonzo and Reynolds (1997:263-272) in a study titled "Responding to symptoms and signs of acute MI - how do you educate the public: a social-psychologic approach to intervention", proposed a model as an intervention strategy to provide further understanding and guide for interventions to reduce the care seeking interval from AMI onset to accessing definitive care as a means of reducing mortality.

Johansson, Stromberg and Swahn (2004:5) conducted a descriptive survey study on 114 patients to explore the choice of transportation mode to hospital in patients experiencing acute myocardial infarction in Sweden. According to the results of this study 32% of the participants were not aware of the importance of a short delay when experiencing an AMI, only 60% called the emergency service number, 112. Johansson et al (2006:11) concluded that the public should be educated that ambulance transportation provides the initial aspect of assessment and stabilisation in pre-hospital emergency care.

Griffin, Davis, Gant, Savona, Shaw, Strickland, Wood and Wagner (1999:261-269) conducted a descriptive study on AMI patients to determine treatment times at a community hospital that does not have pre-hospital ECG transmission and to determine

the effect of time to first hospital ECG on overall door to drug time. According to the study results there was shorter times associated with younger patients and those who used the ambulance as a means of transportation to the hospital. The researchers recommend streamlining of protocols and the exploration of pre-hospital initiatives that may result in a significant reduction in time to accessing definitive care.

Dracup, McKinley and Moser (1997:232) conducted a study to examine the reasons for increased pre-hospital delays in Australian patients with symptoms of AMI and to determine if the characteristics contributing to delays in seeking treatment for AMI were similar for Australian patients. This information contributed toward the development of appropriate patient and community education programmes. The results of their study indicated that patients should be told that AMI presents in various forms even within the same individual and that they should not hesitate to seek medical treatment when symptoms occur. Establishing contact with the ambulance service was considered the best option because of the associated access to early treatment and the reduction in treatment delay times. The participants in the study by Dracup et al (1997:235) stated that there would have been shorter delays in seeking health care if they had been well prepared. They requested health professionals “to take a more proactive and intensive approach to educating patients about the nature of MI signs and symptoms and the steps to take to receive early treatment” (Dracup et al 1997:235). The researchers advised health professionals to be aware of the patients who are reluctant to associate MI symptoms as being of cardiac origin, and therefore recognise the need to provide guidance for such patients to enhance early access to definitive care.

A study investigating how patients’ emergency department experiences were related to their delayed actions in response to future symptoms of AMI was conducted by Meischke, Mitchell, Zapka, Goff, Smith, Henwood, Mann, Lovell, Stone and Taylor (2000:50) in the USA. The objective of the study was to investigate the patients who had visited the emergency department with a chief complaint of chest pain, how their affective response to the ED experience and their satisfaction with ED staff communication, related to their intentions to delay actions in response to future heart attack symptoms. The assumption was that a negative affective response to the ED

visit, and low satisfaction with communication with ED staff, would be positively related to the intention to delay seeking care for future symptoms of AMI. This would therefore assist health care providers, treating chest pain patients in the ED, to improve their care delivery skills.

Ruston, Clayton and Calnan (1998:160) conducted a qualitative study to explore the circumstances and factors that explain variations in response to a cardiac event and to identify potentially modifiable factors. According to the study results there were misconceptions about the presentation of a heart attack. The subjects related the cardiac event as a dramatic event involving collapse not as an evolving event that they had experienced. The subjects were asked to describe their decision making at the time of the cardiac event, what actions and experiences led to the cardiac event, when the event began, what they thought the problem was, whom they talked to about the event and the outcome of the interaction, when they decided to call for help and who made the call. The subjects were also asked about their knowledge of cardiac symptoms and treatment and their personal and family details. According to the study results the most important factor influencing time taken between the onset of symptoms and seeking medical help is that patients and others recognise the symptoms as cardiac in origin. It was identified that symptom recognition and rapid access to treatment could take place at various points in the process. The myths that a heart attack is a dramatic event needs to be dispelled and public perceptions of a heart attack and its associated symptoms need to be changed.

In suggesting ways to improve patient access to emergency services in the event of a cardiac emergency Blank, Doe, Keyes, Labrie, Sabourin and Patel (1998:316) developed a discharge teaching video that emphasised calling 911 in the event of a possible heart attack and a written action plan placed near the telephone. This is supported by Alspach (1999:10) who writes that in the care of patients who are vulnerable to AMI a patient education program by critical care nurses can help to reduce the mortality and morbidity associated with AMI.

A study was conducted by Meischke, Eisenberg, Schaeffer and Henwood (200:312) to test the effectiveness of a "Heart attack survival kit", among elderly patients in the USA. The objectives of the study were to increase the elderly patients' awareness of the need to call 911 and to take an aspirin in response to a cardiac emergency. The telephonic interviews, asking the participants how they would respond to a cardiac emergency, indicated that the education of the elderly was more effective in those who were visited by a paramedic than those who had to read the information from the mail that had been sent to them.

The public's lack of awareness about heart attacks is one of the major reasons why there are delays in seeking medical assistance. Faxon and Lenfant (2001:1210) write that patients should be made to understand the importance of calling a 911 service line in the event of a heart attack in order to save lives and should avoid driving to the hospital with friends or relatives or by themselves. Medical personnel should help patients to create a heart attack survival plan, which demands an improvement of the awareness of heart attack symptoms and a facilitation of access to definitive care. This calls for the involvement of the public in education sessions about the warning signs and symptoms of a heart attack and the need for early and prompt activation of an emergency line or a health facility when symptoms are observed. Faxon and Lenfant (2001:1210) encourage the use of the four components of the "TIME" method developed by Brown, Mann, Daya, Goldberg, Meischke, Taylor, Smith, Osganian and Cooper (2000:173-178), researchers for the Rapid Early Action for Coronary Treatment (REACT) study as follows:

- Talk to patients about the risk of a heart attack, how to recognise the symptoms of AMI, and the proper actions to take if they suspect symptoms/signs of a heart attack
- Investigate patients' feelings about a heart attack and barriers that prevent them from seeking prompt medical help when they are having a heart attack
- Make, together with patients an action plan for dealing with a heart attack and rehearse the plan



- Evaluate your patients' understanding of the risks involved in delaying treatment for AMI.

Patients need to be encouraged to report any suspicions of a heart attack even if they are false alarms. It is also important to note that the educative messages and delivery approach will be differentiated according to with the "patient's age, sex, socio-economic status, and cultural background" (Faxon & Lenfant 2001:1210).

Kucia, Taylor and Horowitz (2001:186-190) conducted a pilot study to determine the effect of a coronary care-trained nurse (CCTN) on transfer times of patients presenting with ACS from the emergency department to the coronary care unit for definitive cardiac treatment. The study comprised patients who came to the emergency department with a complaint of chest pain. The CCTN with experience worked in the emergency department and saw patients over a selected number of hours per week and a non-CCTN saw patients over the same period. Of the ninety-one patients who were seen in the emergency department with possible ACS, forty-seven were diagnosed with Unstable Angina Pectoris and forty-four were diagnosed AMI. There was a slight difference in the mean times in minutes within which patients were transferred to definitive cardiac treatment. This study revealed a non-significant trend suggesting that definitive cardiac treatment is hastened by the allocation of nurse with coronary care experience. The researchers recommended further research about this possibility.

#### **2.2.4 Telephonic patient assessment**

In the Emergency Nurses Association (ENA) (2004) position statement telephone triage is defined as "the practice of performing a verbal interview and making an assessment of the health status of the caller".

Walhberg (2004::17) explored the core of telephone advice nursing from different perspectives. She attempted to explore and identify

- problems that prompt people to contact a health care call centre

- the outcomes of these contacts
- the callers' experiences of the contact with a health call centre
- the basis of nurse assessments.

The current trend in countries such as the USA, UK, Sweden, Norway and South Africa is that most emergency situations are reported through health care call centres. Walhberg (2004:10) notes that telephone technology is an important component of telenursing. Patients access health care in emergencies through the designated call centre or emergency department phone numbers. This also applies to Botswana where the callers with medical emergencies phone MRI Botswana Ltd emergency numbers 911 or 112 or the designated phone number for the other health facilities. These medical or health call centres operate 24-hours a day.

According to Walhberg (2004:10) care-seekers consult nurses through the telephone, seeking advice because they are unable to deal with the health problems they are experiencing. This trend in health care, of seeking assistance by telephone, has created a new cadre of nurses called "telephone nurses" or "call centre nurses". Telephone nursing comprises the following aspects: triage, advice, support, information and education, coordination of activities and referral of care-seekers to other agencies. Walhberg's (2004) study proved useful for this study because nurses need to have knowledge about every aspect of health care, because people call for varied health problems and that the telephone nurses' basis for assessment was very broad. Walhberg (2004:42) comments that telephone advice nursing will develop as more callers learn to contact the health care call centre for new and unknown health problems.

Nurses use their knowledge of signs and symptoms of ACS, and risk factors to assess a patient's vulnerabilities or characteristics during an ACS situation. The telephone nurses, however, do not have direct contact with the patient, as would be the case in a clinic or health facility set-up. In this telephone encounter the nurse uses her imagination to visualise the emergency situation of the caller. Pettinari and Jessop

(2001:668) conducted a study to identify the perceptions of nurses of interactional practices used to manage the absence of visual cues when assisting callers to the NHS direct line in the UK. These authors concluded that nurses learn to create mental pictures of emergency situations. However, not much is known about the interactional practices that help the nurses to “shape a conception” of the callers situations in these non-face-to-face encounters.

Pettinari and Jessop (2001) conducted a qualitative analysis of interviews with new nurses working at the NHS direct telephone consultation service. The second interview was conducted six months after the first. Visualisation of the caller, and his/her setting or situation, was closely linked to the interactional practices carried out between the nurse and the caller. There was a range of interactional activities done by nurses to help callers describe more accurately what the nurse did not see. Nurses altered their responses to the situation in a non-face-to face encounter following the cues from the caller’s description of the situation. The interactional activities guided the nurse to manage the emotional aspects of telephone nursing when providing information, giving advice, reassuring the caller, building trust and support. The results of the study indicate that telephonic nurse-patient interactions hone the skills of nurses in their patient management in the absence of visibility. In emergency call centres like MRI Botswana Ltd, the nurse visualises the caller within an ACS situation based on her knowledge of ACS. During this emergency interaction the nurse will be using her knowledge of ACS and her intuition to identify other unspoken issues, utilising speech characteristics or background noises.

Nurse telephone consultation ensures that all callers are given faster access to health care such as ambulance services. Lattimer, George, Thompson, Mullee, Turnbull, Smith, Moore, Bond & Glasper (1998:1054) note that telephone nursing services are better established in the UK, Canada, USA and the Scandinavian countries than in most other parts of the world. The authors conducted a study to evaluate the safety and effectiveness of nurse telephone consultations. The nurse telephone consultation service was part of the general practice cooperative. Experienced and specially trained nurses, who received, assessed and managed calls from patients or their carers,

operated the telephone consultation service. Some of the management options used by the nurses included telephone advice or referrals to emergency services or advice to patients to attend accident and emergency units in their areas. The nurses assisted the clients using the decision-making software. Lattimer et al (1998:1055) conducted this study in Wiltshire, in the UK in a 55-member general practice cooperative that was serving 97,000 patients. The study sample was made up of all patients who had contacted the service during the trial year. The study design was a block randomised control trial over a year of 156 matched pairs of days and weekends in 36 blocks where one of each matched pair was randomised to receive the intervention.

Nurses who participated in the study were trained in the skills required for telephone consultation before the trial. The nurses who received the calls performed a systematic assessment of the each caller's problem and intervened appropriately guided by the telephone advice system. Lattimer et al (1998:1056) used the measures of process and outcome in the study as follows: process measures were "age and sex of patients in comparison with the registered population; the most frequently presenting complaints; the date and time of telephone calls; the number of calls handled entirely by nurses; the number of calls handled by a general practitioner; and whether the case was managed by advice or by attendance at a surgery or primary care emergency centre". Outcome measures were "numbers of deaths among patients who had contacted the service or for whom the service had been contacted within the preceding seven days, the number of emergency hospital admissions within 24 hours and three days after a call...." (Lattimer et al 1998:1056). The data were transcribed into the SPSS for analysis. A computerised search and manual processes were used to search and compile the details of the callers. Confidence intervals were calculated. The data were presented as "simple descriptive statistics and as a paired comparison within randomised blocks of two weeks, with median differences between control and intervention weeks for each management option" (Lattimer et al 1998:1057).

Woolwich (2000:475) writes that some nursing staff in the A&E departments of some health facilities in the UK are engaged in the triage of patients complaints and injury. Triage is a concept that is derived from the French word "tier" that means "to sort" and is

used by the medical teams to categorise patients' access levels to treatment. According to Woolwich (2000:476) the purpose of triage is to reduce the waiting time for patients. Triage aims to "make the best possible use of the available nursing and medical personnel and facilities". This is an opportunity for all A&E patients to access the health care services. Nurse triage has developed to become a part of the role of the nurse in the A&E. Nurses in the A&E use triage to assess patients coming to their department for health services, as a guide to determine which patients demand immediate care and need to be assisted or referred to the appropriate level of service. Woolwich (2000:476) states that triage involves deciding the priorities for the therapeutic interventions for the client(s) and also determining the place where these interventions should be carried out. Patients' access to the appropriate first aid measures is made possible through triage. Patient triage assists the nurse to identify the chief complaint from the patient during history taking.

The form of triage commonly practised by nurses involves face-to-face (direct) triage. However, in call centres, ER and NHS nurses who do call processing are engaged in telephone triage, an indirect form of triage that has developed over the last years. According to Wheeler & Siebelt (1997:37) the skills used by the nurse in telephone triage are different from those required in direct triage. Woolwich (2000:478) states that in attempting to standardise the assessment of patients and the subsequent collation of information various assessment tools assist nurses to make decisions about the approach to patient care in emergent situations. One such tool used by nurses in telephone triage is the mnemonic "PQRST" although Wheeler and Seibelt (1997:38) do not recommend this but another assessment tool "SCHOLAR". Nurses are guided to make decisions of their triage by various methods such as symptoms clustering or using clinical portraits. Symptom clustering is described as a "method used to assist in determining the clinical need of the patient" (Woolwich 2000:479). The nurse uses knowledge and experience to group the presenting symptoms and to identify the critical nature of the patient's situation. The level of experience of a nurse engaged in triage, allows for the ability of the nurse to use the necessary assessment tools and decision-making skills. For instance, in cardiac emergencies, not all ACS patients present with clear-cut pictures of the typical symptoms. The triage nurse will need to employ her

skills to probe for the relevant data, her sense of intuition and skills of questioning, in order to make a triage decision. The experience of a nurse in a clinical area, such as emergency nursing, enables to the nurse to collect data with a minimal number of valuable questions.

Dale, Crouch and Lloyd (1998:39) in the UK conducted an evaluation of an out-of-hours telephone triage and advice service in general practice where the nurses were guided to assess patients and call outcomes based on a computerised decision support tool. The authors noted that due to the expansion of the out-of-hours health services, several services use nurses to assess and advise callers. Nurses proved to be reliable in providing safe and effective telephone assessment and advice. According to the authors in Sweden, nurses at health centres deal with about 20 million telephone calls every year. The authors conducted an assessment of an out-of-hours service in West London. The nurses staffing the service were experienced in community nursing and/or general practice, as well as trained in telephone skills and information technology to enhance the nurses to use the telephone advice software. This model of care has been tested in various settings and has yielded positive results. Nurses' assessment skills, advice and thorough documentation of the telephone consultations, have been consistent and reliable. According to the researchers their study aims were to assess the effectiveness of this model of care as well as, to identify training and organisational issues of consideration in order to use this type of service. The researchers intended to achieve the following objectives: "to describe the way that calls are assessed, triaged and advised, and how this varies with the characteristics of the patient, such as age and symptoms presented, and the nurse managing the call" (Dale et al 1998:40).

Fatovich, Jacobs, McCance, Sidney and White (1998:143) conducted a study to evaluate the telephone advice given in a community based emergency department in a semi-rural/outer metropolitan setting in Perth, Australia. The researchers evaluated the calls to establish the quality and appropriateness of the telephone advice given. The findings of the study revealed that callers in an emergency were only able to think of contacting the ED, as it was accessible on a 24-hour basis perceiving the ED to be a "safety net" for the community. Fatovich et al (1998:143) recommended the importance of guidelines and documentation of all calls. Telephone advice is not an easy skill but it

is very important for the nurses to enhance their skills. When used properly the telephone facilitates patient care and assists the nurse to make the best of the available human resources.

The nurse has to make rapid decisions to facilitate access to definitive care for patients during ACS situations. There is an increasing demand for telephone advice. The nurse's skill of telephone triage in the assessment of cardiac emergencies is very important. According to the ENA (2004) position statement on telephone advice nurses are expected to recognise the urgency of a situation in order to determine whether the problem is life threatening and institute critical life saving measures telephonically. Wardrobe, Laird and Driscoll (2004:94) state that in community emergency care "a systematic approach to assessment and management is essential in ensuring that patients are receiving the correct care, in the correct place and at the correct time".

### **2.2.5 Clinical patient outcomes**

An outcome is the end result of health care. The selection of outcomes, that are appropriate and are targeted to meet the patient's needs, is an important goal. In the provision of health care, positive patient outcomes are definitely expected by both the care provider and receiver. Disciplines are being expected by the public to identify the outcomes of the services provided. In the Synergy Model outcomes "are whatever the patient says they are" Kaplow (2003:30). According to Whitman (2004:293) "achieving optimum patient outcomes has always been the primary focus of health care providers". Nurses also have expectations of positive patient outcomes from their interactions with patients/clients. Kaplow (2003:30) notes the following outcomes for patients: functional change, behavioural change, trust, satisfaction, comfort and quality of life.

Whitman (2004:293) conducted a literature review on health care outcomes in nursing. There are 10 categories of generic health care outcomes for cardiac surgery patients which are disease specific depending on the illness or disease state. These health care outcomes are mortality, morbidity, and cost of care, symptom control, functional status, knowledge, quality of life, behaviour, home function and psychological status. For each

generic outcome category there is a defined specific outcome. Although these outcomes refer to patients following cardiac surgery they can also be applied to other patient situations. In this study the aim is to assist the nurse provide patient care that will enhance positive clinical patient outcomes for the patient during an ACS in the pre-hospital phase of care.

Brice, Valenzuela, Ornato, Swor, Overton, Pirallo, Dunford, Domeier and Turtle Creek Conference II (2001:65) write that the morbidity and mortality of patients with AMIs that occur in the community may be improved by optimal pre-hospital cardiovascular care. Time delays according to the authors are associated with poor morbidity and mortality rates. In assisting patients during an ACS the nurse needs to understand that morbidity outcomes are related to physiologic outcomes in cardiac patients. According to Whitman (2004:294) descriptive and interventional research in nursing has assisted in the “development of standardised evidence-based protocols” that nurses can use to guide patient care enhancing physiologic outcomes. Other literature findings by Whitman (2004:294) reveal “the number and types of nurses impacts mortality rates”.

Studies reviewed by Whitman (2004:295) for instance descriptive studies that were done to compare the effect of usual care by home visit nurses compared to phone follow-up by clinical nurse specialist in order to assess post-discharge outcomes. The studies were inconclusive as they yielded mixed results. According to Whitman (2004:296) the quality of life outcomes in nursing studies incorporate “symptom, functional and psychological outcomes to measure quality of life”. Healthy lifestyles are an important factor in the prevention or minimisation of risk for ACS occurrence. In the literature review by Whitman (2004:296) health promoting behaviour and risk factor modification are behavioural activities that are studied but there remains a need for more interventional work to determine activities which will assist patients to achieve healthy lifestyles.

Various studies reviewed by Whitman (2004:296), report nursing interventions that assist or improve a patient's and the family's functions. The availability of social support, use of coping strategies, personal resources and knowledge of what to expect are



identified as key concerns aiding home functioning levels. Families need to be assisted to cope with an ACS situation that will enhance the patient's ability to adapt, cope, as well as to minimise fear and anxiety. Enhancing a patient's psychological status during an ACS is essential because during this time the patient is experiencing acute chest pain, is fearful and anxious due to the impending sense of doom from the pain or the reoccurrence of the ACS episode. Chest pain is one of the major symptoms of ACS.

The health care outcome of symptom control aims at assisting patients to manage their pain thus preventing or minimising complications arising from ACS. Other studies reviewed by Whitman (2004:295) on functional status outcomes, focus on the patient's activities of daily living as well as on general activity levels. In this study the assumption is that patient involvement in care and decision-making ability to cope with ACS situation are indicative of the patient's ability to continue with activities of daily living. Whitman (2004:297) writes that there are a number of coping strategies used by patients such as information seeking, avoidance, support-seeking from others (family or friends). Positive outcomes are associated with patients who are optimistic and less anxious. An example is given of a research study demonstrating how phone calls to patients by health care providers helped to decrease patient's anxiety levels (Whitman 2004:297). This calls for interventions and strategies that enhance positive patient outcomes. The patient's knowledge about their situations is vital for optimal patient outcomes as the patient is a critical link in the health care process. In this study the patient is expected to have knowledge of an ACS situation; the major signs and symptoms, risk factors, the available emergency health care services. According to Brice et al (2001:66) facilitating access to care to reduce the delays is associated with the following interventions: maximisation of patient education assisting patients to recognise early symptoms of AMI and making decisions to seek assistance as well as providing patients with information on the early activation of 911 systems.

**Table 2.1: The generic and specific outcomes guiding the nurse managing an ACS situation**

<b>Generic Outcomes</b>	<b>Specific Outcomes</b>
Mortality	Early access to EMS/911/clinic at onset of chest pain symptoms.
Morbidity	Minimise complications of the respiratory and cardiac systems
Cost of care	Prevention of cardiac arrest: minimising need for hospitalisation.
Symptom control	Ability to control occurrence of ACS pain by daily aspirin use or TNT when necessary.
Functional status	Ability to conduct day to day domestic and work chores.
Knowledge	Use of available resources – knowledge about ACS signs and symptoms, about chest pain significance and action to be taken, about emergency health care services, about reducing risks for ACS
Quality of Life	Improved well being and general health status.
Behaviour	Health promotion behaviours to minimise or prevent ACS risk
Home function	Enhanced family support and involvement in patient modification of lifestyle
Psychological status	Adaptation and coping strategies Ability to cope with ACS situations, manage fears associated with potential recurring ACS situations.

The positive clinical outcomes for the patient from the transitions and stressful events are varied ranging from regaining of health to a peaceful death. In an ACS situation the patient clinical outcomes are influenced by various factors such as patient, family and the nurse's knowledge about the situation including that this life-threatening situation requires urgent care using the available resources.

Based on the recommendations for the appropriate management of ACS, in the pre-hospital setting the nurses can be guided by the Synergy Model in patient assessment to identify patients at risk of ACS, initiate early treatment and refer those manifesting with ACS; thereby minimising the risk of subsequent complications and enhancing patient outcomes.

The literature review assisted the researcher to shape the following steps of this research study:

- Designing of the data collection tool
- Reviewing the data collection tool by a statistician and by professional nurses
- Requesting permission to access the medical call centre client records of MRI Botswana Ltd
- Telephoning of potential participants for inclusion in the study
- Pre-testing of the tool on the potential pool of participants
- Collecting of the data from the participants using the structured interview schedule
- Analysis of the data collected using the Statistical Package for Social Sciences (SPSS) with the help of a statistician.

## **2.3 SUMMARY**

In this chapter the researcher reviewed the literature to gain insight into what is known about ACS management in the early phase of onset of symptoms. The information from the literature reviewed provides the researcher with information on ACS manifestations and management, the importance of early treatment for acute coronary situations, and

the recommendations for appropriate assessment of the patient. The researchers recommend the establishment of pre-hospital interventions to improve patient access to definitive cardiac management. This information will guide this study and the researcher will propose ways for improving assessment and management of the ACS patient in the pre-hospital phase of care. The various studies in this literature review guided the researcher on the methodological approaches used in this study. Chapter 3 will discuss the research methodology adopted by the researcher to study the characteristics of the patient during an ACS situation in order to optimise patient outcomes in the pre-hospital phase of care.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.16 INTRODUCTION**

This chapter describes the steps, procedures, and strategies for gathering and analysing the data that were used in this research project. The research design, sampling procedure, data collection, and data analysis methods and procedures chosen by the researcher to guide the investigation are described.

#### **3.17 THE RESEARCH PURPOSE**

The purpose of this research was to explore, identify, and describe the characteristics of patients with an ACS situation during the pre-hospital phase of care and to explore the available resources for these patients. Based on these identified characteristics and resources, propose a systematic approach to data collection/assessment by nurses in the pre-hospital phase of care that could contribute to more positive clinical outcomes for ACS patients in Botswana.

#### **3.18 CONCEPTUAL MODEL FOR STUDY**

In this study the conceptual framework comprised patient characteristics of the Synergy Model, pre-hospital care and the elements of the chain of survival, the nurses' skills of telephonic patient assessment and skills and knowledge of ACS. The conceptual framework guided the researcher to use the patient characteristics of the Synergy Model to explore, identify and describe the profile of the patient who contacted the MRIB Ltd medical call centre in Botswana with an ACS during the pre-hospital phase of care. Based on these results the researcher would make recommendations for the development of a data collection guide for use by the nurse during the call-screening process.

### **3.19 RESEARCH OBJECTIVES**

The objectives for this research project were as follows:

- Explore and describe the characteristics of patients who have experienced ACS.
- Make recommendations for an organised data collection guide for use by nurses in the pre-hospital phase of care.
- Assist nurses to make more effective decisions based on the data collected.

### **3.20 RESEARCH DESIGN**

The following section contains the definition of a research design as well as the selection of a design, rationale for the choice thereof, and description of the concepts used in the design.

#### **3.20.1 Definition**

Polit and Hungler (1999:36) state that a research design is an overall plan for obtaining answers to questions being studied, and handling difficulties encountered during the research.

#### **3.20.2 Selected design**

A quantitative, exploratory and descriptive survey was used to explore and describe the characteristics of patients who had experienced ACS situations. (See description of terms and application in section 3.5.4).

#### **3.20.3 Rationale for choice of design**

This research design was selected for the following reasons:

- There was limited literature available to describe the characteristics of the patient with ACS experience in Botswana. Therefore a descriptive exploratory design would assist to collect new information.
- This design would help the nurse to explore, identify and describe the characteristics

of the patient with ACS. The nurse will utilise the knowledge of the patient characteristics to develop a profile of the patient during an ACS, to determine the available resources, and to use this data to provide the required service during the prehospital phase of care.

### **3.20.4 Description of the concepts used in the selected design**

In the following section, the descriptions of the concepts and their application to this research will be provided.

- **Quantitative research**

Burns and Grove (1997:27) define quantitative research as “a formal, objective, systematic process in which numerical data are utilised to obtain information and describe variables and their relationships”. Quantitative research methodology provides objective measurement of the data from the patients. Quantitative research was appropriate for this study to provide quantifiable data from the patients with ACS experience that could be measured objectively to aid the identification, exploration and, description the characteristics of patients with ACS experience. The generation of the research data on patient characteristics with ACS experience would contribute to the development of a refined medical call centre and nursing data collection and assessment processes. The research findings from the quantitative data would assist the researcher in this study to make inferences to a larger population.

- **Non-experimental**

According to Polit and Hungler (1999:155) in non-experimental studies the researcher observes the phenomena as they naturally occur without intervening in any way. Data are collected without making any changes or introducing any treatments. Non-experimental research is suitable for the study of human beings in nursing, because, human characteristics are inherently not subject to experimental manipulation. In this study, in order to describe the characteristics of patients with experiences of ACS situations in the pre-hospital emergency settings, a non-manipulative approach was

appropriate as there was no alteration to the behaviour of the patients. Secondly, due to ethical considerations the manipulation of many human variables is not morally acceptable because of the potential for physical or mental harm to the participants. Thirdly, the research constraints posed by an experimental approach such as time, personnel, type of participants and funds, made a non-experimental approach more feasible.

- **Exploratory**

Exploratory research aims at exploring the dimensions of a phenomenon in a way in which it is manifested (Polit & Hungler 1999:17-18). The exploratory element in the design assisted the researcher to meet the study purpose of exploring the characteristics of the patient in ACS that influence positive clinical outcomes in the pre-hospital phase of emergency care. In this study the researcher explored the literature for the background on patients with experience of ACS and from the data collected the level of vulnerability of the patient.

- **Descriptive survey**

The descriptive element in the design implied describing the phenomenon, within a given population, without attempting to establish causality or manipulation of the patient characteristics (Polit & Hungler 1999:16-17). This statement is consistent with the view of Burns and Grove (1993:29, 1997) namely that in this design the researcher intended to describe the characteristics of patients with ACS during the pre-hospital phase of care based on the collected data. The descriptive survey provides the opinions of the respondents with reference to the patient characteristics during an ACS situation. The descriptive survey also assisted the researcher to achieve the objectives of this research (see section 3.4) describing the characteristics of the patient influencing the outcome of ACS in the pre-hospital phase of emergency care.

### **3.21 RESEARCH METHOD**

In this section, the methodology, the study population, the sampling process and the



sampling procedure, the setting, the development of the instrument and ethical considerations are presented.

### **3.21.1 Definition of the term “methodology”**

Methodology refers to the steps, procedures, and strategies for gathering and analysing the data in a research investigation (Polit & Hungler 1999:707). In this research, the methodology of quantitative research studies has been used to guide the researcher in conducting this study.

### **3.21.2 The Population and sampling methods**

The population is the total group of persons that meets the designated set of inclusive criteria established by the researcher (Burns & Grove 1997:293). The sample refers to the small portion of the population that the researchers are studying in the particular site or setting (Burns & Grove 1997:293; Roberts & Burke 1989:213). The study population is defined as the entire set of individuals who have some common characteristics (Polit & Beck 2006:56).

#### **3.21.2.1 The research population group**

The researcher anticipated that over the period January 2004 to June 2005 a sufficient research population would be obtained. The research population for this study were persons who have had experiences of ACS situations as patients. The population was derived from the medical call centre records of MRIB Ltd, over the period January 2004 to June 2005.

#### **3.21.2.2 The sampling process**

Sampling refers to “the process of selecting a number of individuals from the delineated target population in such a way that the individuals in the sample represent as nearly as possible the characteristics of the whole population” (Dempsey & Dempsey 1995:80).

Purposive and convenience sampling was used in this research. Purposive sampling is described by Polit and Hungler (2006:264; Burns & Grove 2001:376) as a type of non-probability sampling method in which the researcher selects the respondents for the study on the basis of personal judgement about which ones would be most representative or productive. Purposive sampling according to Parahoo (1997:223) “uses the judgement of the researcher to select those respondents who know the most about the phenomenon and are able to articulate and explain nuances to the researcher”. The patients with experience of ACS were approached to participate in the study. Purposive sampling assisted the researcher to obtain as many perspectives as possible from the participants. Convenience sampling was used to access the accessible population who said they would be available for the interview during the period of data collection scheduled by the researcher.

### **3.21.2.3 Sampling procedure**

Sampling of the participants for this study was done as follows:

- Permission of the MRI Botswana Ltd Call Centre Manager to utilise the medical call centre patient registers to identify the potential participants of the 105 registered patients was obtained.
- The researcher compiled a list of every patient who called the MRI Botswana Ltd medical call centre with a complaint of chest pain or collapse related to chest pain.
- Possible participants were selected after the researcher had categorised the participants according to the criteria described under section 3.6.2.4.
- The researcher contacted by telephone the listed potential participants to seek their permission to be recruited to participate in the study. The researcher also informed the potential participants about a face-to-face data collection exercise at a later date.
- The researcher compiled a list of all participants who agreed to participate in the study.

### **3.21.2.4 Criteria for the selection of participants**

According to Holloway and Wheeler (1996:75) the “good” respondent is the one who is willing and is able to critically examine the experience and his/her response to the situation as well as being willing to share the experience with the researcher. To be included in the study the respondents had to meet the following inclusive criteria:

- A patient had to either be male or female, who had experienced ACS in the previous year in the preceding 18 months (January 2004 – June 2005).
- The patient and/or family made the initial call for assistance to the MRI Botswana Ltd medical call centre.
- The participants were willing to participate in the study and to give written consent (See Annexure C).
- The participants were able to understand (verbal) spoken English and respond to a verbal interview.

### **3.21.2.5 The number of Participants**

From the sampling processes the researcher intended to recruit between 40 and 50 participants for the study because of limited funds. The number of participants was met according to availability of the participants who were willing to participate in the study.

### **3.21.3 The Setting**

The setting refers to the place where the research data are collected. The data were collected from the respondents at the agreed location convenient for each participant. The study was conducted in Gaborone, the capital city of Botswana.

MRI Botswana Ltd a private emergency medical service company, providing emergency medical services involving road and air ambulance transport, and first aid training also operates a 24-hour medical call centre that is staffed by registered nurses. The records of patients seeking emergency assistance are maintained in the client register and in

the patient files. The client register had 105 patients documented as seeking assistance for chest pain (non-trauma related) the major typical symptom for ACS. The records of patients calling/seeking emergency medical services from MRI Botswana Ltd is kept by the nursing sister on duty in the records holding room.

### **3.22 DATA COLLECTION**

The process of collecting data for this study was conducted as follows:

#### **3.22.1 The instrument and techniques of exploration used to generate data**

The data collection instrument was the structured interview schedule from which questions were asked to each participant. The structured interview schedule assisted the researcher to ask the participants identical questions and to control the interview within the perspective of the study and collect similar types of data from all the participants which facilitated the processes of comparing of responses and data analysis (Polit & Hungler 2006:294, Burns & Grove 2001:421; Parahoo 1997:87; Brink & Wood 1994:58).

#### **3.22.2 Discussion of the instrument (type of questions and items included)**

The following discussion presents the structure of the instrument, development of the instrument, motivation for its use and anticipated problems during data collection.

##### **3.22.2.1 *Structure of the instrument***

The structured interview schedule used in this research comprised of two sections, the first part (Part A) was for the collection of demographic data and the second part (Part B) for the collection of quantitative data on the characteristics of the patients with an experience of ACS in pre-hospital emergency care (See Annexure D - Structured interview schedule).

The biographic data section of the interview guide, referred to as Part A, with question items 1 to 11, had more structured questions. An investigator-constructed biographic

data form with closed-ended questions provided information about the characteristics of the participants under study namely, age, sex, marital status, race, religion, type of occupation, income source and range, employment status and educational background. The demographic characteristics provided relevant information related to the biological, social and economic factors contributing to the level of vulnerability for each patient's characteristics as described in the Synergy Model.

The second part of the structured interview guide, referred to as Part B with questions items ranging from 14 through to 61, was developed from the existing literature to provide baseline data from which the interview would proceed. The content for the items for the interview schedule were formulated from the review of literature pertaining to ACS management in the pre-hospital phase of emergency care and the focus of the questions was guided by the patient characteristics from the conceptual framework of the AACN Synergy Model of Patient Care. Due to failure to identify an existing tool a new instrument was designed. The questions comprised both closed and open-ended questions. The questions would assist in the collection of the relevant data for development the profile of the patient with ACS during the pre-hospital phase of care and contribute to the development of a data collection guide for use by the nurse during call screening and call processing to determine the level of vulnerability for each patient characteristics in order to enhance positive clinical patient outcomes.

#### **3.22.2.2 *Development of the instrument***

The following aspects were considered during the development of the instrument:

- The demographic data comprised closed-ended items.
- The development of questions on the structured interview schedule was guided by the study problem, purpose and research objectives.
- The questions on the structured interview schedule were organised based on the biological, social, economic and psychological factors and patient characteristics of Synergy Model.
- The language of communication was English for the purposes of communication to

cater for the varied backgrounds of the potential participants. English is also an official language in Botswana and is used by the local citizens.

### **3.22.2.3 *Motivation for using a structured interview schedule***

The structured interview schedule as a method of data collection was chosen for the following reasons:

- The structured interview schedule is suitable for this research because it guided the researcher to be focused on the area of study during the interview and helped to draw the desired information from the participants (Polit & Hungler 1995:332).
- The use of the interview method is time consuming. However, the decision to use this method of data collection was also influenced by the following factors presented by Polit and Beck (2006:296):
  - There is a high response rate during face-to-face interaction.
  - There is less chance of misinterpretation of questions by the participants.
  - The researcher is able to judge the participant's level of understanding during the interview.
  - The researcher is able to elicit the perceptions, opinions, and feelings of the participant and clarify issues.

## **3.23 ANTICIPATED PROBLEMS DURING DATA COLLECTION AND MEASURES TAKEN TO MINIMISE THESE PROBLEMS**

The following section discusses the anticipated problems that could arise from participants' response set bias, transient personal factors, situational contaminants and researcher bias during the process of data collection and proposes the approaches that the researcher could use to minimise the problems.

### **3.23.1 Minimising response set bias**

Personal characteristics of the participants may influence their responses to questions,

resulting in social desirability of response, extreme responses and acquiescence. The interview techniques of questioning, explanation of the purpose of the research to the participants and assurance of confidentiality were useful in reducing the above traits (Polit & Beck 2006:300). The interviewer introduced herself to establish rapport and to put each participant at ease. The participants were informed that the purpose of this study was to explore and describe experiences of ACS during the pre-hospital emergency phase of care.

### **3.23.2 Minimising transient personal factors**

Some temporary states of the participants such as fatigue or anxiety may influence their responses. Interviews may take longer than questionnaires (Burns & Grove 2001:422). To overcome these factors the researcher scheduled the interview sessions for the morning hours with each session lasting 20-30 minutes. During shorter interview periods there is more concentration from the participant.

### **3.23.3 Minimising situational contaminants**

Some situational factors may negatively influence the participants' behaviour. In this instance the participant is aware of the interviewer's presence (reactivity factor). Environmental factors such as temperature, noise, lighting, and other disturbances may impact on the participants' reactions. In this research, situational contaminants were excluded by the use of a well-ventilated and lighted room and a "no disturbance" sign put outside the interview room limiting access during the data collection session in places where offices were used. Other interviews that took place in the patients' residences were conducted privately, excluding family members or other(s).

### **3.23.4 Minimising researcher bias**

The researcher's interest in the issue being addressed has a potential for distortion of the study findings (Burns & Grove 2001:422). The researcher observed reflexivity and the interview dynamics to overcome the problem of potential researcher bias.

### **3.24 ADMINISTRATION OF THE INSTRUMENT**

In order to collect data successfully, while at the same time limiting the problems outlined in the previous section, the following precautions were taken:

#### **3.24.1 The process of interviewing**

- The researcher conducted a one-on-one face-to-face interview with each participant.
- The researcher maintained eye contact with each participant.
- The data were collected only once from each participant by one interviewer.

Asking the participant if there are any questions or further comments assisted closure of the interview. The researcher summarised the interview proceedings by stating in her own words the ideas and opinions of the participants to ensure correct understanding (Terre Blanche & Durrheim 1999:129).

### **3.25 PRE-TESTING OF THE STRUCTURED INTERVIEW SCHEDULE**

Pre-testing was conducted on four participants who met the eligibility criteria to participate in the study and who were excluded from participating in the actual study. Pre-testing of the structured interview schedule provided an opportunity to assess the following areas:

- Length of time to be taken for each interview.
- Practice of the interview techniques by the researcher.
- The flow of the interview based on responses and comments made by the participants.
- The recording procedure.
- Reliability and validity of the tool



### **3.26 ETHICAL CONSIDERATIONS**

Ethical considerations and problems in health care research are complex. The following ethical principles applied to this research:

#### **3.26.1 Gaining entry into the Setting**

The researcher followed guidelines for conducting research in Botswana as described in this section. The researcher observed the following ethical considerations:

- The researcher requested permission to conduct the study from Botswana's Ministry of Health (Research Unit). (See Annexures A & B for letters requesting and granting permission).
- Informed consent – According to Polit and Beck (2006:93) informed consent means “that participants have adequate information regarding the research; comprehend the information; and have the power of choice, enabling them to consent voluntarily to participate in the research or decline participation”. In this study this was observed by explaining to the participant the purpose of the study, methods of data collection and the significance of the study. Each participant was expected to provide written consent. (See Annexure D for the consent form).
- Confidentiality - The researcher did not require the participant to provide any form of identification for confidentiality.

#### **3.26.2 Securing informed consent and disclosure of the study's purpose**

In securing informed consent from the participants, the ethical principles of respect for human dignity, namely the right to full disclosure, and informed consent by Polit and Beck (2006:89,93) the following steps were followed:

- Informed consent in a study is an on-going process of informed participation.

- In order to ensure that the participants were well informed about their role in this study there was full disclosure of the study purpose by the researcher. This involved the explanation of the process and purpose of study thus enhancing the self-determination of each potential subject.
- The researcher explained the research purpose to each potential participant and scheduled the dates for the interview with each individual participant who had agreed to participate in the study.
- Written informed consent by signing, not the writing of full names, was obtained from the participants. These consent forms and the interview schedules were kept in a secure place by the researcher and they would be destroyed after the research report had been completed successfully.

### **3.26.3 Voluntary participation in the study**

In observing the participants' right to respect for human dignity, including the right to self-determination, the researcher carried out the following actions stated by Polit and Beck (2006:89):

- The researcher informed the participants that there would be no payment for participation in the study.
- No participant was coerced to join the study. Participants voluntarily participated in the study after giving informed consent in writing.
- The participants had the freedom to withdraw from participation when and if they wished to do so.
- Each participant could refuse to answer any specific question.

### **3.26.4 Maintaining anonymity and confidentiality**

Maintaining anonymity and confidentiality ensured the participants' rights to privacy (Polit & Beck 2006:95; Burns & Grove 2001:201). Privacy during data collection was ensured as follows:

- There was no recording of the participants' names on the interview schedule response sheets.
- Code numbers or pseudonyms were used for example, ACS01/M or ACS02/F, reflecting the number of the participant interviewed and the gender. The identity of the participants remained anonymous in reports and publications of the study.
- Only the researcher kept the documents for data collection. No person, except for those actively involved in the analysis of the data, shared this data.
- The completed interview schedules were kept locked up by the researcher. After the research report had been accepted, the completed interview schedules would be destroyed.

### **3.26.5 Construction of the informed consent form**

The informed consent form was constructed by the researcher and incorporated the ethical considerations of voluntary participation, freedom to withdraw from participation, full disclosure of the study and confidentiality. (See Annexure D - Informed Consent Form).

### **3.27 DATA ANALYSIS**

Data analysis is performed for the purposes of reducing, organising, and giving meaning to the collected data (Burns & Grove 2001:794). The data were analysed using the SPSS program version 12. A statistician was involved in the analysis of the data. In quantitative research measurement involves a set of rules according to which numeric values are assigned to objects to represent varying degrees of some attribute (Polit & Beck 2006:350). There are four levels of measurement namely: nominal, ordinal, interval, and ratio measurement. These levels of measurement were used in the process of data analysis as shown in the statistical analysis. Descriptive statistics were used in this study to facilitate the organisation of and the description of data (Burns & Grove 2001:499). Data were summarised using frequency distributions, measures of central tendency and variability measures for the deviations in the data. Measurement

errors may be associated with the following factors situational contaminants; response set biases and transitory personal factors (Polit & Beck 2006:324).

### **3.28 RELIABILITY AND VALIDITY**

In order to determine the quality and adequacy in a quantitative instrument, reliability and validity measures the consistency and accuracy of an instrument. The following section discusses the issues of reliability and validity pertaining to this study.

#### **3.28.1 Reliability**

According to Polit and Beck (2006:324) the reliability of an instrument is the degree of consistency with which it measures the attributes it is supposed to be measuring. Also an attribute is considered reliable if its measures accurately reflect the true measures of the attribute under investigation. There are three aspects of reliability that are of concern to researchers namely: stability, consistency and equivalence (Burns & Grove 396). The reliability of the interview schedule was tested using:

- Pre-testing of the tool is a means of assessing its reliability, namely accuracy and dependability.
- The adapted split-half technique to assess its consistency.

#### **3.28.2 Validity**

The validity of an instrument is the degree to which it measures what it is supposed to be measuring (Polit & Hungler 1997:299). This attribute was strengthened by consultation with other members involved in the same area of study, literature reviews and constructive inputs from the study supervisors and the statistician. The validity of an instrument is supported by a greater or lesser degree of evidence. There are different approaches to assessing the validity of an instrument namely: content validity, face validity, criterion-related validity and construct validity.

- Content validity is concerned with the sampling adequacy of the content area

being measured. Areas covered in the tool should represent a wide area of the topic under study. This is considered a subjective exercise because the researcher or people designing the tests determine the content to be included in the study (Polit & Beck 2006:329). For the purposes of this research the researcher used the local government health clinics to source registered nurses to assist with reliability and validity measures during the process of development of the data collection tool. Although they do not operate in a call centre these settings have registered nurses that have the experience of receiving telephone calls, giving medical advice, responding to various emergencies and transporting patients to the clinic or hospital. The manager of the MRI Botswana Ltd medical call centre, who is also a nurse, was given the interview schedule to assess the content for appropriateness. (Burns & Grove 2001:401).

- Face validity was found to be present because all sections of the interview schedule were focusing on the patient characteristics during an ACS and the events taking place in the pre-hospital phase of care.
- In assessing criterion-related validity, the researcher seeks to establish the relationship between the scores on the instrument in question and some external criteria. The researcher identifies a reliable and valid criterion. In this study on patient characteristics during an ACS, the interview schedule should be able to “distinguish among people who differ in the present status on some criterion” according to Polit & Beck (2006:329).

### **3.29 SCOPE AND LIMITATIONS OF THE STUDY**

Limitations are restrictions in a study that may decrease the generalisability of the findings and may be theoretical and/or methodological (Burns & Grove 1993:46).

#### **3.29.1 Methodological limitations**

- The study was conducted in one call centre only therefore this impacts on the

credibility of the findings and restricts the population to which the findings can be transferable.

- This was a convenient sample and not necessarily representative of the population under study as many calls are also by the government clinics but lack of documentation hinders access to such patients and also due to the difficulty in accessing contact telephones in records of patients who were assisted during their ACS situation.
- Being an initial study in such an area, the instrument used for data collection may have limited credibility because it has not been tested previously.
- This study done in MRI Botswana Ltd may not be generalised to other call centres in Botswana.

### **3.29.2 Theoretical limitations**

There might be weaknesses in the conceptual framework and the operational definitions used in this study restricting the abstract generalisations of the findings.

### **3.30 SUMMARY**

This chapter discussed the research steps and procedures that guided this study. The research design and methods were described. The next chapter will present the data analysis and discuss the findings in relation to the conceptual framework adapted from the Synergy Model as indicated in Chapter 2 section 2.2.1 of this dissertation. Wherever possible the findings from this survey will be compared and contrasted with research results discussed in Chapter 2 of this dissertation.

## **CHAPTER 4**

### **DATA ANALYSIS AND FINDINGS**

#### **4.1 INTRODUCTION**

In this chapter the data analysis and findings from 44 interview schedules from patients who ACS experience are discussed. The purpose of this study was to identify ACS patients' characteristics during an ACS situation in the pre-hospital phase of care and the available resources to deal with such situations.

The objectives of the study were to:

- Explore and describe the characteristics of patients who have experienced ACS
- Make recommendations for an organized data collection guide for use by nurses
- Assist nurses to make more effective decisions based on the data collected

Through purposive and convenience sampling 44 participants who had experienced ACS between January 2004 and June 2005 were recruited into the study. Ethical principles were observed as described in chapter 3. Signed consent forms were separated from the written interview schedules to ensure anonymity. A professional statistician analysed the data that were collected. Data are analysed using the SPSS version 12. The findings will be discussed according to the sections of the interview schedule: Part A on biographical data and Part B on characteristics of the patient according to the conceptual model elements of patient's characteristics of the Synergy model, pre-hospital chain of survival, nurses' triage telephone skills and assessment of ACS and patient outcomes.

## 4.2 PRESENTATION OF FINDINGS

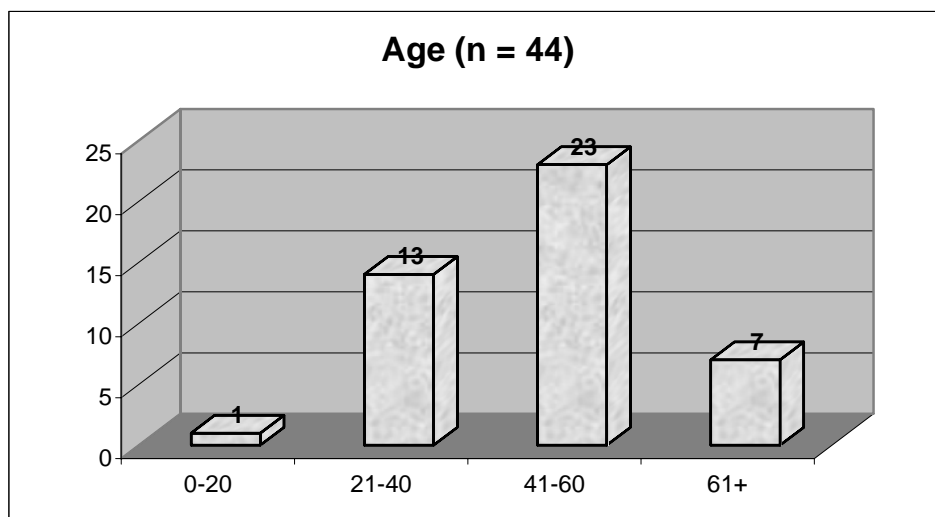
The analysed data will be presented in the form of tables, graphs and figures to make the data presentation meaningful as shown in the following sections.

### 4.2.1 Part A: Patients biographical data

The demographic data in Part A collected information on the participants' ages, race, religion, first language spoken, educational qualifications, income sources and ranges, marital status, occupations and employment status.

#### 4.2.1.1 *Age distribution (Item 1)*

The participants were asked to select the appropriate age in years from the listed age ranges in the interview schedule. Figure 4.1 depicts the age distribution of the participants with ACS experiences.



**Fig 4.1: Age distribution (=N44)**

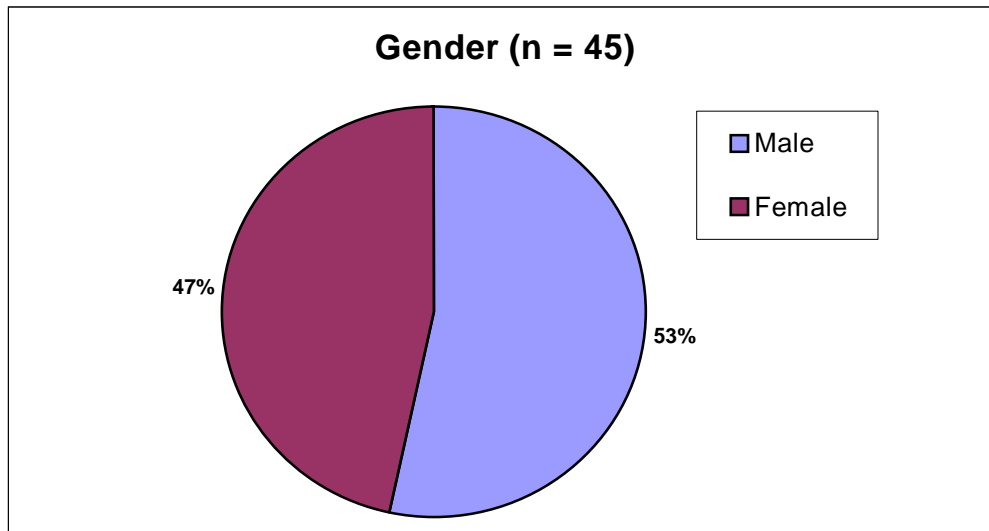


According to the study findings there were 23 (52.3%) participants in the age range 41-60 years, 13 (29.5%) participants in the age range 21-40 years, while there were 7 (15.9%) participants in the age range 61+ years and only 1 (2.3%) participant in the age range 0-20 years. The mean age was 46.36 years of age. Literature review indicated that the risk for ACS increases with age. ACS is common among people between the ages of 40-70 years of age (Brieger et al 2004:461; Fenton & Baumann 2005:2; Hardy & Hussey 2003:75; Holmberg, Holmberg, and Herlitz (1999:88D). The age of a person complaining of chest pain, or calling with signs and symptoms of ACS, should increase the nurse's awareness of the potential risk of ACS for persons within the age ranges of 40 years and above. However, attention should also be paid to callers who are between 20 and 40 years old, as indicated in figure 4.1.

#### **4.2.1.2      *Gender distribution (Item 2)***

Figure 4.2 shows that the gender distribution was 53% female and 47% male. According to the study findings, there were more females than males with experience of ACS. These findings confirms the results of other studies that females have a greater chance and are also at higher risk of experiencing ACS just like males. It has been known over the years that males are a more susceptible gender to ACS than the women making these findings appear to contradict this view of greater male susceptibility to ACS. Cardiac disease has been associated with males over the years but statistics show that there are many deaths due to coronary heart disease in American females than males (AHA 2003:1). The incidence of ACS increases in women after menopause according to Platt (2002:88).

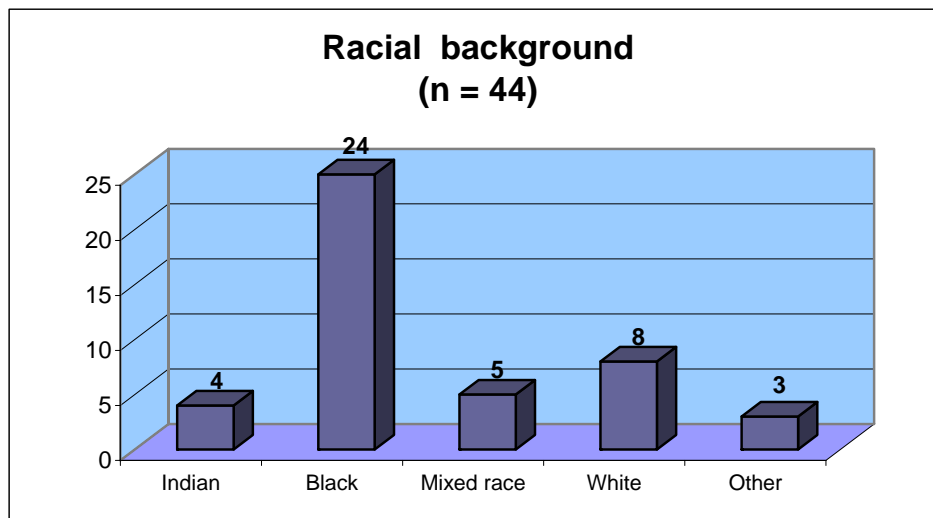
According to Ryan, DeVon & Zerwic (2005:36) there are longer delays in seeking treatment associated with women. The study findings require the nurse screening the patients to recognise the risk for ACS in women and women need to be made to realise their susceptibility for cardiac events.



**Figure 4.2: Gender distributions (N = 44)**

#### **4.2.1.3      *Racial background (Item 3)***

In Fig 4.3 the racial backgrounds of the patients with the experiences of an ACS, who participated in the study, are shown. There were 24 (54.5%) participants belonging to the black racial background who had experienced an ACS with the remaining 20 (45.5%) participants spread out as follows: 8 white, 5 mixed race, 4 Indian, and 3 other (not specified). The increased number of participants from the black racial background with ACS concurs with the observation by Maganu (1996:6) on the increasing incidence of cardiovascular disease in Botswana. Although Botswana is a predominantly black populated country, there were still some people from other races presenting with ACS episodes. This is consistent with studies that reveal that whites and Asians are at great risk for ACS as well. Ryan et al (2005:36) found that race, with reference to African Americans, is a significant predictor for not seeking treatment immediately after symptoms begin. The nurse assessing patients should not overlook race as a contributory factor of race to ACS.

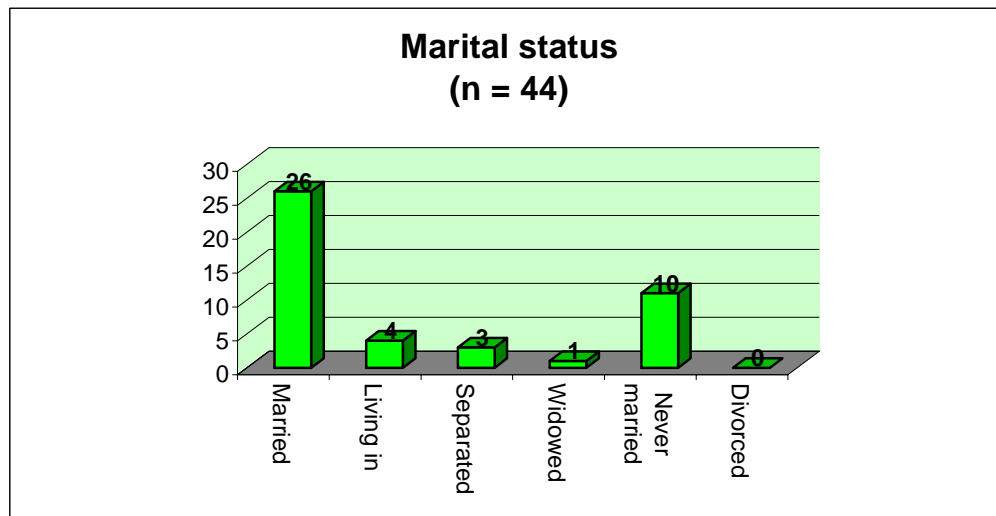


**Figure 4.3: Racial background (N = 44)**

#### **4.2.1.4 Marital Status (Item 4)**

The participants were requested to indicate their marital status. The responses to this question were as follows: 26 (59%) participants were married, 10 (22.7%) participants had never married, 4 (9.1%) participants were living in with partners, 3 (6.8%) participants were separated, 1 (2.3%) were widowed and there was no one who had divorced.

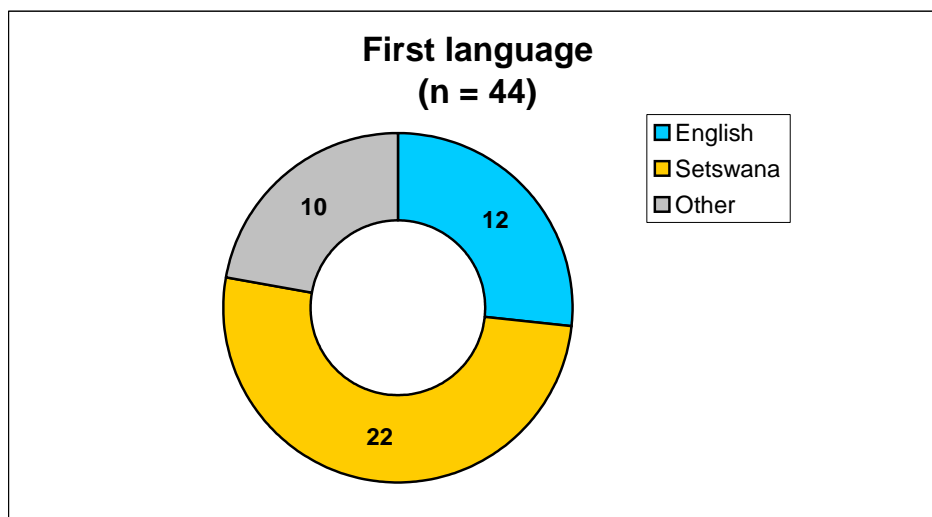
Marital status of the participant indicates the availability of spousal support during a cardiac event. The findings of Moser and Dracup (2000:270) reflect the impact of spousal support on positive outcomes of cardiac patients. The spouse is the source of support in many cases. There is high risk of mortality in cardiac patients who live alone or lack sources of emotional support. Nurses should understand the role of social support in the mitigation of worsening of outcomes of an ACS. The nature of the marital relationship at the time of an ACS event may influence the outcome/response of patient's clinical condition. The marital status of the participants is shown in Figure 4.4 below.



**Figure 4.4: Marital status (N = 44)**

#### **4.2.1.5 First Language spoken (Item 5)**

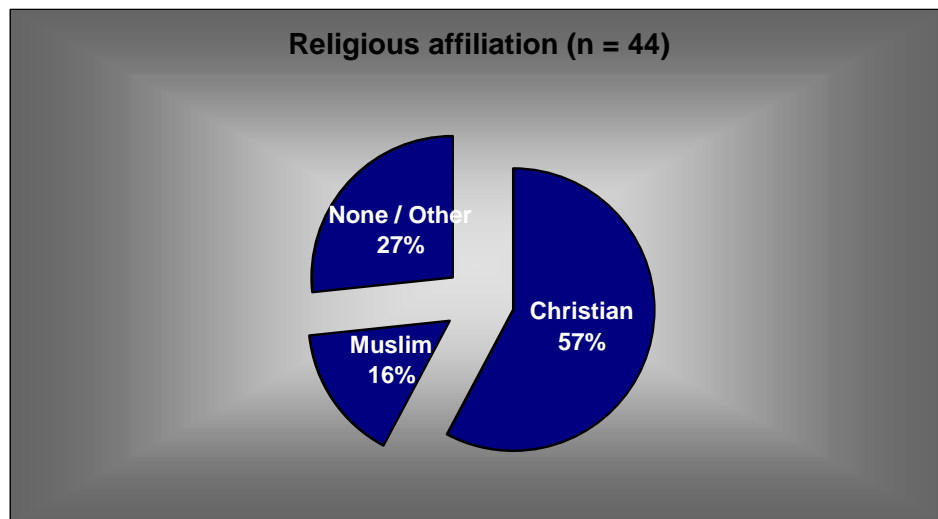
Figure 4.5 depicts the language chosen by the participants as a first language.



**Figure 4.5: First language (N = 44)**

The knowledge of the patient's language during an ACS emergency will influence the flow of conversation and interactions between the nurse and the patient. The results show that 22 (50%) participants spoke Setswana as their first language, 12 (27%) participants spoke English as their first language, while 10 (23%) participants spoke

other languages. Although language may not have any direct significance as a risk factor for a cardiac illness, it is a means of communication between the call centre nurse and the patient or family/other(s) calling for assistance during an ACS emergency. To process emergency calls without any delays a common mode of communication is essential in a call centre, staffed by nurses who are able to speak a variety of languages.



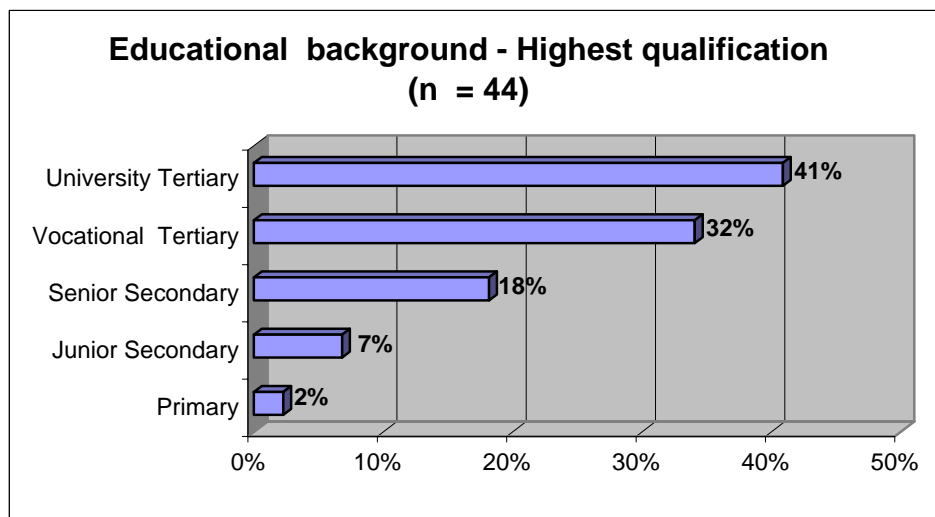
#### **4.2.1.6 Religious affiliation (Item 6)**

**Figure 4.6: Religious Affiliation (N = 44)**

The distribution of the participants' religious affiliations was 57% Christians, 16% Muslims and 27% belonging to none or other religious groups. Spiritual well being is a factor in reducing the stress levels of an individual. Increased stress is associated with increased potential for ACS. Kreitzer & Snyder (2002:73) write that religious beliefs, as part of complementary and alternative medicines, enforce faith and prayer that impact on patient outcomes. During ACS emergencies, nurses should be aware that patients and family/others' reactions might also be influenced by their belief systems that could hinder the efforts of the health professionals.

#### 4.2.1.7 *Educational background (Item 7)*

The highest educational qualification attained by the participant was indicative of the income range and also the type of job demands. Insufficient income sources and demanding jobs increase the risk factor for ACS. In this study the participants' educational background was spread out as follows: 41% had attained university tertiary level; 32% had attained vocational tertiary level; 18% had attained senior secondary level; 7% had attained junior secondary level and 2% had attained primary level. There were more participants with higher educational qualifications contributing to increased opportunities for better income. Figure 4.7 shows the spread of the results.



**Figure 4.7: Educational background (N = 44)**

#### 4.2.1.8 *Occupation (Item 8)*

Table 4.1 reflects the results of the type of occupations of the participants in this study. There were 2 (5%) professional health workers, 10(23%) in administration (clerical or management), 9 (20%) businesspersons, 7(16%) teachers, 5(11%) in the mining industry, 1(2%) lawyer, 4(9%) students, and 6(14%) in the “other” category. Due to the job demands these occupational categories are potential sources of psychosocial

pressures predisposing an individual to ACS. According to a study in Greece by Panagiotakos, Chrysohoou, Pitsavas, Antoniou, Vavouraniakis, Stravopodis, Moraiti, Stefanadis and Toutouzas (2003:25) there is a strong association between occupational stress and ACS.

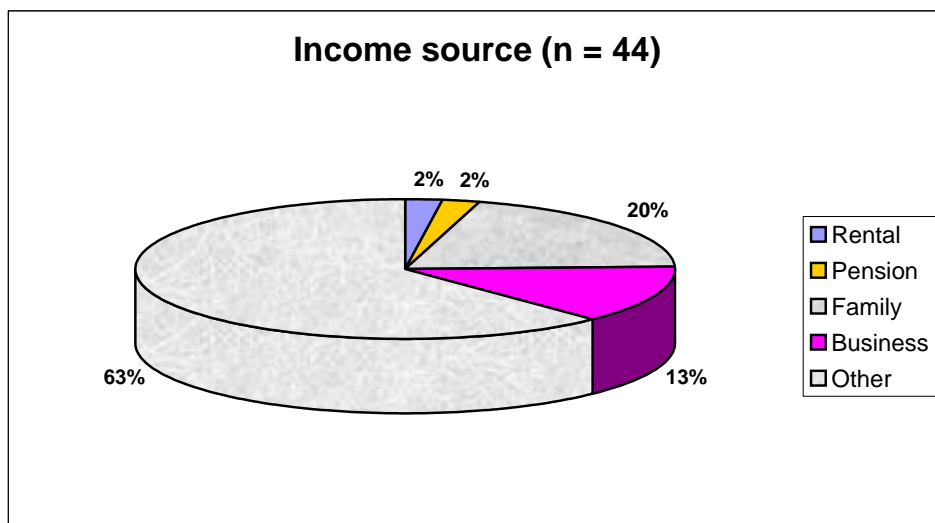
**Table 4.1: Occupation**

<i>Occupation:</i>	<i>N = 44</i>	<i>%</i>
Health worker - Professional	2	5%
Administration - Clerical or Management	10	23%
Finance - Business Person	9	20%
Agriculture - Farmer	0	0%
Education - Teacher	7	16%
Mining - Engineer, Miner	5	11%
Legal - Lawyer	1	2%
Student	4	9%
Other	6	14%
<b>Total:</b>	<b>44</b>	<b>100%</b>

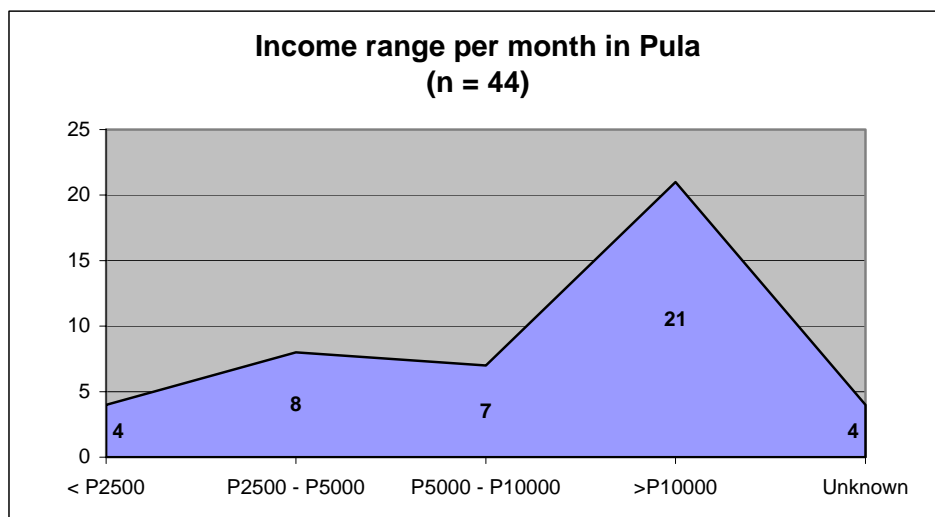
#### **4.2.1.9      *Income source (Item 9)***

The participants were asked to indicate the source of their income. The majority of the participants (63%) received their income from salaries and other, while 13% were supported by their businesses, 20% were supported by their families, 2% depended on their pension and another 2% on the rental received from tenants.

The availability of income is important to assist the patient with some means of financing their health care requirements such as appropriate diet and access to private health care facilities.



**Figure 4.8: Income Source (N = 44)**



**4.2.1.10 Income range (Item 10)**

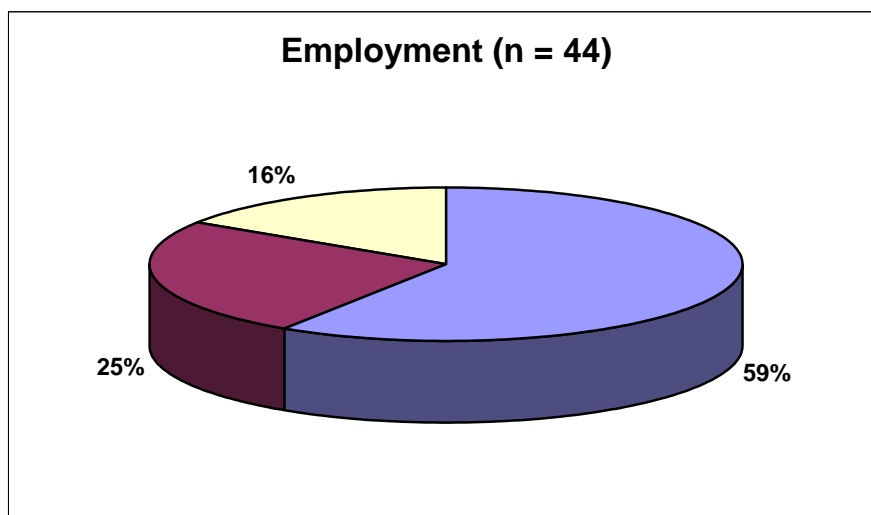
**Figure 4.9: Income range (N = 44)**



The largest number of participants 21 (47.7%) were generating income greater than P10, 000 per month while 7 (15.9%) of the participants were earning in the range P5000-P10, 000; 8 (18.2%) of the participants were earning in the range P2500-P5000 and 4 (9.1%) of the participants were earning less than P2500 while (9.1%) of the participants had an unknown income range. The participants had some economic resources available. The assumption from these findings was that there was minimal potential for stress associated with lack of resources.

#### **4.2.1.11 Gainful employment (Item 11)**

Of the 44 participants 26 (59.1%) were employed, 11 (25%) were engaged in their own business and 7 (15.9%) were not employed. Being occupied in some form of activity and generating income, assists to enhance the psychosocial well being of an individual. However, demanding jobs and/or business could increase a person's stress levels and thus also their chances of ACS encounters.



**Figure 4.10: Gainful employment (N = 44)**

#### **4.2.2 Part B: Characteristics of patients with the experience of an ACS situation**

This section of the interview schedule analyses the characteristics of the patients with an experience of an ACS based on the responses to questions based on the eight patient characteristics of the Synergy Model. Part B was divided into the following sections:

- Section A: Resource availability
- Section B: Vulnerability
- Section C: Complexity
- Section D: Participation in decision-making
- Section E: Participation in care
- Section F: Stability
- Section G: Resiliency
- Section H: Predictability

The findings of each section of the study are presented and discussed.

#### **4.2.2.1 Section A: Resource availability – Patient knowledge of illness**

Resource availability is the extent of resources that the patient and his/her family and/or other(s) bring into a care situation. The knowledge that the patient has is one of the resources of interest to the nurse in the pre-hospital phase of call processing during telephone triage. This section consisted of seven questions, which assisted the researcher to determine the patient's resource availability according to the patients' knowledge of illness.

##### **4.2.2.1.1 *Pain or discomfort during an emergency situation (Item A1)***

This question was asked to determine patient's knowledge of the area of pain or discomfort during the ACS episode. The number of persons who experienced pain or discomfort was 44 (100%). Table 4.2 shows the findings on the pain or discomfort during an emergency.

**Table 4.2: Pain or discomfort during an emergency situation**

<b>Area of pain or discomfort:</b>	<b>Number of persons experiencing pain / discomfort: N = 44</b>	<b>Percentage:</b>
a. In the chest	41	93%
b. On the back	9	9%
c. In the arms or shoulder	14	14%
d. In the neck or jaw	11	11%

There were 41 (93%) participants who identified that their area of pain or discomfort was in the chest, 14 participants experienced the pain or discomfort in the arms or shoulders, 11 participants experienced pain in their necks or jaws while 9 participants had pain on their backs. Although chest pain is a major symptom of ACS, the pain presentation may vary from one person to another. Pain on the back, in the arms or shoulders and in the neck or jaw atypical symptoms of ACS are often neglected by the patient and are likely to be overlooked by the nurse (Ryan et al 2005:34).

#### **4.2.2.1.2 Atypical symptoms of ACS (Item A2)**

This question on the patient's experience of other atypical symptoms of ACS was relevant because not all patients present with chest pain as a significant symptom during ACS. Ryan et al (2005:34) advise that the knowledge of atypical symptoms of ACS is important because they are often ignored causing delays in seeking medical

assistance. Brieger et al (2004:461) state that atypical symptoms of ACS pose a great challenge to nurses as they are associated with unfavourable outcomes.

The study by Devon and Zerwic (2004:7) highlights that the public should be informed about the other atypical symptoms of ACS and therefore should not delay seeking treatment because they have no symptoms of chest pain or discomfort. This information was also relevant to the call centre nurse during the call screening of the patient.

Table 4.3 shows patients' experiences of other symptoms of ACS.

**Table 4.3: Patients' experiences of other symptoms of ACS**

<b>Symptoms:</b>	<b>Number of persons experiencing symptoms: (N = 44)</b>	<b>Percentage:</b>
a. Nausea or vomiting	18	41%
b. Heart or epigastria discomfort	21	48%
c. Sweating (diaphoresis)	16	36%
d. Shortness of breath	12	27%
d. Syncope or any feeling of faintness	13	30%

#### **4.2.2.1.3 Signs and symptoms related to cardiac problems (Item A3)**

The participants were asked if they were able to relate their signs and symptoms to a cardiac problem to determine the patients' level of knowledge about ACS. Of the 44 participants only 41% were able to relate their experiences to cardiac problems while 59% failed to make any connection between their signs and symptoms to cardiac problems. In a study by Devon and Zerwic (2004) it was found that failure by individuals to interpret their symptoms as cardiac in origin contributed to their delays in seeking medical assistance. This information is vital for the nurse to probe during call processing. Dracup et al (1997:25) advise that health professionals to be aware of patients who are reluctant to associate MI symptoms as being of cardiac origin. The findings from Carney et al (2002:241) suggest that the "individual's ability to relate the

symptoms they are experiencing to their heart is the strongest predictive factor in patients' seeking help within 60 minutes".

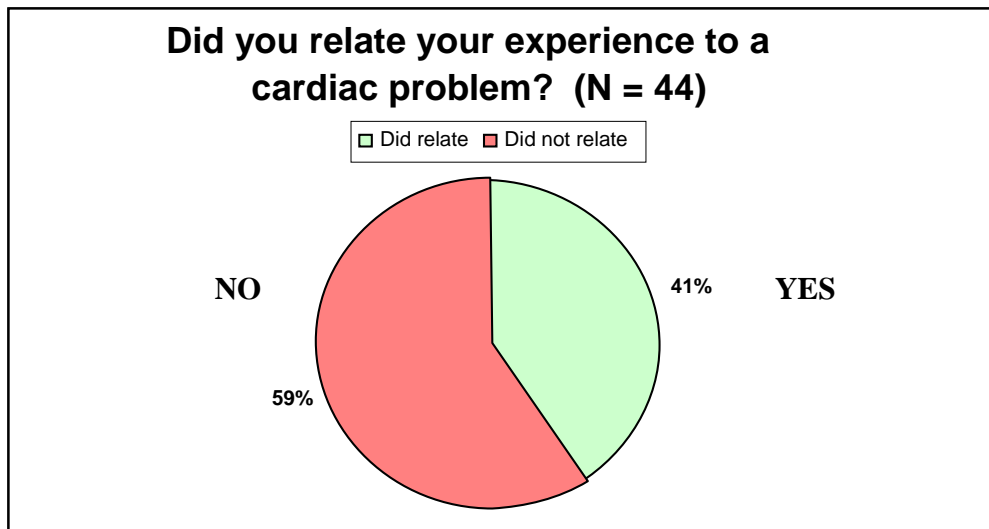
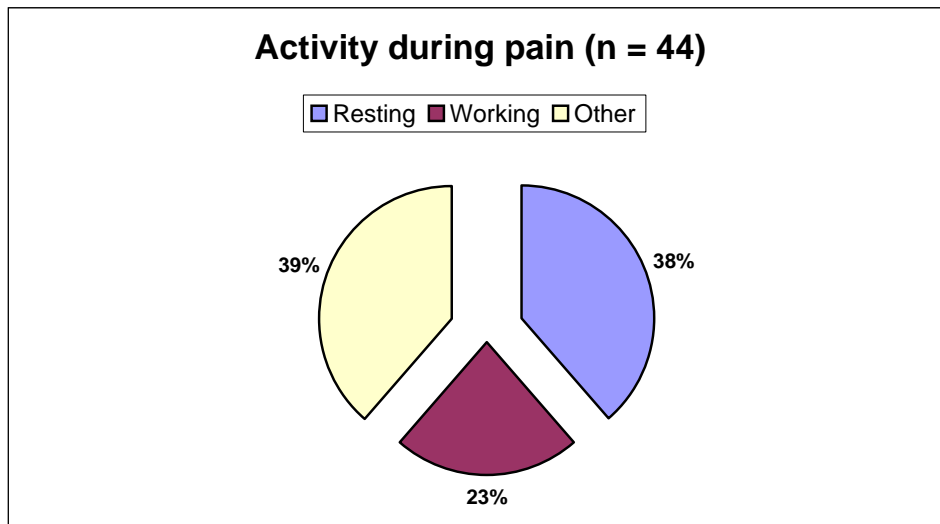


Figure 4.11: Signs and symptoms related to cardiac problem (N = 44)

#### 4.2.2.1.4 Activity during pain onset (Item A4)

ACS occurs even while the patient is at rest and is aggravated by exercise.

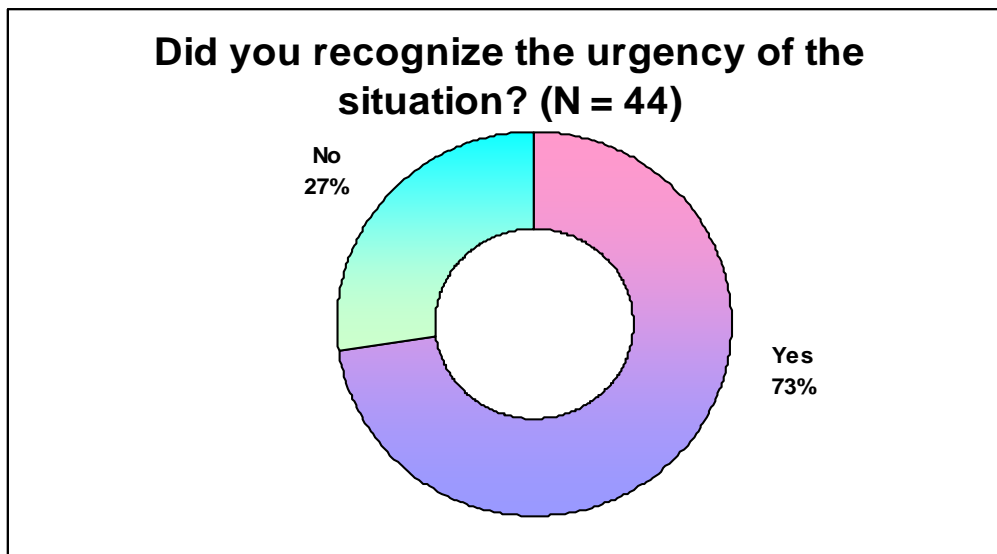


**Figure 4.12: Activity during pain onset (N = 44)**

According to the study results 39% of the participants were engaged in “other” (non-specified) activities, 38% were resting while 23% were working when they experienced ACS. The spread of the results indicate that ACS can occur any time. Other research results show that there are four triggers of infarction that have been well characterized namely, awakening, anger, physical exertion, and sexual activity. Physical activity and anger are contributory factors to ACS occurrence (Strike, Perkins-Porras, Whitehead, McEwan & Steptoe, A. 2006). The call centre nurse should enquire about the activity of the patient at the onset of pain.

#### **4.2.2.1.5 Urgency of the situation (Item A5)**

This question determined the patient’s abilities to recognise the urgency of the situation. Figure 4.13 presents the findings of the participants’ responses.



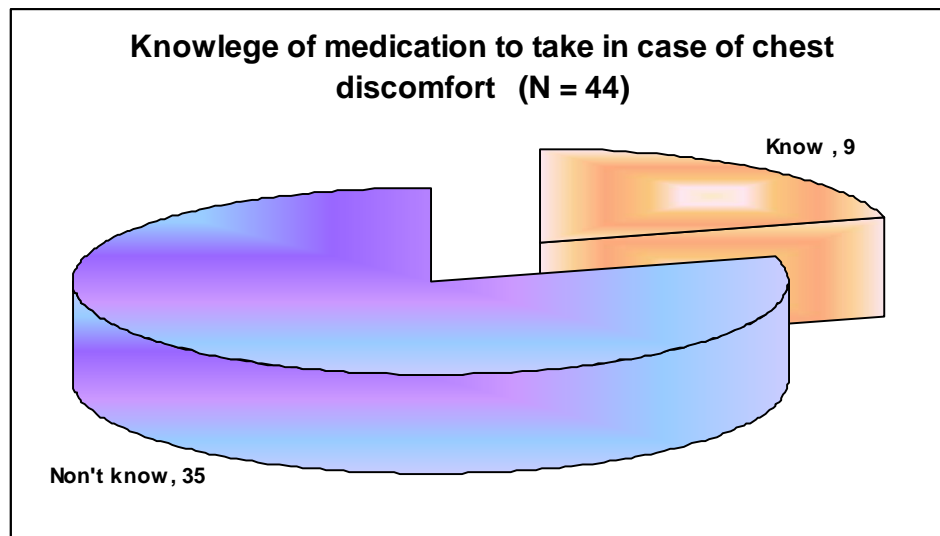
**Figure 4.13: Urgency of the situation (N = 44)**

Of the 44 participants, 73% realised that their ACS situation was an emergency and required urgent attention while 27% did not. The failure of the participants to recognise the significance of their situation can be attributed to misinterpretation of their symptoms, or psychological defence mechanisms such as denial or rationalisation (Dracup & Moser 1997:253). Failure to recognise the urgency of the situation delays the decision to access early care. Those who did not realise that this was an urgent (emergency) situation require more education on the morbidity/mortality outcome of ACS. The role of the call centre nurse in this situation is to convince all patients with complaint of chest pain to be transported to hospital for further assessment.

#### **4.2.2.1.6 Knowledge of the medication (Item A6)**

In the early stages of ACS taking of medications lessens the chest pain or discomfort and prevents the development of further cardiac injury. Possessing knowledge of the medication to take hastens the decision to take the required medication. In this study only nine participants were knowledgeable of the medication while the rest did not know. This indicates the need for increased public education campaigns to inform the

people on the importance of always having aspirin source available to cater for emergency situations. Meischke et al (2000:317) conducted a survey to increase elderly patients' awareness of a cardiac emergency in order to assist them to respond accordingly by taking aspirin during an ACS attack.



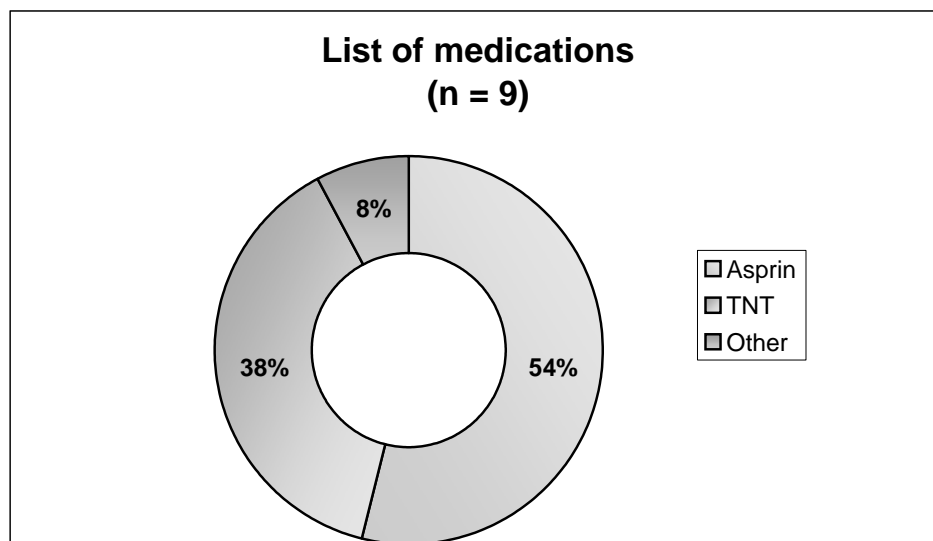
**Figure 4.14: Knowledge of medication to take (N = 44)**

#### **4.2.2.1.7 List of medications (Item A7)**

The commonly used medications in ACS that are easily available over the counter are Aspirin and TNT. This item measured the patient's knowledge of the medications that can be used when having chest pain in the pre-hospital phase of care. The study results by Quan, LoVecchio, Clark and Gallagher (2004:363) reveal that the use of aspirin in patients in the prehospital phase is safe. It reduces thrombus formation and reduces mortality. However, there were only nine participants gave a response to this question and of these 54% mentioned aspirin, 38% mentioned TNT, while 8% mentioned other medicines. The responses to this question indicate that the nine participants were able



to give the names of the right medications. According to the findings in this section the participants had the available knowledge of ACS, which categorises them in resource availability level 5 (AACN 2004). This is a positive contribution to good patient outcome. Early recognition of the ACS event is required to activate EMS. However, the participants' knowledge on the medications was not adequate categorising this as a minimal to moderate resource availability requiring patient education on the emergency medications.



**Figure 4.15: List of medications (N = 44)**

#### **4.2.2.2 Section A: Resource availability – social support systems**

##### **–health care access**

This section consisted of nine questions, which assisted the researcher to assess the patient's resource availability in terms of access to health cover.

##### **4.2.2.2.1 Available health facilities (Item A8)**

Table 4.4 reveals the various clinics and hospitals that were accessible to the participants. The results show that there were both government and private health clinics within the reach of participants. The accessibility of a health facility is an available resource that impacts on the outcome of patients during an emergency when the patient requires definitive treatment during an ACS situation.

**Table 4.4: Available health facilities**

Health facilities:	Facilities available (n = 44):	Percentage:
a. Government clinic	36	82%
b. Government hospital	37	84%
c. Private clinic	36	82%
d. Private hospital	32	73%

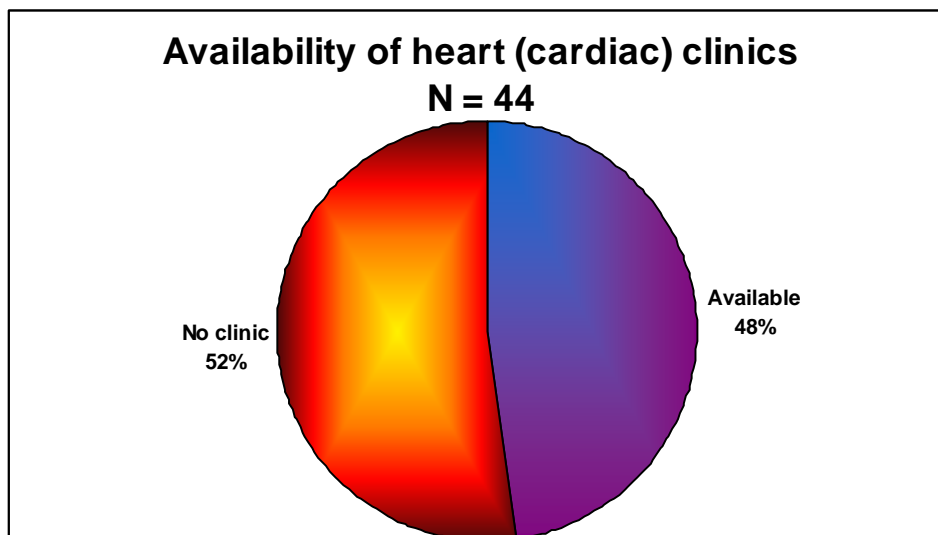
However, the appropriateness of the health facility to the patients' nature of disease is also an important factor for the call centre nurse to consider when planning where the patient should be transported for further cardiac management.

#### **4.2.2.2 Affordability of health facilities (Item A9)**

The participants were asked whether they could afford the cost of visiting health facilities. The results indicate that all 44 (100%) participants rated their facilities in their area as affordable. These participants had no problems to cater for the costs of their health care requirements at the government or private health clinics/hospitals. The Botswana government subsidizes the health care costs for the nationals. The non-Botswana nationals are catered for by the various medical insurances to which they subscribe or they pay cash. Further investigations may be required to identify the participants' source of funding: whether they were on health care insurance, were supported by government or were paying privately.

#### **4.2.2.2.3      *Availability of heart clinic (Item A10)***

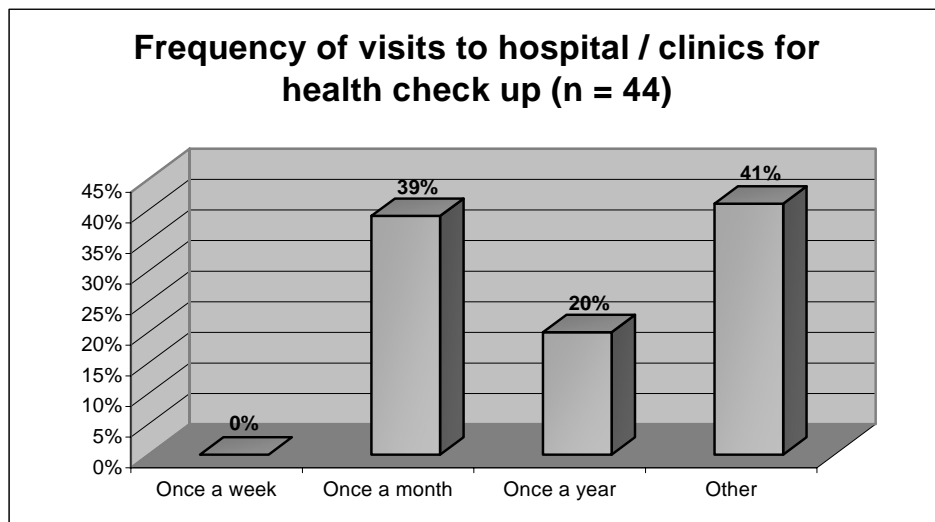
The participants were asked to indicate whether there was a heart (cardiac) clinic available in the area. The results are depicted in Figure 4.16. The results indicate that 52% of the participants had no cardiac clinic available in their area while 48% of the participants were within reach of a cardiac clinic. The participants had social system resources available for immediate further cardiac management. Those participants who had access to a cardiac clinic in their area had a greater chance of better clinical outcomes because they had access to the care of a cardiologist. This information is relevant to the nurse when making recommendations or giving advice for further management of the ACS patient to prevent re-occurrences of ACS episodes.



**Figure 4.16: Availability of heart (cardiac) clinics (N = 44)**

#### **4.2.2.2.4      *Frequency of visits to hospitals/clinics for health checkups (Item A11)***

The figure 4.17 below shows the number of times participants visited a hospital or clinic for health check ups.



**Figure 4.17: Frequency of visits to hospital/clinics for health check up (N = 44)**

Individuals who visit the hospitals for frequent health checkups value their health. It follows therefore that these individuals will be perceptive of any signs and symptoms that are not normal (Carney et al 2002:238). Having health check ups at regular intervals is a good practice to know the individual's health status.

#### **4.2.2.2.5 Mode of available transport (Item A12)**

According to the results indicated in Table 4.5 below the participants acknowledged access to either private or public transport. There were 75% (n=33) participants who had their own vehicles and 39% (n=17) who had access to public transport. Knowledge of the means of transport is essential so that the patients can be transported rapidly to hospitals for definitive cardiac care.

**Table 4.5: Mode of transport available at disposal**

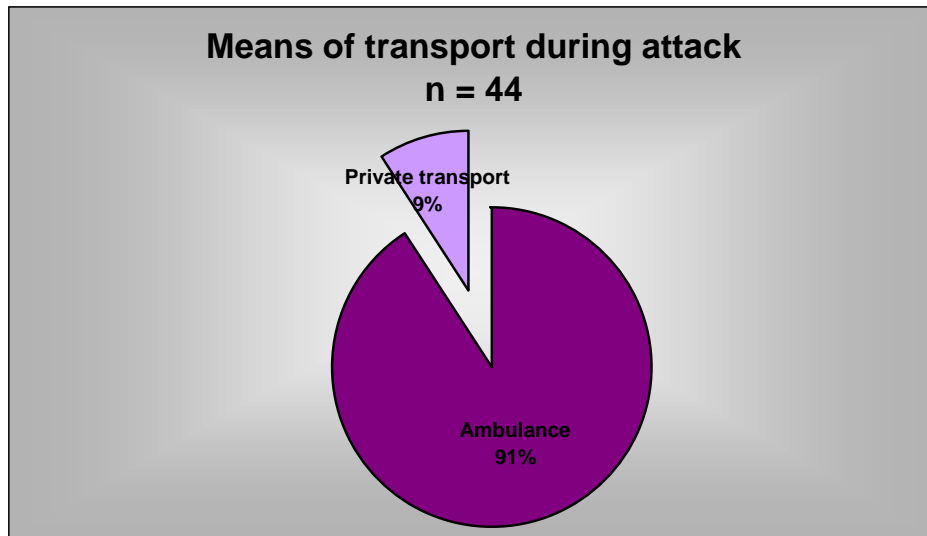
<b>Transport:</b>	<b>Availability of transport: (n = 44)</b>	<b>Percentage:</b>
a. Own vehicle	33	75%
b. Own bicycle	1	2%
c. Public transport	17	39%
d. Donkey / horse cart	0	0%

Having access to transportation is an important resource during a cardiac emergency such as ACS. Delays in accessing definitive care are reduced when there is availability of transport. The various modes of surface transport were included in the question as the assumption was made that people reside and work in different areas.

#### **4.2.2.2.6 Means of transport to hospital during cardiac attack (Item A13)**

The participants were asked to indicate whether they were transported by ambulance or by private vehicle. The results reveal that 91% of the participants were transported to clinic/hospital by ambulance when they had an ACS episode while 9% were transported to clinic/hospital by private vehicle. From the study findings even though the patients had access to private and public transport in an emergency 91% of the participants sought the services of an ambulance. This indicated a positive resource availability because the patients recognised the importance of rapid access to definitive care during an emergency. The results are shown in Figure 4.18.

This is consistent with many study recommendations. In study findings by Leslie et al (2000:137) some individuals thought that self-transportation was considered the quickest means of getting to hospital but missed the opportunity for immediate care from EMS during transportation. The availability of an ambulance transport the patient is an important resource that enhances the clinical outcome of the patient during an ACS situation. The patient has immediate access to trained health personnel who have the ability to commence definitive care during the transportation and stabilisation phase of prehospital care.



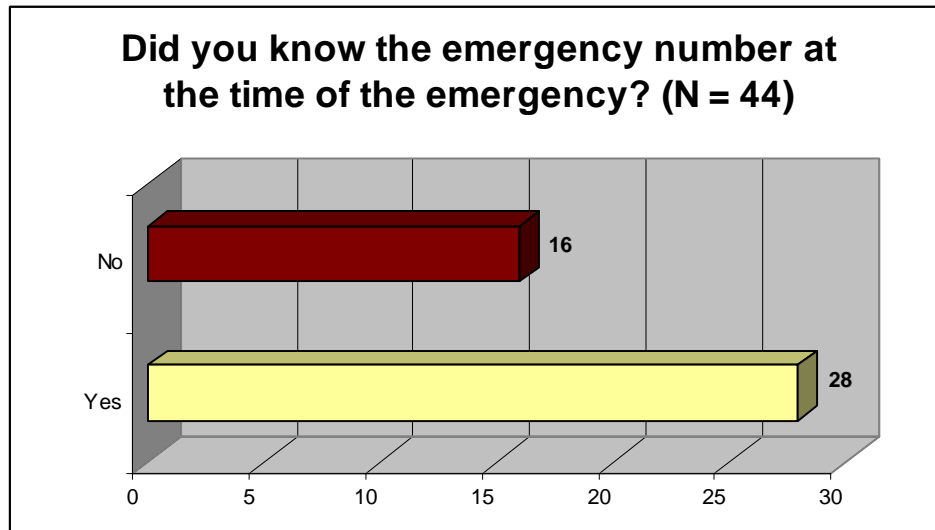
**Figure 4.18: Means of transport during attack (N = 44)**

Lack of access to an ambulance is a problem noted to contribute to poor patient outcomes during a cardiac emergency. Although some people prefer self-transport during an emergency, considering it to be quicker, the patient is denied rapid health care access during the transportation phase of prehospital care. Therefore public education is necessary to inform the public to consider the use of an ambulance. The patient can only consider waiting for the ambulance when they are assured of getting satisfactory service.

#### **4.2.2.2.7 Knowledge of emergency numbers (Item A14)**

The participants were asked whether they knew the emergency numbers to contact during an emergency. The results in Figure 4.19 show that there were 28 (63.6%) participants who said they knew the emergency numbers to contact during an emergency while 16 (36.4%) participants had no knowledge of which emergency numbers to contact. Lack of awareness by the public about a heart attack is cited as one of the major reasons why there are delays in seeking assistance. However, in this study there were more participants 28 (63.6%) who knew the number to contact during

an emergency. For those who did not know, Faxon and Lenfant (2001:1210) recommend public education on the importance of calling an emergency service.



**Figure 4.19: Knowledge of emergency numbers (N = 44)**

#### **4.2.2.2.8      *Emergency numbers to contact during medical emergencies in Botswana (Item A15)***

The participants were able to mention various phone numbers, which could be called during a medical emergency. Of the numbers listed 911, 112, 3901601, and 997 were mentioned by many of the participants. Both 911 and 997 are toll free numbers that can be called from a fixed phone line. The 911 number belongs to the private EMS (MRI Botswana Ltd) while 997 belongs to the government hospital ambulance service, 112 is an emergency number from a mobile phone, and 3901601 is a fixed line for EMS in the private sector.

**Table 4.6: List of emergency numbers to contact during medical emergencies in Botswana**

Emergency number:	Number of respondents acknowledging the number:	Percentage:
a. 911	35	80%
b. 112	26	59%
c. 3901601	27	61%
d. 998	5	11%
e. 991	5	11%
f. 3901999	3	7%
g. 3953221	7	16%
h. 997	22	50%
i. None	6	14%

#### **4.2.2.2.9 Reason (s) for calling MRIB Ltd for assistance (Item A16)**

In response to the reasons for calling MRI Botswana Ltd for assistance during the ACS situation the participants' responses were as follows according to Table 4.8.

**Table 4.7: Reason (s) for calling MRIB Ltd for assistance**

Reasons for calling MRIB Ltd for assistance	Amount of respondents:	Percentage:
Urgent transport	15	34%
Access to medical advice	20	45%
Ambulance service	22	50%
Emergency medical assistance	10	23%
Quick response	4	9%
Service provider	2	5%

The need for transportation by ambulance (n=22; 50% participants), urgent transport (n=15; 34.1% participants), access to medical advice (n=20; 45.6% participants) and access to an emergency service (n=10; 22.7% participants) were responses provided by most of the participants. The realisation by participants that it was important to call



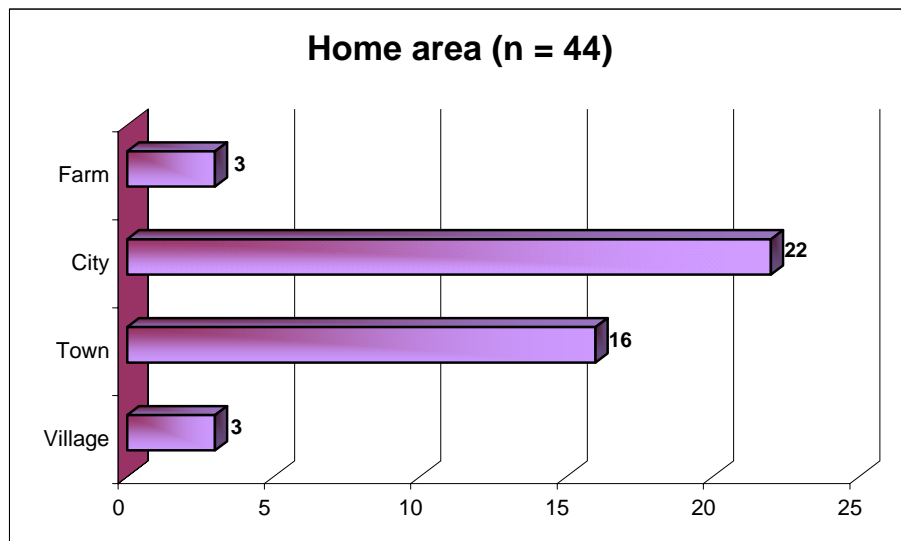
for EMS was an indication that the participants recognised the importance of EMS as a valuable health resource in the event of an emergency. By phoning the EMS callers have access to the instructions and medical advice given by the nurses. Nurses are therefore challenged to improve their telenursing skills in order to gain the confidence of the patients calling during emergencies and encouraging people to use EMS for ACS emergencies. During telephone assessment, call centre nurses need to evaluate the availability of ambulance transport, as it will facilitate rapid access to definitive care.

#### **4.2.2.3      Section A: Resource availability – social support assistance – family/other (s)**

This section consisted of four questions, which assisted the researcher to assess the patient's resource availability in terms of social support systems.

##### **4.2.2.3.1      *Home area (Item A17)***

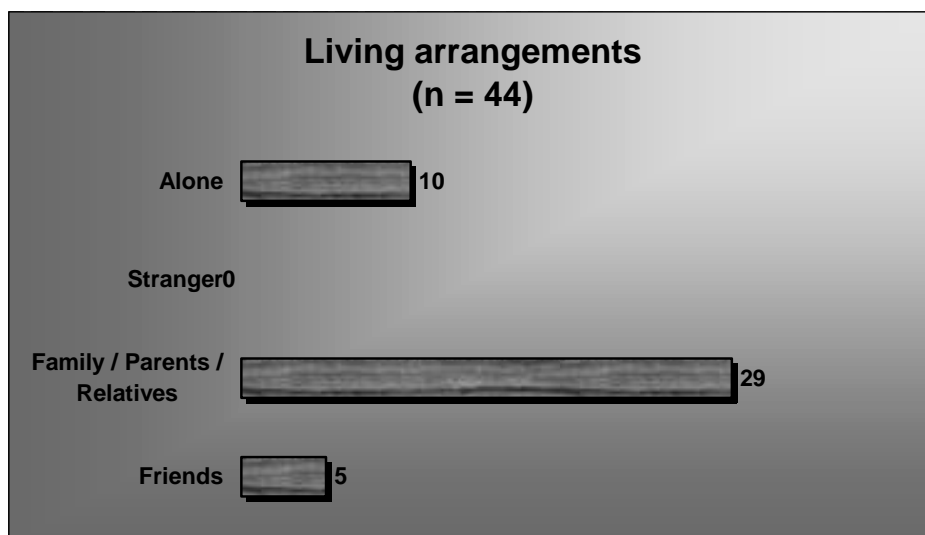
The question on home area was asked to determine the availability of patient's social support by family or others. Information on where a person lives also provides clues on sources of support that the person may have because of the various lifestyle patterns associated with various areas. The location of residence provides clues on the possible distance of patient during an emergency to a health care setting. The majority of participants (n=38/86.4%) indicated that they live in town or the city, closer to most of the health care settings during an emergency.



**Fig 4.20: Home Area (N=44)**

#### **4.2.2.3.2 Living arrangements (Item A18)**

In response to this question the responses revealed that 29 (65.9%) participants lived with family (parents/relatives), 10 (22.7%) participants lived alone and 5 (11.4%) participants lived with friends.

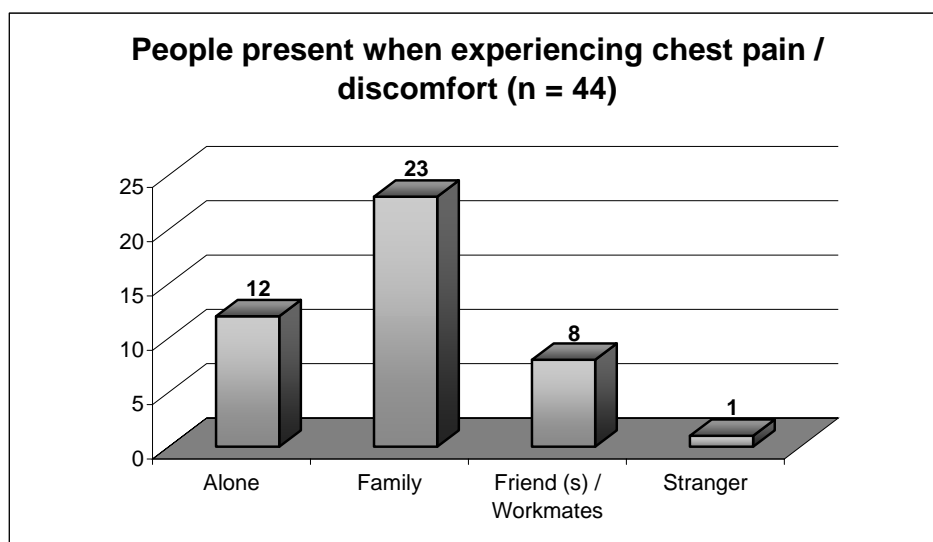


**Fig 4.21: Living arrangements (N=44)**

Residing with someone is an important resource during a cardiac emergency as there is a source of support – the family members and others can contact emergency services urgently. Greenwood et al (1996:226) found a connection between social support and coronary heart disease mortality. Poor social support is a strong factor in contributing to deaths from heart disease.

#### **4.2.2.3.3 People present during ACS episode (Item A19)**

The participants' responses to the above question were as shown in Figure 4.22.



**Fig 4.22: People present during ACS episode (N=44)**

During the episode of chest pain/discomfort, 23 (52.3%) participants had family members present, 8 (18.1%) participants had friends/workmates present, and 12 (27.3%) participants were alone while 1 (2.3%) participant was with a stranger. The presence of family and/or others during an ACS situation is a strong social system support a resource that a patient brings into the care situation. The Synergy Model describes this as a high-level resource (AACN 2004). Moser and Dracup (2000:270) indicate that patients who live alone or lack a source of support during a cardiac event face poorer outcomes.

#### **4.2.2.4 Section B: Vulnerability – Risk factors**

In this section the researcher attempted to estimate the various risk factors that contributed to patients risk for ACS and to identify measures that could be employed to reduce this risk.

##### **4.2.2.4.1 Medical conditions (Item B20)**

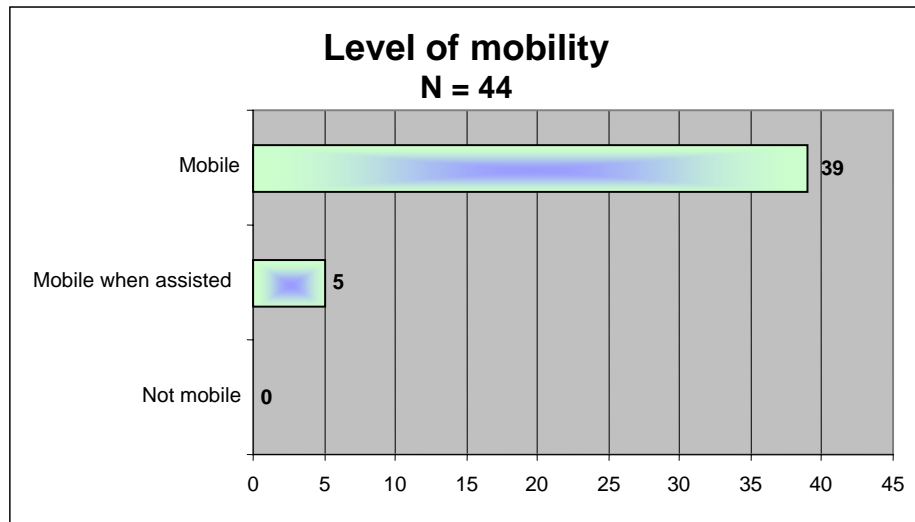
The presence of the following medical conditions namely: diabetes, hypertension, and cardiac, are associated with high risk for ACS and the outcome of the ACS episode. Of the participants (n=44), 26 (59%) participants had some medical conditions representing more than half of the participants being at risk for an ACS. Knowledge of these medical conditions is essential for the nurse to determine the level of the participants' vulnerability during an ACS episode. These participants can be categorised at level 3 as moderately vulnerable and susceptible. This indicates the need for patient education on lifestyle behaviour changes, and proper medical management of the medical condition, to minimise risk and lower the patients' vulnerability to future ACS episodes.

**Table 4.8: Medical conditions**

<b>Medical condition:</b>	<b>Response (n = 44):</b>	<b>Percentage:</b>
a. Diabetes	4	9%
b. Hypertension	13	30%
c. Cardiac	4	9%
d. Other serious illness	5	11%

##### **4.2.2.4.2 Level of mobility (Item B21)**

When asked about their level of mobility during an ACS situation 39 (88.6%) participants were able to move on their own while 5 (11.4%) participants required assistance.

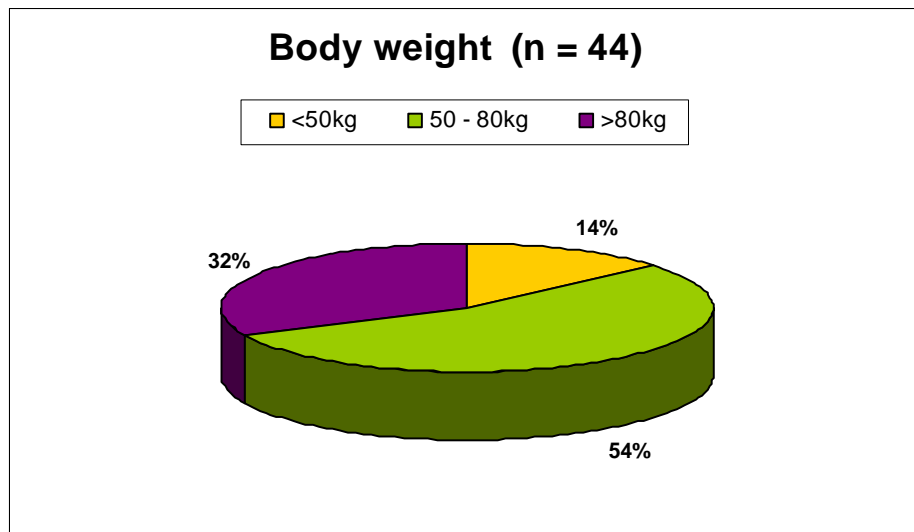


**Fig 4.23: Level of mobility (N=44)**

Patients who were able to mobilise was an indication that the myocardial injury had not yet reached a critical incapacitating stage.

#### **4.2.2.4.3 Body weight (Item B22)**

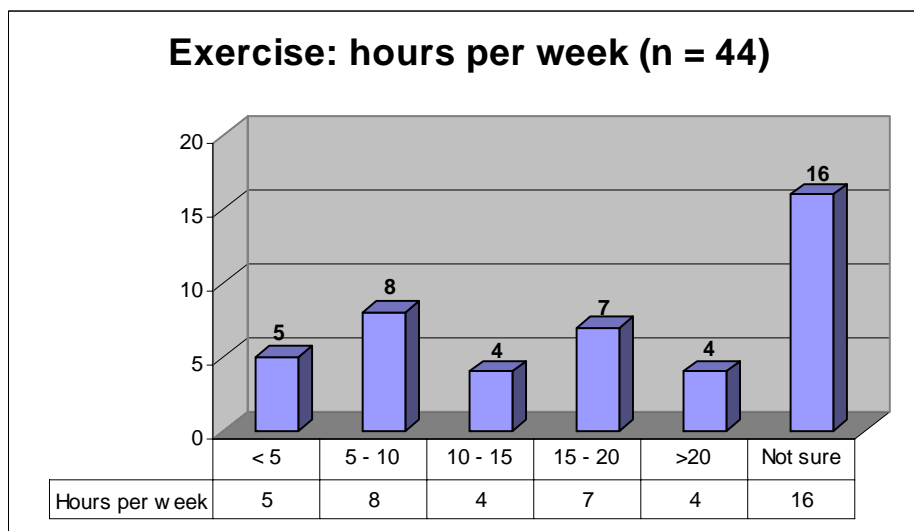
Figure 4.24 shows the results of the estimated body weight of the participants. Obesity or being overweight is a common predisposing risk factor for ACS.



**Fig 4.24: Body weight (N=44)**

Participants (32%) who were over 80kg were highly vulnerable to ACS. Grundy (1999:996) notes that the prevalence of obesity in the USA is very high and is a predisposing risk factor for coronary heart disease.

#### 4.2.2.4.4 Exercise (Item B23)

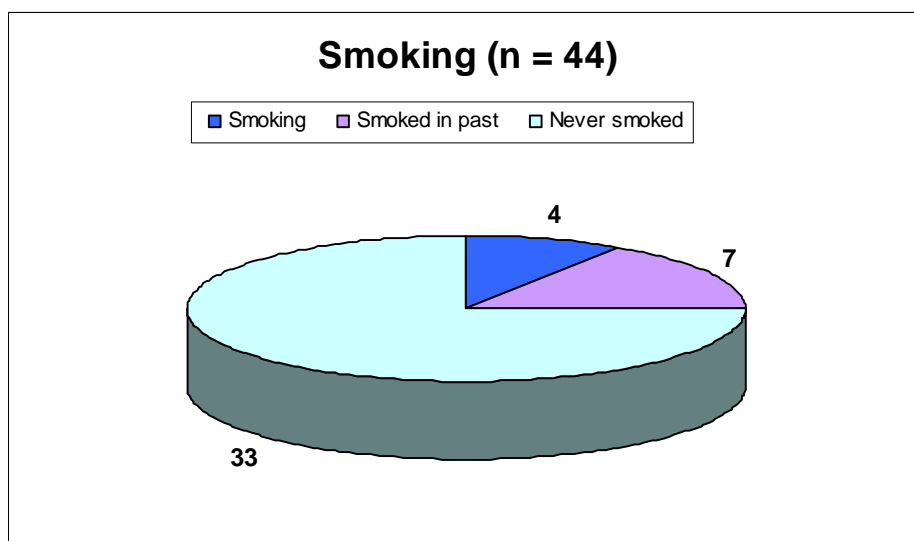


**Fig 4.25: Exercise (N=44)**

The participants were asked how many hours per week they exercised. Performing exercises helps to reduce the risk for ACS. Participants (n=28;63.6%) were able to give an indication of the number of hours per week in which they were engaged in some form of exercise ranging from the minimum number of hours (less than 5 hours) to the maximum number of hours (more than 20 hours). There were 16 (36.4%) participants who were not sure of their exercise hours. This was an issue of concern because these persons were probably not exercising, increasing their vulnerability to ACS.

#### 4.2.2.4.5 **Smoking (Item B24)**

This question helped to determine the level of susceptibility to ACS among participants as a result of smoking.



**Fig 4.26: Smoking (N=44)**

Cigarette smoking is a major causal risk factor for cardiac disease. In this study 33 (75%) participants had never smoked therefore falling into the category of low risk. These participants were minimally vulnerable and had greater chances of better clinical outcome.

#### 4.2.2.4.6 **Number of cigarettes per day (Item B25)**

The participants were asked to indicate the number of cigarettes they smoked per day. The results are shown in Table 4.9. Out of the 44 participants only 4 (9.1%) participants were still smoking, making them highly vulnerable to the occurrence of ACS. The results shown in this table reflect the need for education to assist these participants with behaviour changes or adaptations of lifestyle.

**Table 4.9 Number of cigarettes smoked per day**

Number of cigarettes per day:	Response: (n = 4)
1 – 5	1
6 – 10	2
> 10	1

#### **4.2.2.4.7 Alcohol use (Item B26)**

The participants were asked about their consumption of alcohol, as it is a risk factor for ACS. There were 28 (63.6%) participants who did not consume alcohol while 16 (36.4%) participants drank alcohol.



**Fig 4.27: Alcohol use (N=44)**



#### 4.2.2.4.8 *Type of alcohol consumed (Item B27)*

The participants consumed a variety of alcoholic substances as shown in the table 4.10.

**Table 4.10: Type of alcohol consumed**

<b>Type of alcohol:</b>	<b>Taken by respondents:</b>	<b>Percentage: N = 16</b>
a. Sorghum beer	3	19%
b. Beer	7	44%
c. Wine	7	44%
d. Hard liquor	7	44%

#### 4.2.2.4.9 *Amount of alcohol consumed (Item B28)*

Table 4.11 shows the amount of alcohol consumed per day by the participants.

**Table 4.11: Amount of alcohol consumed**

<b>Number of cans / bottles / glasses consumed per day:</b>	<b>Response:</b>	<b>Percentage: N = 16</b>
a. 1 – 5	12	75%
b. 6 – 10	3	19%
c. > 10	1	6%

#### 4.2.2.4.10 *Type of foods (Item B29)*

The participants were asked to indicate the food types that they consumed. The risk for ACS is increased if certain foods are consumed by older persons. The following question requested the participants to indicate their types of diets.

**Table 4.12: Type of foods**

Type of food:	Response:	Percentage: N = 44
a. Red meat	24	55%
b. Chicken	41	93%
c. Fish	36	82%
d. Vegetables	44	100%
e. Fresh fruit	44	100%
f. Eggs	31	70%
g. Dairy products	40	91%
h. Bread	44	100%
i. Maize porridge	39	89%
j. Other starch	43	98%

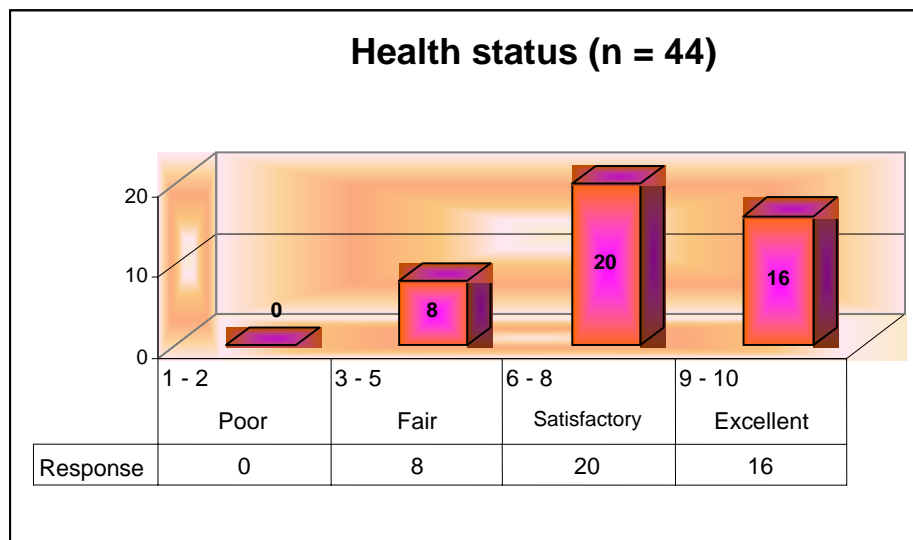
#### 4.2.2.4.11 *Appropriate diet type (Item B30)*

This question was asked because of the significant relationship between certain foods high in fat, cholesterol, or salt, which predispose an individual to the occurrence of ACS. Most of the participants 21 (48%) were not sure about their diet type, 19 (43%) were non-vegetarian, while 3 (7%) were vegetarian, 7 (16%) were on low fat diet and 9 (14%) were on non-salt diet. Eating the appropriate diet type reduces the risk of ACS for these participants.

**Table 4.13: Appropriate diet type**

Type of diet:	Response:	Percentage: N = 44
a. Vegetarian	3	7%
b. Non-vegetarian	19	43%
c. Low fat	7	16%
d. Non salt diet	6	14%
e. Not sure of diet type	21	48%

#### 4.2.2.4.12 *Rating of current health status (Item B31)*

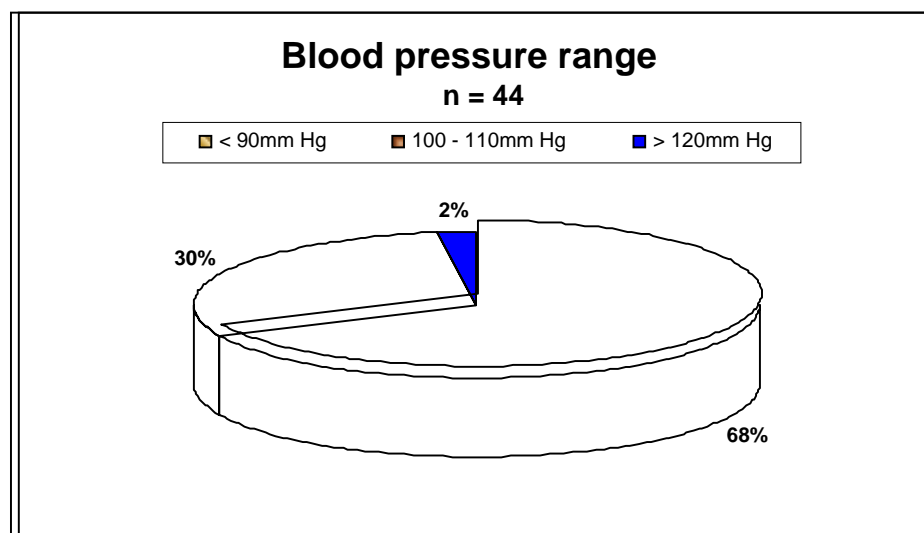


**Fig 4.28: Health status (N=44)**

The participants were asked to rate their well-being and indicate what they considered their health status to be. Thirty-six participants ranked themselves as having a satisfactory health status and were in excellent health.

#### **4.2.2.4.13 Blood pressure range (Item B32)**

The results of this study show that the participants had the following systolic blood pressure ranges: 68% had lower than 90mmHg systolic, 30% were in the range of 100-110mmHg systolic, while 2% were above 120mmHg systolic. The results of the questions on blood pressure readings of the participants ranged as follows:



**Fig 4.29: Blood pressure range (N=44)**

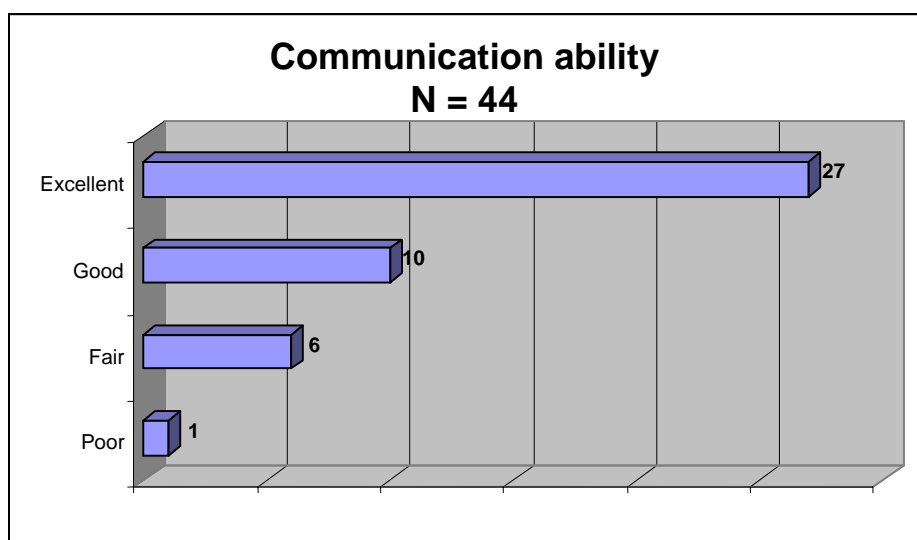
There is need for consideration of lowering the blood pressure in hypertensive patients to minimise potential for ACS.

#### **4.2.2.5 Section C: Complexity – psychological functioning and coping**

Complexity is the intricate entanglement of two or more systems. This section focuses on the patients' psychological functioning, family dynamics and the use of alternative therapies. The section on psychological support and coping capabilities has the following four items, namely the ability to communicate with others, ability to cope with stressful situations, experience of chest pain/discomfort and the expectancy of the next episode.

##### **4.2.2.5.1 Ability to communicate with others (Item C33)**

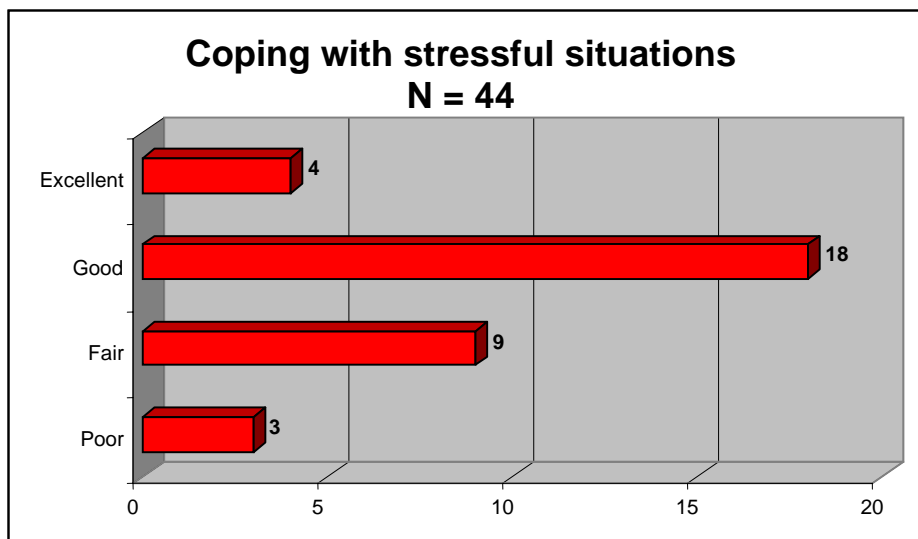
The participants were questioned on their ability to communicate with others. The participants in this study rated their ability to communicate with others as follows: 27 (61.4%) excellent, 10 (22.7%) good, 6 (13%) fair and 1 (2.3%) poor. This question was relevant to determine the participants' ability to inform others in the event of an emergency. The study findings show that the largest number of participants had adequate communication abilities.



**Fig 4.30: Ability to communicate with others (N=44)**

**4.2.2.5.2 Ability to cope with stressful situations (Item C34)**

Figure 4.31 depicts the responses from the participants on their abilities to cope with stressful situations. 18 (41%) participants viewed their coping abilities to be good, while 9 (21%) participants viewed their coping ability to be fair and 3 (6.8%) participants felt they had poor coping abilities. There were only 4 (9.1%) participants who had excellent abilities to cope with stressful situations. The enquiry about coping abilities was necessary to ascertain how the participants would cope with the stress experienced in an ACS situation.



**Fig 4.31: Ability to cope (N=44)**

#### 4.2.2.5.3 *Experience of chest pain/discomfort (Item C35)*

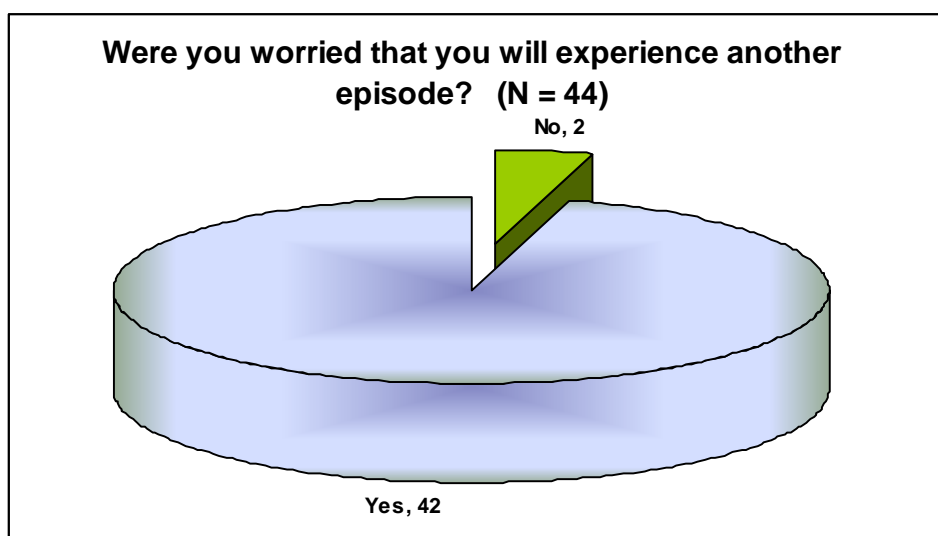
Table 4.14 shows the findings on the participants' experience of chest pain/discomfort.

**Table 4.14: Experience of chest pain / discomfort**

<i>Experience:</i>	<i>Response:</i>	<i>Percentage:</i>
a. 'I was afraid I would die'	13	30%
b. 'Extremely frightened'	8	17%
c. Frightened	17	39%
d. Not frightened	6	14%
	<b>44</b>	<b>100%</b>

According to the results displayed in Table 4.14, there were 13 (30%) participants who said they felt they would die as a result of the ACS event, 8 (17%) participants were extremely frightened and 17 (39%) were frightened of the experience. Only 6 (14%) participants did not experience any fear. These results that 38 (86%) participants were afraid of the experience confirm that an ACS situation is a very frightening experience. It is a complex situation where the individual experiences a near death or impending death situation.

#### 4.2.2.5.4 *Expectance of next episode (Item C36)*



**Fig 4.32: Expectance of next episode (N=44)**

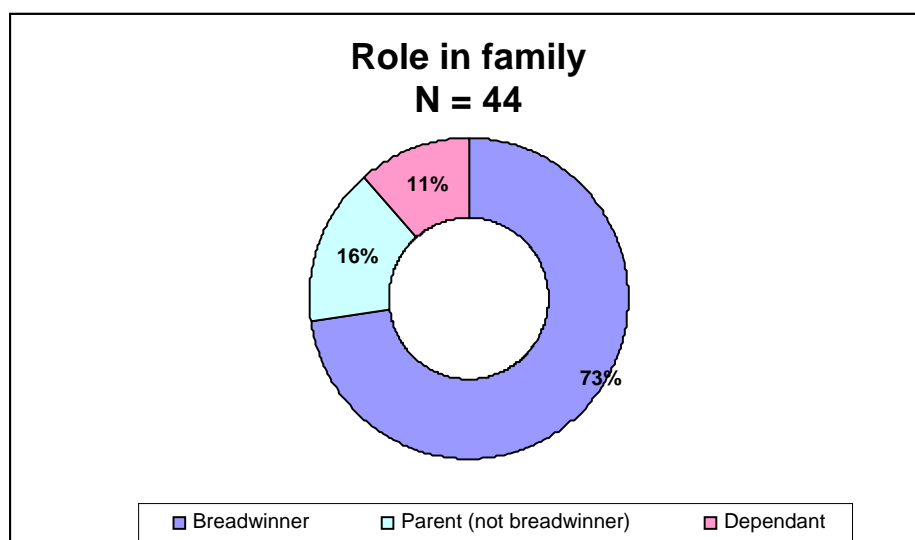
When asked whether they were worried about experiencing another cardiac episode, the participants (n=42; 95.5%) affirmed their anxiety of a re-occurrence. The stress levels of this group who are worried are high rendering them vulnerable for another cardiac episode. There is need for patient to be assisted to reduce psychological distress arising from the fear of recurring cardiac problems (Moser & Dracup 2000:271). Anxiety increases the potential for ACS. It is difficult to ascertain whether those who were not worried about another episode would be considered as confident or whether they were simply in denial.

#### **4.2.2.6 Section C: Complexity – family dynamics**

In this section there were two items addressing the family dynamics of a patient during an ACS situation.

##### **4.2.2.6.1 Role in the family (Item C37)**

Individuals play various roles in family systems. In this study 73% of the participants were breadwinners. As family members responsible for the welfare of the family the participants were under a lot of pressure to ensure that the needs of the members were taken care of. This demanding role predisposes the patient to incidences of ACS.



**Fig 4.33: Role in the family (N=44)**

The role of the participant is an important consideration as it may hinder seeking of medical attention by the patient.

#### **4.2.2.6.2 Support from family/friends (Item C38)**

The family or friends are a valuable source of support in any emergency situation. The participants were asked to indicate their satisfaction with the support they got from family or friends during an ACS situation. The perceived level of support will also influence the patient's ability to cope with the emergency. In this study 29 (66%) participants were very satisfied with the support. Cooperation between the patient and family or friend during an emergency minimises delays in patient's access to definitive care.

**Table 4.15: Support from family / friends**

<b>Satisfaction:</b>	<b>Response:</b>	<b>Percentage:</b>
a. Very satisfied	29	66%
b. Fairly satisfied	3	7%
c. Not satisfied	0	0%
d. Not present / didn't tell anyone	12	27%
	<b>44</b>	<b>100%</b>

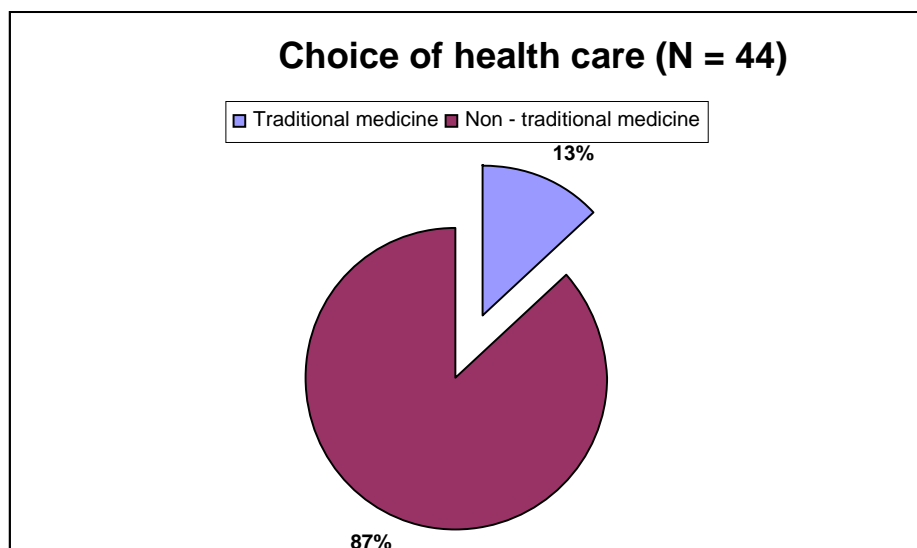
#### **4.2.2.7 Section C: Complexity – alternative therapies**

In this section there are four items that sought to identify the complex situation that may arise from alternative therapies that the patient may have used. These include the initial choice of health care during illness, family health traditions, cardiac related medication at time of the attack and treatments at the time of the attack.



#### **4.2.2.7.1 Initial choice of health care during illness (Item C39)**

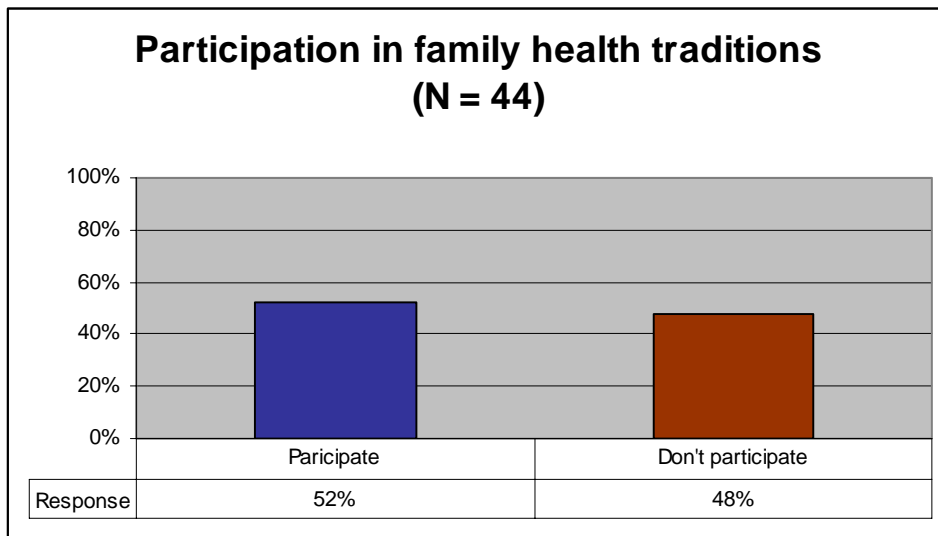
Delays in accessing definitive care can be caused by the decision made by the patient and family as their initial choice of health care approach. Pre-hospital care falls under the non-traditional (conventional) medicine. The majority (87%) of the participants indicated that they preferred the modern approach to health as the initial choice. The choice made by the participants enabled their access to definitive treatment for ACS offered in conventional medicine.



**Fig 4.34: Choice of health care (N=44)**

#### **4.2.2.7.2 Family health traditions (Item C40)**

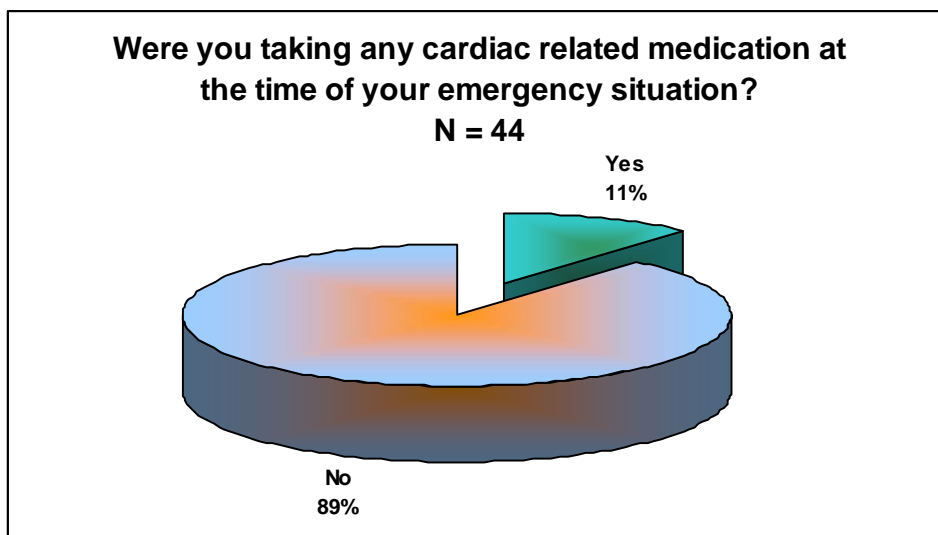
This question was significant because seeking health care through the family health traditions performed by the people has the potential to delay patient access to EMS.



**Fig 4.35: Family health traditions (N=44)**

Some traditions may adversely affect the seriousness of the signs and symptoms of a cardiac situation. It is also important for the nurse to realise that in our African context family health traditions are very significant aspect of health care.

#### **4.2.2.7.3 Cardiac related medication at time of attack (Item C41)**



**Fig 4.36**

**Cardiac related medications (N=44)**

To establish the pre-existence of a cardiac condition before the current ACS experience, the participants were asked to indicate whether they were taking any cardiac related medications. These participants (89%) did not have an underlying cardiac condition that could compromise the patient's responses during an emergency situation.

#### **4.2.2.7.4      *Treatments at time of attack (Item C42)***

The name of the medication taken by the participant will provide the nurse with the clue of an underlying medical condition. This approach is useful when dealing with a patient who is not able to identify their medical problem.

**Table 4.16: Treatments at time of attack**

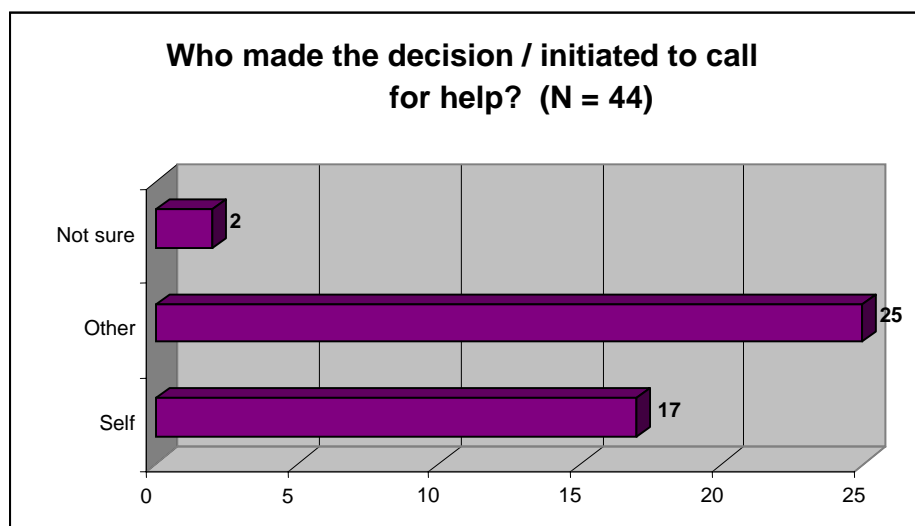
<b>Treatments taken:</b>	<b>Response: N = 44</b>
a. Anti - hypertensive	14
b. Aspirin	2
c. Anti - diabetics	5
d. Anti TB	2
e. Anti - inflammatory	2
f. Antibiotics	2

#### **4.2.2.8      **Section D: Participation in decision-making – self participation****

Self-participation refers to the extent to which the patient/family engages in decision-making. This section deals with three items addressing the patient's and family's participation in decision-making. namely the decision to call for help, level of participation in decision-making and the time factor after pain experienced in call for help.

##### **4.2.2.8.1      *Decision to call for help (Item D43)***

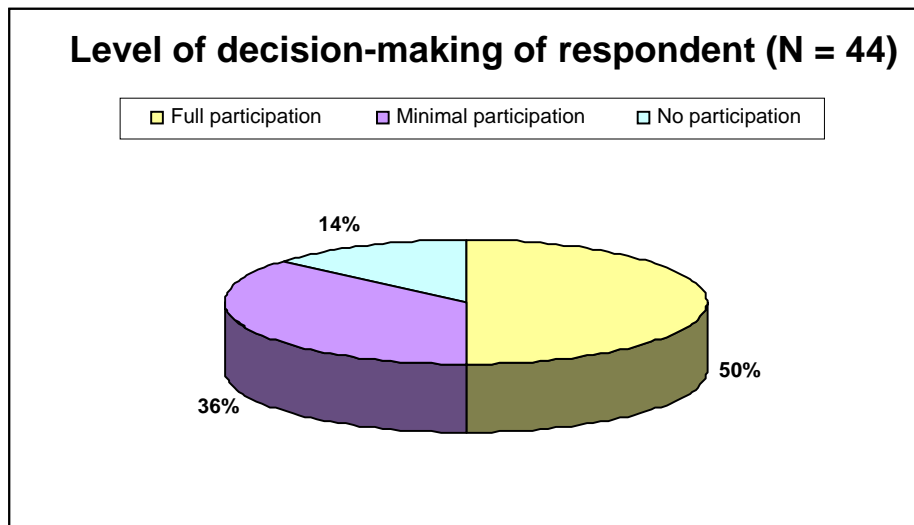
Patients have the responsibility to make decisions for their health care depending on their perception of their health situations. Individuals who are in an emergency situation, however, may not always have the primary responsibility of deciding what should be done because of other confounding factors such as severe pain, or severe psychological distress. In this study 17 (38.6%) participants depended on others to get help for their cardiac emergency while 25 (56.8%) participants sought assistance on their own. This information is important because the call centre nurse maybe dealing with others or the patient.



**Fig 4.37: Decision to call for help (N=44)**

#### **4.2.2.8.2 Level of participation in decision making (Item D44)**

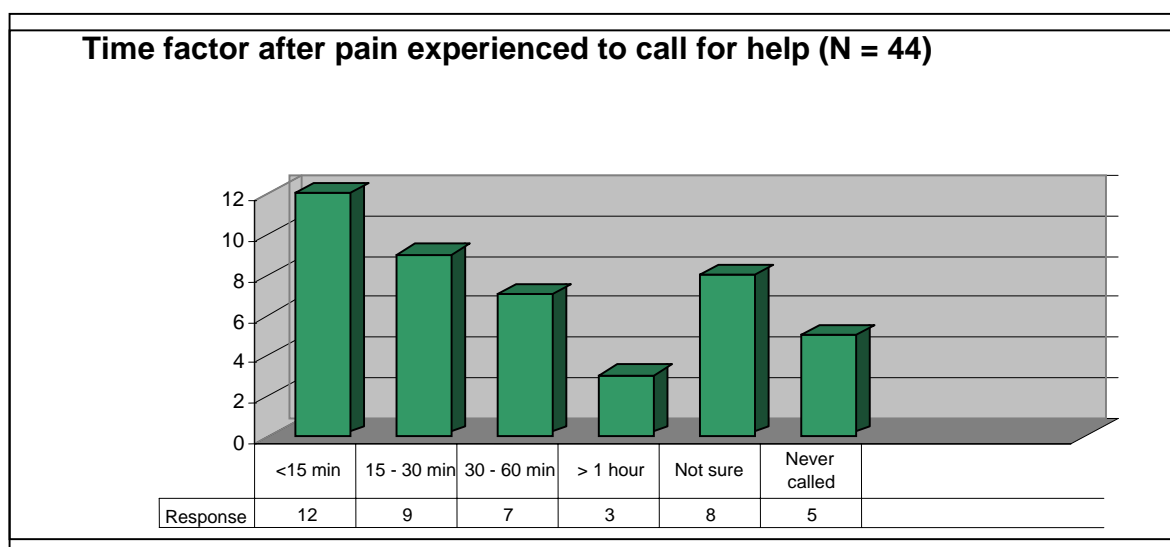
Those participants (50%) who made the decision to call for help were fully involved in making decisions regarding their care. It can be assumed that those who had others making the call for help participated minimally or not at all.



**Fig 4.38: Participation in decision making by respondent (N=44)**

#### **4.2.2.8.3 Time factor after pain experienced to call for help (Item D45)**

This question was asked to identify the length of time it took the participants to contact EMS when they experienced chest pain. This study revealed that 38 (86.4%) participants had called for help within one hour of the onset of pain. Those who called earlier were able to associate their symptoms with a cardiac emergency (Dracup & Moser 1997:261).



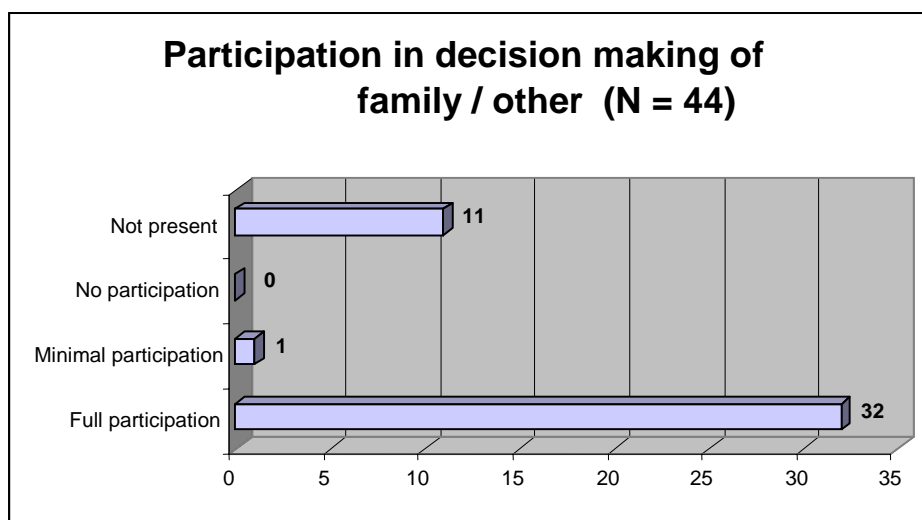
**Fig 4.39: Time factor after pain experienced to call for help (N=44)**

The participants who delayed calling for help or did not call at all failed to recognise the significance of the symptoms. Time factor is every critical in accessing definitive care in the pre-hospital phase of care and it also contributes to positive outcomes during an emergency.

#### 4.2.2.9 Section D: Participation in decision-making – family/other (s) participation

Family involvement during emergency situations is a very important social support structure.

##### 4.2.2.9.1 Family / other (s) participation in decision making (Item D46)



**Fig 4.40: Participation in decision making by family/other (N=44)**

Family members may call in or bring the patient for emergency care. When emergencies occur in the home, other(s) may be present in instances where emergencies occur at work or elsewhere other than the home setting. The presence of a family member enhances patient cooperation and understanding of the situation, and following the instructions during emergency situations. A patient's lack of social support

may contribute to the lack of resources required to change unacceptable patient behaviour. In this study 32 (72.7%) participants had family members who were present while there was no family member present for 11 (25%) participants.

#### **4.2.2.10 Section E: Participation in care – self participation**

This refers to the extent to which the patient participates in their care.

##### **4.2.2.10.1 Action when experiencing symptoms (Item E47)**

There were varied responses given by the participants regarding the action taken when ACS symptoms were experienced as shown in Table 4.17. Findings from a study done by Leslie, Urie, Hooper and Morrison (2000:138) reveal that only 25% of the 313 persons studied called for help within one hour of the onset of symptoms. The patients who did not call for help thought that the symptoms would go away.

**Table 4.17: Action when experiencing symptoms**

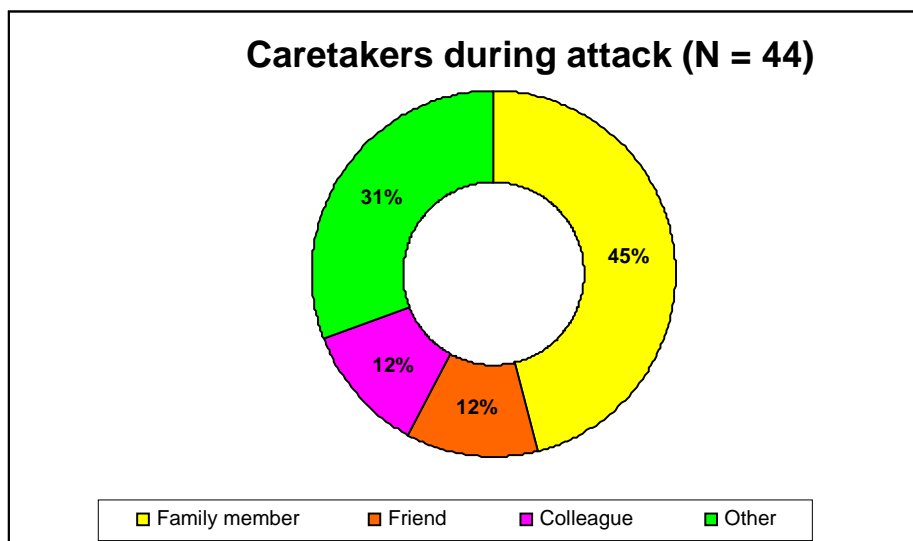
<b>Action:</b>	<b>Response:</b>	<b>Percentage: N = 44</b>
a. Called / phoned for medical advice	16	36%
b. Took some medication	7	16%
c. Informed relative / friend	28	64%
d. Called for an ambulance	14	32%
e. Arranged transport to go to clinic / hospital	7	16%
f. Rested and waited for the symptoms to subside	14	32%
g. Passed out	3	7%

#### **4.2.2.11 Section E: Participation in care – family/other (s) participation**

Refers to the extent to which family/other(s) participates in aspects of patient care.

#### **4.2.2.11.1 People responsible for care during attack (Item E48)**

The presence of family members and others forms a strong social support system base for patients during an emergency. From the findings shown in Figure 4.41 the participants had the presence of another person during the emergency situation. The presence of another person facilitated the communications between the nurse and the patient and family. The family or other person would carry out the instructions given by the nurse during the emergency.



**Fig 4.41: Caretakers during attack (N=44)**

#### **4.2.2.11.2 Action of family / other (s) during attack (Item E49)**

When asked what actions were taken by the family and others during the emergency, the family members and others took steps to ensure that the patient was taken to



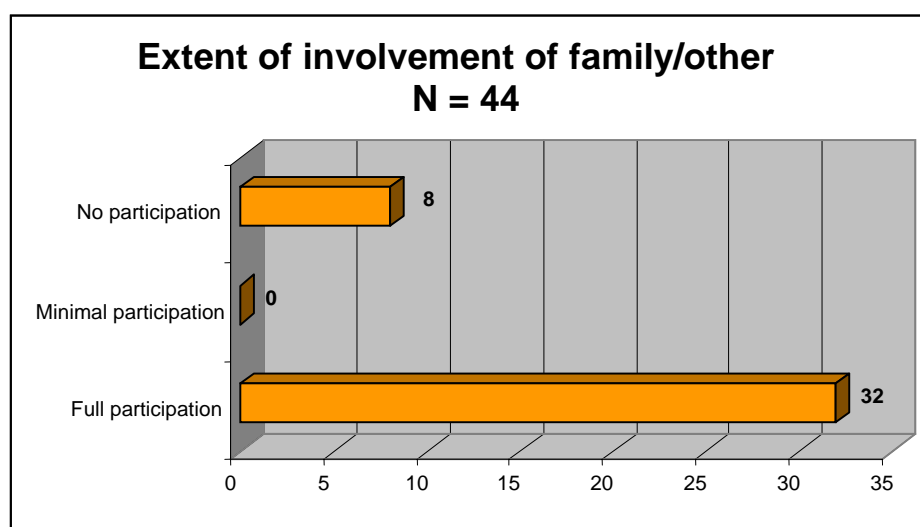
hospital for further management as evidenced by the following actions: called for medical advice 19 (43.2%), called for an ambulance 33 (75%) and organised transport to hospital 33 (75%). The action that was taken by the family and others was influenced by their knowledge of the significance of the emergency situation.

**Table 4.18: Action of family / other(s) during attack**

Action:	Response: N = 44	Percentage:
Called / phoned for medical advice	19	43%
Gave patient some medication	4	9%
Informed relative / friend	2	5%
Called for an ambulance	33	75%
Arranged transport to go to clinic / hospital	27	61%
Asked you to rest and waited for the symptoms to subside	1	2%
No family were involved	12	27%

#### **4.2.2.11.3 Extent of family other(s)' participation during attack (Item E50)**

From the study results it was evident that there was much participation by the family members. The presence of family members created a strong support base for the participants during their emergency care.

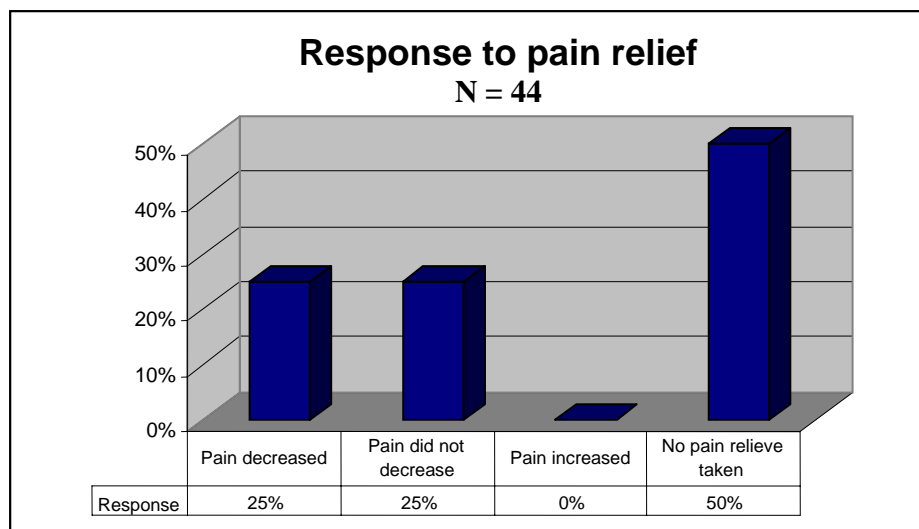


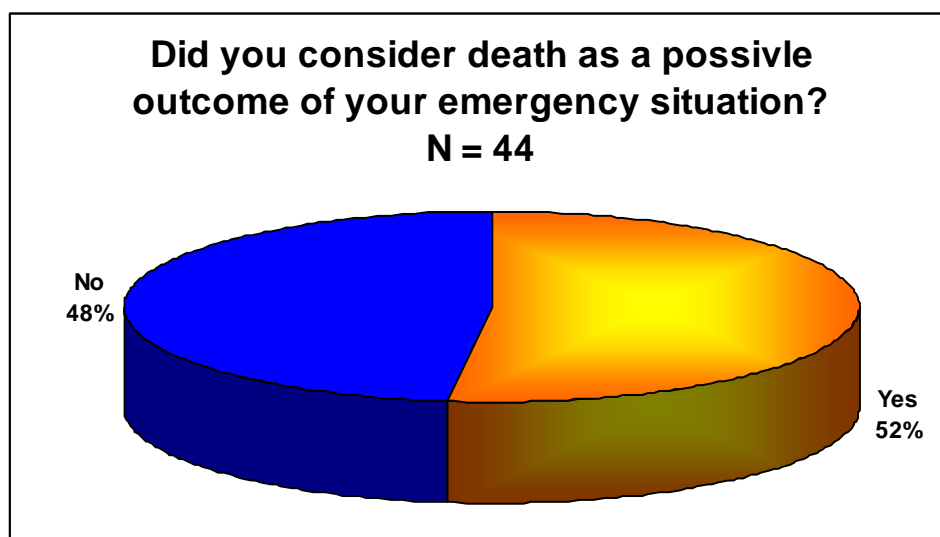
**Fig 4.42: Extent of involvement of family/other (N=44)****4.2.2.12 Section F: Stability**

This refers to the perceived level of responsiveness to therapy. There are three areas in this section.

**4.2.2.12.1 Response to pain relief (Item F51)**

During an ACS situation the participant may experience chest pain which may require pain relief, In this study there were 25% participants took pain relief medicines and were relieved of the pain while another 25% did not do so. The remaining 50% opted not to take any pain relief medicines. This question can be related to the patients' knowledge of the medications to take during a cardiac emergency.

**Fig 4.43: Response to pain relief (N=44)****4.2.2.12.2 Perceived risk of death (Item F51)**



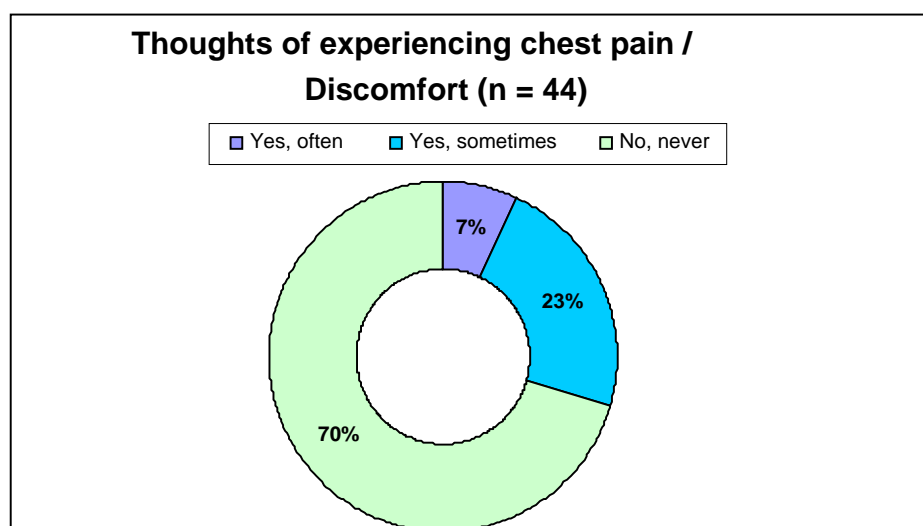
**Fig 4.44: Consideration of death (N=44)**

When asked whether they had considered death as a possible outcome during the ACS emergency 52% participants said “yes” while 48 participants said “no”. Severe chest pain is associated with impending sense of doom in certain individuals.

#### **4.2.2.12.3 Perceived risk of developing complications**

##### ***Thoughts of experiencing chest pain / discomfort (Item F53)***

Of the participants, 70% expressed that they had not thought that they would experience chest pain or discomfort although 30% of the participants agreed that the thought had crossed their mind. The public needs to be educated on the risk factors of ACS so that they can ascertain whether they are predisposed to ACS or not, and take precautions to prevent the occurrence.



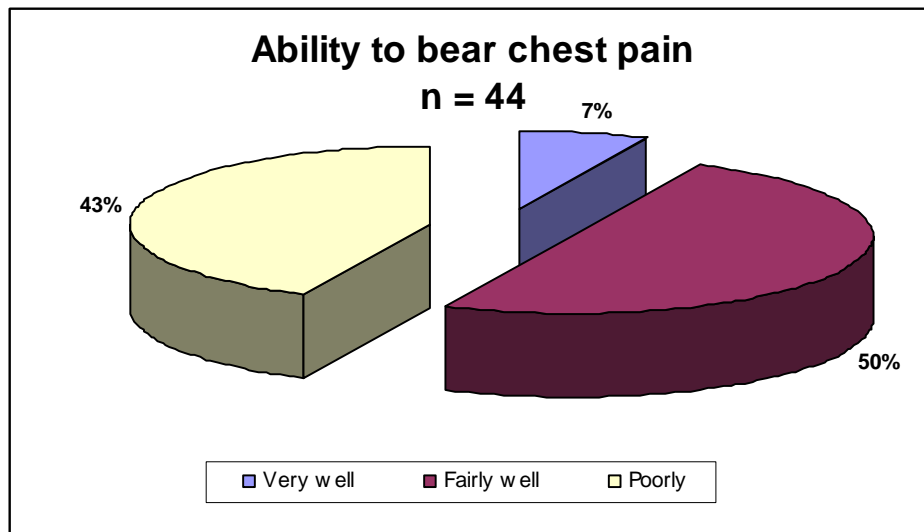
**Fig 4.45: Thoughts of experiencing chest pain/discomfort (N=44)**

#### **4.2.2.13 Section G: Resiliency**

Resiliency refers to the capacity or ability to utilise coping/compensatory mechanisms after an insult. Six aspects of resiliency were addressed during this study, namely the ability to bear chest pain, the nurse instructions while waiting for the ambulance, the satisfaction with assistance provided by the nurse while waiting for the ambulance, the reasons for dissatisfaction, the level of knowledge in response to the emergency situation and the methods used to control symptoms after a cardiac episode.

##### **4.2.2.13.1 *Ability to bear chest pain (Item G54)***

The ability to cope with chest pain was fairly divided among the participants as follows: 50% coped poorly while the other 50% coped well. The support system and the individual's psychological capacity to tolerate pain may have played a role in the outcome of the patient's ability to bear chest pain.

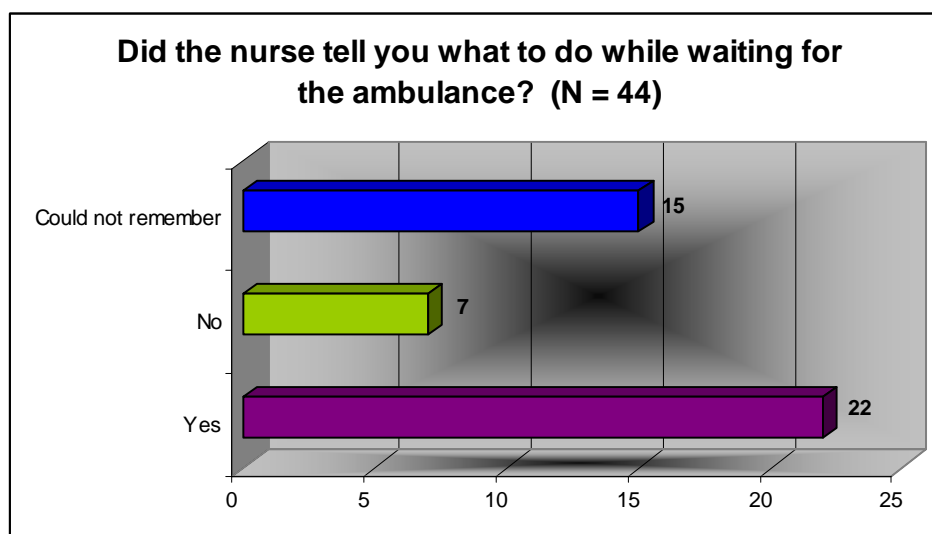


**Fig 4.46: Ability to bear chest pain/discomfort (N=44)**

#### **4.2.2.13.2 Nurse's instructions while waiting for ambulance (Item G55)**

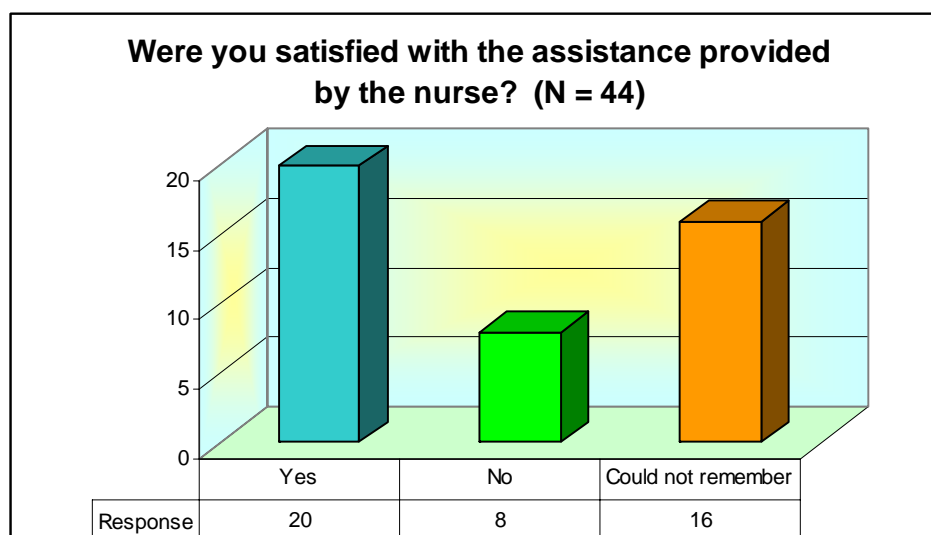
Nurses serve in call centres on a 24 hour basis. The role of the nurse is to conduct telephone assessment, to provide medical advice and refer patients for further medical care. In an emergency the nurse is required to institute instructions on life saving measures while waiting for EMS crews to transport the patient to hospital (ENA 2005).

Fatovich et al (1998:143) commented that patients require access to health information and advice around the clock. The ability of the nurse to provide instructions helps to enhance the patient outcomes, alleviating the dangers while waiting for definitive care.



**Fig 4.47: Nurse instructions while waiting for ambulance (N=44)**

**4.2.2.13.3 Satisfaction with assistance provided by nurse while waiting for Ambulance (Item G55)**



**Fig 4.48: Satisfaction with nurse instructions (N=44)**

The participants were asked to state their satisfaction levels with the service provided by the nurse when they called for help. There were 20 (45.5%) participants who were satisfied while 18 (40.9%) participants could not remember whether or not they were

indeed satisfied. Most callers to the ED were happy with the advice given by the nurse according to study results by Fatovich et al (1998:145).

#### **4.2.2.13.4 Reasons for dissatisfaction (Item G56)**

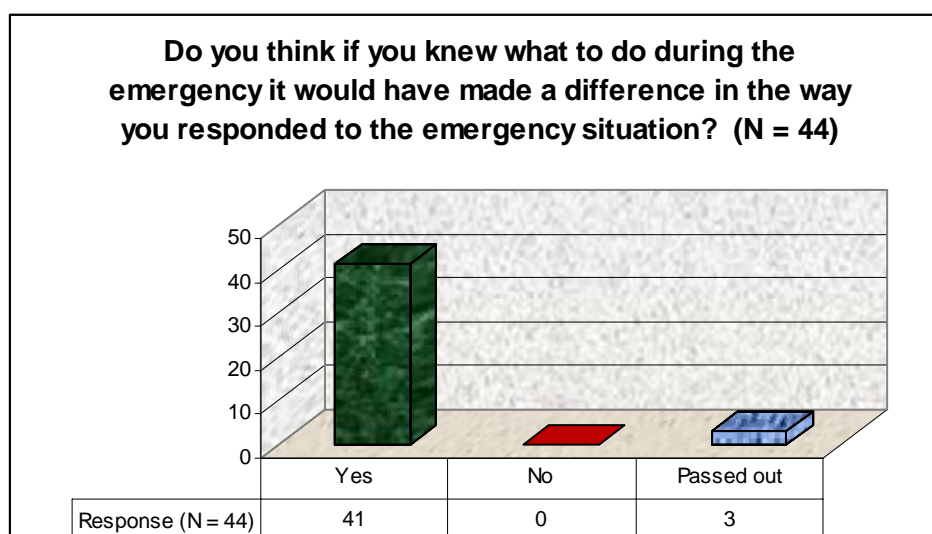
There were eight participants who were not happy with the assistance given by the nurse according to the reasons outlined in table 4.19. Fatovich et al (1998) note that lack of satisfaction by clients may be due to nurses' lack of experience, lack of protocols to guide medical advice resulting in inappropriate advice given to the patients.

**Table 4.19: Reasons for dissatisfaction**

<b>Reasons for dissatisfaction:</b>	<b>Respondents: (N = 8)</b>
Instructions were not clear	2
No one told me what to do when I have a chest pain	3
No advice was given by the person taking the call	3
Ambulance delayed	1

#### **4.2.2.13.5 Level of knowledge in response to emergency situation (Item G57)**

In Figure 4.49 the results show that of the 44 participants in the study 41 (93.2%) participants stated that knowing what to do in an emergency would have made a difference to their situation. The participants acknowledged lack of knowledge. Meischke et al (2000:317) improved the awareness of the elderly in response to cardiac emergencies by testing the effectiveness of a heart survival kit that recommended calling 911 and taking aspirin. The education of patients is the key to improving the survival rates of patients in ACS events. Blank et al (1998:316) suggest that patient outcomes can be improved by providing patients with information about the action plan during a cardiac emergency.



**Fig 4.49: Knowledge level in response to emergency situation (N=44)**

#### **4.2.2.13.6 Methods used to control symptoms after a cardiac episode (Item G58)**

Table 4.20 refers to complementary therapies and other healing practices that contribute to the reduction of stress and other lifestyle practices that predispose to cardiovascular disease. Although participants (n=44; 100%) used conventional medicine they also acknowledged the use of other means to cope with the symptoms of ACS.

**Table 4.20: Methods used to control symptoms after cardiac episode**

Method used:	Response: N = 44	Percentage:
a. Alternative medical systems (indigenous/traditional)	10	23%
b. Mind-body interventions (prayer)	24	55%
c. Biologically based treatment (dietary/herbs supplements)	31	70%
d. Energy therapies (healing touch/therapeutic touch/exercise)	16	36%
e. Conventional medicine	44	100%



#### 4.2.2.14 Section H: Predictability

Predictability is a characteristic that allows one to expect or to determine a course of the illness. Only two issues pertaining to predictability will be addressed in this section, namely the outcomes of chest pain/discomfort episode and the experience of change in the patient's life.

##### 4.2.2.14.1 Outcome of chest pain/discomfort episode (Item H60)

There were three outcomes for patients with the experience of chest pain in this study as outlined in the table below.

**Table 4.21: Outcome of chest pain / discomfort episode**

Outcome of chest pain / discomfort:	Response: N = 44	Percentage:
a. Survived with no complications	34	77%
b. Admitted to hospital	26	59%
c. Referred to cardiologist	26	59%

##### 4.2.2.14.2 Experiences of changes in lifestyle (Item G61)

Undergoing the experience of ACS brought about some changes in most of the participants lives. The experience increased the understanding of the cardiac condition and how it should be managed to mitigate more serious outcomes. The need to change the lifestyle is advocated in the literature reviewed for this study and is associated with improved patient outcomes.

**Table 4.22: Experience of change in life after episode**

<b>Experience of change in life:</b>	<b>Response: N = 44</b>	<b>Percentage:</b>
Improved understanding of the nature of the condition	33	75%
Increased knowledge on the management of the condition	37	84%
Increased awareness of the need for behaviour / lifestyle change	36	82%

### **4.3 SUMMARY OF THE FINDINGS**

The researcher used the conceptual model based on patient characteristics of the Synergy Model, pre-hospital care and the chain of survival, nurse telephone triage skills and decision-making to facilitate access to definitive care for better patient outcomes to guide this study. The aim of the study was to explore the characteristics of patients who had experienced ACS situations and identify the available resources to cope with this emergency situation.

#### **4.3.1 Patient characteristics**

The ACS patients' characteristics that were typical for ACS patients included their ages, gender, race, and financial status. The Synergy Model guided the researcher to determine the vulnerabilities or inadequacies in resources, which the patients encountered when they experienced the ACS situation. These would be useful for the nurse collecting data from each particular patient during a cardiac emergency situation to determine the patient's level of vulnerability, and the resources they bring into the situation. The patients had adequate social support systems; they needed assistance to cope with their emergency situations.

### **4.3.2 Pre-hospital care and chain of survival**

The nurse functions to facilitate early access to definitive care. The instructions and advice given by the nurse to the patient were considered helpful by the patients in this study.

### **4.3.3 Patient outcomes**

The participants in this study had better outcomes from the ACS experience. There were no complications. The participants expressed satisfaction with the assistance provided by the nurses.

## **4.4 CONCLUSION**

This chapter discussed the data analysis and interpretation of the findings with reference to the literature review wherever possible. The data were presented in tables and graphic designs.

Chapter 5 concludes the study, by discussing the limitations and makes recommendations for practice and further research.

## **CHAPTER 5**

### **Conclusions, limitations and recommendations**

#### **5.7 INTRODUCTION**

The aim of this study was to explore, identify and describe the characteristics of patients who experienced ACS events and to explore the available resources for these patients. In this chapter the conclusions, with reference to the objectives and findings, the limitations of the study and recommendations for practice and further research will be presented. The assumptions underlying the study in chapter 1.11 will be reviewed in relation to the conclusions.

#### **5.2 OVERVIEW OF THE STUDY**

There is an increase in the mortality and morbidity rates of ACS related incidents in Botswana. Many studies have been conducted to investigate the reasons for delays in contacting EMS services in the event of emergency situations. Pre-hospital care has been identified as a critical phase in enhancing patients' survival during an ACS episode. Studies have been done on reducing the time between the onset of symptoms and accessing definitive care; from the patient's recognition of symptoms to the commencement of medical treatment in the hospital. However, there is a gap in the information base on the assessment of the patients by the nurse in the call centre during an ACS episode. This study sought to utilise the knowledge base of the profile of the ACS patient to explore the patient characteristics based on the Synergy model and to identify the available resources. There were 44 participants who were interviewed who met the following criteria for recruitment:

- A live patient who was either a male or female, who had experienced ACS within the preceding 18 months (January 2004 – June 2005).

- The patient and/or family made the initial call for assistance to the medical call centre.
- The participants were willing to participate in the study and to give written consent. (See Annexure C).
- The participants were able to understand (verbal) spoken English and respond to an interview.

The data were collected through interviews using a structured interview schedule that was developed specifically for this study. Based on the results of the data analysis of the 44 interview schedules the findings of this study will be presented with reference to the identified objectives and the assumptions.

### **5.3 CONCLUSIONS IN RELATION TO THE OBJECTIVES GUIDING THE STUDY**

Upon completion of the data analysis the researcher made conclusions based on the following study objectives:

- Explore and describe the characteristics of patients who have experienced ACS.
- Make recommendations for an organised data collection guide for use by nurses in the pre-hospital phase of care.
- Assist nurses to make more effective decisions based on the data collected.

#### **5.3.1 OBJECTIVE 1**

***Exploring and describing the characteristics of patients with the experience of ACS.***

The data from Part A and Part B of the interview schedule contributed to the data collected pertaining to this objective.

### **5.3.1.1 Demographic profile of the ACS patient**

The data from the demographic section of the interview schedule in this study yielded results that are consistent with literature reviewed and contributed to the existing knowledge base of the profile of the patients with an ACS in Botswana. Literature sources indicated that in Botswana, the number of patients presenting with signs and symptoms of cardiovascular disease is increasing as a result of changing socio-economic demographics. This study results confirmed this by the number of people (105) reporting to the emergency call centre in the study with cardiac symptoms. The mean age of people presenting with ACS symptoms in this study was 46.6 years. Contrary to the myth that men are more prone to ACS than women; consistent with current studies, there were more females who presented with ACS symptoms than men in this study. Even though Botswana has a large black population there were other races of white and Asian origin that were also among the people with ACS problems. Most of the participants in this study were employed with some form of income, implying that financial resources were available. The participants in this study were mostly in sedentary occupations predisposing them to physical inactivity, which is a risk factor for ACS. In the classification of the Synergy Model, overall the participants were moderately vulnerable being regarded as not fully protected and susceptible to ACS.

#### ***5.3.1.1.1 Implications and Recommendations***

The participants in this study had modifiable predisposing risk factors for ACS. The call centre nurse needs to acquire more knowledge about ACS to be able to adequately and appropriately instruct patients on the mitigation of risk factors. There is a need for the public to be made aware of the predisposing risk factors for ACS through public awareness programs such as health fair clinics and radio talks.

### **5.3.1.2 Characteristics of the ACS patient**

Part B of the interview schedule focused on the characteristics of the patients with the experience of ACS described with reference to the patient characteristics of the Synergy Model. There are eight patient characteristics namely: resiliency, vulnerability,

complexity, resource availability, stability, predictability, and participation in care and participation in decision-making.

#### **5.3.1.2.1 Resource availability**

Refers to the extent of resources (personal, psychological, fiscal, technical) that the patient and family/others bring to the emergency situation. In this study the three areas namely: patient's knowledge of the illness, patient's access to health care and the patient's social support systems were useful for the nurse to identify and evaluate the resource level of a patient during an ACS situation.

The patients in this study presented with both the significant typical symptom of ACS (chest pain/discomfort) and the atypical symptoms. However, most of the participants failed to recognise the urgency of their situation and the relationship of the symptoms to a cardiac problem. These patients had a minimal to moderate resource availability (limited knowledge available) that would hinder their understanding of urgent need to contact EMS. This contributed to their delays in seeking help.

The private and government facilities were both accessible to the participants. Medical treatment for cardiac emergencies such as ACS should be available and accessible to patients. However, the patients' first point of entry into the health care system is the clinics that are largely staffed by nurses with doctors only in certain clinics. The participants in the study acknowledged access to both facility types although there was lack of access to cardiac clinics for some participants. Access to health care was a moderate resource because health facilities had limitations in catering for the patients' type of health problem.

In pre-hospital care lack of transport or use of private transport, is a contributory factor delaying access to definitive care. This study reveals that although most of the participants had their own means of transport or had access to transport most preferred to contact the ambulance service for transport to hospital.

Most of the participants in the study resided with family and others. This was an adequate resource level contributing to quicker reporting of the symptoms as well as having someone to provide support during the ACS emergency. The participants in this study had strong social support systems. However, the participants who lived alone had weak social support systems.

#### **5.3.1.2.1.1 *Implications and Recommendations***

The patient with limited knowledge about the seriousness of the ACS problem has potential for delay in seeking medical help. This has implications for the nurse in the call centre. When patients phone to an emergency call centre the nurse should be knowledgeable about the typical and atypical symptoms of ACS and be able to probe for more details during the call. This screening process can help to avoid mismanagement due to misdiagnosis.

Access to a clinic/hospital facilitates patient's commencement with definitive treatment. Nurses get requests for assistance in emergencies through the phone or from family/others reporting at the clinics. In order to minimize delays during the call screening process, the nurse requires information on the nearest appropriate health facilities where patients can be further assessed. The nurses are responsible for processing faster access to health facilities through the ambulance services.

The public should be encouraged to contact EMS for ambulance services to ensure early initiation of definitive care. The public should be informed of the emergency numbers that can be called in the event of emergencies.

Patients cope better when they have love and support of family and friends. The lack of support is a hindrance to the nurse giving instructions in an emergency when the patient is alone and afraid. This also hampers the nurse from being able to collect adequate information about the patient's situation.



### **5.3.1.2.2 Resiliency**

Resiliency refers to the capacity to return to a restorative level of functioning using compensatory/coping mechanisms. The participants in this study can be categorised as being minimally to moderately resilient, because although some were able to endure the pain to a certain extent, some of them failed to cope although they had taken pain relief measures.

#### **5.3.1.2.2.1 *Implications and recommendations***

A calmer person is able to follow instructions. Call centre nurses need to employ psychological management techniques to minimise panic states of the patient and family members/others. Nurses need to be knowledgeable about instructions given to a person in an ACS event, provide psychological support and comfort the patient while waiting for ambulance crews to arrive on the scene. The nurse should probe for and identify other unseen emotional reactions. Instructions/activities keep patients/others occupied therefore distracting the patient's focus on fear. The patient and family/others value nurse instructions if the nurse is portrayed as being caring. The nurse should also be aware that patients/family and others have their own ways, which they can resort to in emergencies to help them deal with the situation.

### **5.3.1.2.3 Vulnerability**

Vulnerability refers to the susceptibility to actual or potential stressors that may adversely affect patient outcomes. The participants in this study experienced variability ranging from mild to severe vulnerability for different factors. The participants were moderately to highly vulnerable as they possessed the medical conditions predisposing to ACS, namely diabetes, hypertension and other cardiac conditions.

The predisposing factors to ACS were variable among the participants. There were 32% participants who were moderately to highly susceptible for being overweight. The

participants demonstrated poor exercise patterns. There were 5 (11%) participants who were exercising less than 5 hours, and 16 (36.4%) participants who did not know the number of hours they exercised. Due to the nature of their occupation, 39 (88.6%) of the participants were engaged in sedentary type of work; making them prone to physical inactivity, a predisposing factor for ACS. Smoking was a minimal risk factor as there were 40 (90.9%) participants who did not smoke.

#### **5.3.1.2.3.1 *Implications and recommendations***

There is a requirement for behavioural lifestyle changes for most of these participants. The call centre nurse needs to acquire more knowledge on ACS to be able to adequately and appropriately instruct patients to assist them to reduce their vulnerability to future ACS encounters.

#### **5.3.1.2.4 Complexity**

Complexity refers to the intricate entanglement of two or more systems. The role of the participant is an important consideration as it may hinder seeking of medical attention. The participants (n=32; 72.7%) indicated that they were either fairly or very satisfied with the support they got from family and friends. There was no compromise of access to definitive care. The participants sought conventional (non-traditional) health care. Although they used conventional medicine, the participants were engaged in family health traditions that were contributory to delays in seeking medical assistance. The use of cardiac medications was indicative of a patient's previous cardiac history that could compromise the current response to emergency care. The participants were moderately complex because they were moderately involved in patient or family dynamics.

#### **5.3.1.2.4.1 *Implications and recommendations***

Although they had not been able to relate their symptoms as being cardiac the participants (n=26; 59%) recognised the emergency situation and called for immediate medical help. The patient's ability to communicate with others was vital as it influences

their ability to share the critical situation with the nurse or other emergency care workers. The ability of the participant to cope with the situation was every important to get their cooperation during the call assessment. It is an important realisation by the patient of the presence and support of the family member and friends. The call centre nurse needs to employ her skills to create a trusting relationship with the patient and family.

#### **5.3.1.2.5 Stability**

Stability refers to the ability to maintain a steady-state equilibrium. The participants were minimally to moderately stable depending on their response pain relief medicines taken or not taken. Of the participants who decided to take pain relief medicines, 25% experienced pain relief while 25% did not experience any pain relief. The participant's level of stability varied from being stable for a period of time and being responsive to the pain relief to being unresponsive to the pain relief and facing a high risk of death. The presence of fear elevates the stress levels experienced by the patient during an ACS situation. This increases the risk for worsening the condition. An ACS situation is a frightening experience. The participants expressed fears of the current situation and of recurring events.

##### **5.3.1.2.5.1 *Implications and recommendations***

The nurse needs to use her nursing skills to create a safe passage for the patients in an ACS situation. The nurse should encourage the use of coping strategies such as applying the basic and advanced life support skills that is internationally recognised as the protocol to which a patient should be managed at the scene.

#### **5.3.1.2.6 Predictability**

Predictability is a characteristic that allows one to expect a certain course of events or course of illness. There are good outcomes for patients' situation in this study. However, the ACS experience brought about changes in most of the patients' lifestyles. Patients felt they were better prepared for future incidents.

**5.3.1.2.6.1 Implications and recommendations**

ACS is a cardiac emergency of which the outcome is not easy to predict. Depending on the variable risk factors, it is not easy to determine the outcome of an ACS situation, because there is variation in presentation from patient to patient. The call centre nurse needs to be aware that the patient's course of illness may progress from a usual and expected course to an uncertain pathway.

**5.3.1.2.7 Participation in care**

Participation in care refers to the extent to which patient/family participates in aspects of care. For those participants who had family and others present during the emergency, there was a moderate level of participation to full participation during the emergency situation. Although they were fully able to participate in care there was still some need for assistance in care.

**5.3.1.2.7.1 Implications and recommendations**

The participation of the patient/family in care during the emergency engages them in some form of activity contributing to reduced panic states while waiting for the ambulance (EMS). The call centre nurse should provide instructions to the patient/family to occupy them during the waiting time, for example lying down, being calm, breathing normally, taking aspirin and asking family members to pack an overnight bag.

**5.3.1.2.8 Participation in decision-making**

The participants and their family in this study ranged from a moderate level of participation to full participation in making decisions during emergency situations. Although some of the participants and family were able to make decisions, there were those with limited capacity, 14% of the participants who did not make any decision or 36% who had minimal participation, who needed advice to be able to make decisions about their care.

#### **5.3.1.2.8.1 Implications and recommendation**

During an ACS situation decisions have to be made rapidly. Most patients and family are not focused due to anxiety therefore they need guidance. The nurse in the call centre should be able to assess the patients' ability to provide advice and guidance to the patient and family to enable them make appropriate choices relative to their resource availability.

### **5.3.2 OBJECTIVE 2**

***Make recommendations for an organised data collection guide for use by nurses in the pre-hospital phase of care.***

From the results of the study the researcher proposes the following outline to be used in the compilation of a data collection guide by the nurse in the pre-hospital phase of care. In the event of an emergency most of the callers, namely the patient and family who call in for medical assistance are in a state of panic. During this time the nurse has the responsibility of providing appropriate care in the shortest time possible to minimise delays in getting the patient to the appropriate facility. While the ambulance crews have been sent on their way to the incident scene the nurse has to continue processing the call. During call processing, the nurse collects information while concurrently making an assessment of the situation. In ACS emergencies the patient might not present with a clear-cut picture of the signs and symptoms of ACS. In order to make a triage decision the nurse can use the following guide to collect patient's data:

#### **Important personal patient details:**

- Age and gender

#### **Evaluate stability - level of consciousness**

- Awake
- Unconscious (patient able or not able to talk)
- Absence of breathing and pulse {if unconscious – move onto telephone CPR}

**Establish resource availability – knowledge of illness:**

- **Evaluate chief complaint – chest pain or discomfort**
  - Onset of the pain
  - Radiation of pain down arm, shoulder, neck or jaw
  - Description of pain
  - Activity when pain started – resting or working
  - Rate pain on scale of 1-10
- **Evaluate other symptoms**
  - Nausea or vomiting
  - Sweating
  - Shortness of breath

**Evaluate the resources ability – social support – the presence of family member or other**

- Explain the need for instructions to be given
- Explain the importance of remaining calm

**Establish first incident or not**

**Evaluate predictability - the pain relief measures taken**

- Availability of aspirin or TNT at the scene
- Establish whether aspirin or TNT taken already
- Instruct patient to take one aspirin and chew or to use TNT spray sublingual

**Establish psychological support**

- Reassure the patient and family member/other
- Calm
- Encourage – inform about transport organised
- Re-evaluate pain on scale of 1-10

**Evaluate vulnerability - other medical conditions and medications patient is taking**

- Ask if other medications being taken
- Ask if there are serious conditions such as diabetes, hypertension, cardiac or other serious illnesses such as chest infections

**Evaluate resource health care access identify the nearest clinic/health facility**

### 5.3.3 OBJECTIVE 3

***Assist nurses to make more effective decisions based on the data collected.***

The development of a data collection guide will assist nurses to appropriately assess the patients – probing for information, determining the patient's critical nature of the problem.

Patient's personal details are useful to the nurse in identification of predisposing factors. The participants and family were involved in making decisions for care. Patients' characteristics are useful for the identification of areas of vulnerability, the patient's available resources and the determination of appropriate referral sources such as clinic with general practitioner or hospital with physician/cardiologist.

### 5.3.4 Relating the findings to the assumptions stated in chapter 1.11

The patients in this study experienced ACS in various settings namely: the home workplace. This is consistent with the research assumptions. They contacted the EMS through the medical call desk at MRI Botswana Ltd. The reasons given by the participants for contacting MRI Botswana Ltd were consistent with assumptions that PHEC bridges the gap between the acute care setting and the incident scene and will thus ensure continuity of care in this area. Studying the characteristics of patients with ACS provides the nurse with insight on how to appropriately manage patients in the emergency situations. The involvement of family in decision-making and care of the patient is very valuable as they are a source of social support for the patient but are effective only when there is no language barrier between the nurse and the patient as well as between the nurse and the family.

Optimal cardiovascular care in the pre-hospital phase of care helps to decrease the mortality and morbidity rates for ACS. The clinical patient outcomes namely: functional change, behavioural change, trust, satisfaction, comfort and quality of life, should be the target of the nurse in the pre-hospital phase of care. In ensuring that patient outcomes are favourable nurses are required to advise and instruct patients about the following aspects:

- Early access to EMS/911/clinic at the onset of chest pain symptoms or other atypical symptoms.
- Ability to control occurrence of ACS pain by daily aspirin use or TNT use when necessary.
- Enhance patient's knowledge by giving information on ACS signs and symptoms, chest pain significance and action to be taken, decreasing risks for future ACS encounters.
- Encourage patients to improve their well being and general health status by engaging in health promotion behaviours to minimise or prevent risks for ACS.
- Encourage enhanced family support and involvement in patients' modification of their lifestyles.
- Assist with adaptation and coping strategies to be able to cope with ACS situations and manage fears associated with potential recurring ACS situations.

### **5.3 LIMITATIONS**

The following limitations, which could limit the generalisability of the research results, were identified:

- The participants for the study were drawn from only one setting the medical call centre of MRIB Ltd. The operational structure and processes of MRIB Ltd may not



be generalised. Although nurses in other clinics attend to cardiac patients their practices might be different.

- The focus of the study did not have plenty of literature with data on nurses working in pre-hospital care.

#### **5.4. RECOMMENDATIONS FOR FUTURE RESEARCH**

The following recommendations were made for further research:

- The expanding role of the nurse in telephone nursing
- The education and training needs of the nurse in telephone nursing
- The experiences of the nurses working in call centres in Botswana.
- Recommendation is made for further research to examine the efficiency of the interactional practices for consideration to be added as part of training programmes for nurses working in call centres.

#### **5.5 CONCLUDING REMARKS**

In this chapter, the characteristics of patients who experienced ACS events were explored, identified and described. The conclusions, with reference to the objectives of this research as well as the limitations of this study, were described. In particular, this chapter contained the recommendations for future practice and research.

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## **ANNEXURE A**

### **LETTER REQUEST FOR PERMISSION TO CONDUCT RESEARCH**

C/o Private Bag BR 256  
Gaborone  
24<sup>th</sup> March 2004

To: The Ministry of Health  
Research Unit  
Gaborone.

Dear Sir/Madam

**RE: PERMISSION TO CONDUCT RESEARCH STUDY**

I write to request your permission to undertake a research study in Gaborone. I am a Malawian national resident in Botswana since July 1993.

I am a Registered Nurse-Midwife and Nurse Educator employed by MRI Botswana Ltd. since 1996. I obtained my Bachelor of Nursing Education from the University of Botswana in 1996 and MA (Cur) majoring in Nursing Education from the University of South Africa in 2003. I am currently pursuing studies with the University of South Africa reading for an MA (Cur) in Pre-hospital Emergency Care (Emergency and Trauma Nursing). As part of the requirements for completion of my studies I require to undertake a research study. My proposed research study focuses on needs and characteristics of patients with Acute Coronary Syndromes situations and the involvement of nurses in the pre-hospital phase of emergency care. The attached proposal document provides details of the research study.

I take this opportunity to thank you for your assistance in processing of my request.

Yours faithfully



Nellie Monteliwa Chokani Namame (Ms)  
RN/M, MA(Cur)



## **ANNEXURE B**

**LETTER REQUESTING FOR PERMISSION  
FROM MINISTER OF HEALTH  
(HEALTH RESEARCH UNIT)  
TO CONDUCT STUDY**

TELEPHONE: 3914467  
 FAX: 3914467  
 TELEGRAMS: RABONGAKA  
 TELEX: 2818 CARE BD



MINISTRY OF HEALTH  
 PRIVATE BAG 0038  
 GABORONE  
 BOTSWANA

REPUBLIC OF BOTSWANA  
 MINISTRY OF HEALTH

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REFERENCE No: HRU-13/18 C Vol V (164) August 5, 2005

Nellie Monteliwa Chokani-Namame  
 Gaborone.

**Research Permit: "Acute Coronary syndromes patients characteristics: Optimising outcomes in the pre-hospital phase of care".**

Your application for a research permit for the above stated research protocol refers. We note that you have satisfactorily revised the protocol as per our suggestions. **Permission is therefore granted to conduct the above-mentioned study.** This approval is valid for a period of 1 year, effective August 5, 2005.

This permit does not however give you authority to use data from the selected company without prior approval from management of the company. Furthermore, for the primary data permission should also be sought from participants prior to data collection using the approved consent documents.

The research should be conducted as outlined in the approved proposal. Any changes to the approved proposal will need to be resubmitted to the Health Research Unit in the Ministry of Health.

Furthermore, you are requested to submit at least one hardcopy and an electronic copy of the report to the Health Research Unit, Ministry of Health within 3 months of completion of the study. Copies should also be sent to relevant authorities.

**Approval is for academic fulfillment only.**

Thank you,

S. El-Halabi (Head - Health Research Unit)  
 For Permanent Secretary Ministry of Health

PERMANENT SECRETARY  
 MINISTRY OF HEALTH  
 RESEARCH UNIT  
 05 AUG 2005

PRIVATE BAG 0038

## **ANNEXURE C**

### **CONSENT FORM**

## CONSENT TO BE A RESEARCH PARTICIPANT

Dear Participant

I am a registered nurse and midwife currently studying with UNISA as a Master of Nursing (MA Cur) majoring in Pre-hospital Emergency Care conducting a research study on the characteristics of patients with Acute Coronary Syndromes in order to improve clinical outcomes in the pre-hospital emergency phase of care.

At the moment there appears to be inadequate information on the characteristics of patients with Acute Coronary Syndromes during the pre-hospital phase of care. Nurses in Botswana are the initial health care provider at the point of contact with health facilities in Botswana. Proper and adequate information gathering techniques by the nurse will enhance and facilitate patient transportation to the nearest best facility. You are requested to participate in this study as the recipient of emergency care before referral and transportation to the appropriate health facility. It is hoped that the results of this study will influence the telephone assessment skills of the registered nurse in pre-hospital emergency care and improve patient and nurse communications, and patient clinical outcomes.

If you agree to be in the study, you will be available for an interview with the interviewer, Mrs. Nellie Chokani-Namame at a convenient location. Please note that all the information will be dealt with in the strictest confidence.

**Circle one:**

**I (AGREE) (DO NOT AGREE) to be a participant in this study.**

I understand that there will be no medical benefit to me, and I will not be paid for my participation. The study may produce information that is useful for the development of pre-hospital emergency nursing care for Acute Coronary Syndromes in Botswana.

I have the right to refuse to participate or withdraw from the study at any time. Refusing to participate in the study will in no way affect my work.

Participant Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher Signature: \_\_\_\_\_

## **ANNEXURE D**

### **STRUCTURED INTERVIEW SCHEDULE**

## INTERVIEW SCHEDULE

### **PART A - PATIENTS BIOGRAPHICAL DATA**

**(Please tick the appropriate box)**

- 1. Age**
  - 0 – 20 ☐
  - 21 - 40 ☐
  - 41 – 60 ☐
  - 61+ ☐
  
- 2. Gender**
  - Male ☐
  - Female ☐
  
- 3. Racial background**
  - Indian ☐
  - Black ☐
  - Mixed race (Black/White, Black/Indian) ☐
  - White ☐
  - Other (not in above categories) \_\_\_\_\_
  
- 4. Marital status**
  - Married ☐
  - Living In ☐
  - Separated ☐
  - Widowed ☐
  - Never married ☐
  - Divorced ☐
  
- 5. First Language**
  - English ☐
  - Setswana ☐
  - Other (specify) \_\_\_\_\_
  
- 6. Religious Affiliation**
  - Christian ☐
  - Muslim ☐
  - None /Other (specify) \_\_\_\_\_
  
- 7. Educational Background Highest Qualification**
  - Primary ☐
  - Junior Secondary ☐
  - Senior Secondary ☐
  - Vocational Tertiary ☐
  - University Tertiary ☐
  - None ☐

**8. What is your area of Occupation?**

- |                |   |                          |
|----------------|---|--------------------------|
| Health worker  | (professional/support staff)                            | <input type="checkbox"/> |
| Administration | (clerical or management)                                | <input type="checkbox"/> |
| Finance        | (business person/accountant)                            | <input type="checkbox"/> |
| Agriculture    | (farmer)  | <input type="checkbox"/> |
| Education      | (teacher / tertiary student)                            | <input type="checkbox"/> |
| Technical      | (engineer, miner, technician e.g. plumber, electrician) | <input type="checkbox"/> |
| Legal          | (lawyer, police officer)                                | <input type="checkbox"/> |
| Housewife      |   | <input type="checkbox"/> |

**9. Income Source**

- |                 |                          |
|-----------------|--------------------------|
| Rental          | <input type="checkbox"/> |
| Pension         | <input type="checkbox"/> |
| Family          | <input type="checkbox"/> |
| Business        | <input type="checkbox"/> |
| Salary          | <input type="checkbox"/> |
| Other (specify) | <input type="checkbox"/> |

**10. Income range per month in pula**

- |        |                                     |                          |
|--------|-------------------------------------|--------------------------|
| Income | (under P2500)                       | <input type="checkbox"/> |
| Income | (over P2500 and P5000)              | <input type="checkbox"/> |
| Income | (over P5000 but less than P10, 000) | <input type="checkbox"/> |
| Income | (over P10,000)                      | <input type="checkbox"/> |
| Income | (not known)                         | <input type="checkbox"/> |

**11. Gainful Employment**

- |   |                          |
|---|--------------------------|
| In employment                                     | <input type="checkbox"/> |
| Out of employment / not employed / not applicable | <input type="checkbox"/> |
| Self-employed (own business)                      | <input type="checkbox"/> |

**PART B****CHARACTERISTICS OF PATIENTS WITH THE EXPERIENCE OF AN ACS SITUATION.**

(Please tick or write the appropriate response(s) to the following questions).

**A. Resource availability – Patients Knowledge of Illness**

1. During your emergency did you experience any pain or discomfort
  - a. In the chest Yes ☐ No ☐
  - b. On the back Yes ☐ No ☐
  - c. In the arms or shoulder Yes ☐ No ☐
  - d. In the neck or jaw Yes ☐ No ☐
  
2. Did you experience any of the following symptoms?
  - a. Nausea or vomiting Yes ☐ No ☐
  - b. Heart or epigastric discomfort Yes ☐ No ☐
  - c. Sweating (diaphoresis) Yes ☐ No ☐
  - d. Shortness of breath Yes ☐ No ☐
  - e. Syncope or any feeling of faintness Yes ☐ No ☐

3. Did you relate your experience (signs and symptoms) to a cardiac problem? **Yes** ☐ **No** ☐
4. What were you doing when the pain started?  
 a. Resting ☐  
 b. Working ☐  
 c. Other (specify) \_\_\_\_\_
5. Did you recognize the urgency of the situation? **Yes** ☐ **No** ☐
6. Do you know the medications that need to be taken when you have chest discomfort? **Yes** ☐ **No** ☐
7. For “yes” response to the previous question – List the medications.  
 a. Aspirin ☐  
 b. Glyceryl Trinitrate (TNT) ☐  
 c. Other (specify) \_\_\_\_\_

#### **A. Resource availability – Social Support Systems – Health Care Access**

8. Please indicate the available health facilities in your area of locality?  
 a. Government Clinic ☐  
 b. Government Hospital ☐  
 c. Private Clinic ☐  
 d. Private Hospital ☐  
 e. Other (specify) \_\_\_\_\_
9. Are the available health facilities affordable? **Yes** ☐ **No** ☐
10. Are there any heart (cardiac) clinics in your area? **Yes** ☐ **No** ☐
11. How often do you visit the hospital/clinic for health check ups?  
 a. Once a week ☐  
 b. Once a month ☐  
 c. Once a year ☐  
 d. Other (specify) \_\_\_\_\_
12. What mode of transport is readily available at your disposal?  
 • Own vehicle ☐  
 • Own bicycle ☐  
 • Public transport ☐  
 • Donkey/horse cart ☐  
 • Other (specify) \_\_\_\_\_
13. At the time of your emergency how did you get to the hospital?  
 • Ambulance ☐  
 • Private transport ☐
14. At the time of your emergency did you know the emergency numbers to contact? **Yes** ☐ **No** ☐  
 Other (specify) \_\_\_\_\_



15. List the emergency numbers to contact during a medical emergency in Botswana

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

16. List your reason (s) for calling MRIB Ltd. for assistance during your medical emergency?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

#### **A. Resource availability – Social Support Systems – Family/Others**

17. Where is your home area?

- City ☐
- Town ☐
- Village ☐
- Farm ☐

18. Whom do you stay with? (Living Arrangements)

- a. Friends **Yes** ☐ **No** ☐
- b. Family/Parents/Relatives **Yes** ☐ **No** ☐
- c. Stranger **Yes** ☐ **No** ☐
- d. Alone **Yes** ☐ **No** ☐

19. Who was present when you were experiencing chest pain/discomfort?

- a. Alone **Yes** ☐ **No** ☐
- b. Family **Yes** ☐ **No** ☐
- c. Friend (s)/ Workmates **Yes** ☐ **No** ☐
- d. Stranger **Yes** ☐ **No** ☐

#### **B. Vulnerability – Risk Factors**

20. Do you have any of the following medical conditions?

- a. Diabetes **Yes** ☐ **No** ☐
- b. Hypertension **Yes** ☐ **No** ☐
- c. Cardiac **Yes** ☐ **No** ☐
- d. Other serious illness **Yes** ☐ **No** ☐

21. What is your level of mobility?

- a. Not mobile ☐
- b. Mobile when assisted ☐
- c. Unassisted / independent ☐

22. Select the appropriate estimate range of your body weight in kilograms

- a. Less than 50 kg ☐
- b. Between 50kg and 80kg ☐
- c. Over 80kg ☐

23. How many hours per week do you perform exercises?
- a. Less than 5 hours ☐
  - b. Between 5 and 10 hours ☐
  - c. Between 10 and 15 hours ☐
  - d. Between 15 and 20 hours ☐
  - e. More than 20 hours ☐
  - f. Not sure ☐
24. Do you smoke?
- a. Yes, presently smoking ☐
  - b. No, but smoked in the past ☐
  - c. No, never smoked ☐
25. For “yes” response to the previous question - How many cigarettes do you smoke in a day?
- a. 1-5 ☐
  - b. 6-10 ☐
  - c. More than 10 ☐
26. Do you take any alcohol? **Yes** ☐ **No** ☐
27. For “yes” response to the previous question – What type of alcohol is consumed?
- a. Sorghum beer ☐
  - b. Beer ☐
  - c. Wine ☐
  - d. Hard liquor ☐
28. How much is your alcohol consumption in a day/week/month?
- a. 1-5 cans/bottles/glasses per day/week/month ☐
  - b. 6-10 cans/bottles/glasses per day/week/month ☐
  - c. More than 10 cans/bottles/glasses per day/week/month ☐
29. What type of foods do you usually eat?
- a. Red meat **Yes** ☐ **No** ☐
  - b. Chicken **Yes** ☐ **No** ☐
  - c. Fish **Yes** ☐ **No** ☐
  - d. Vegetables **Yes** ☐ **No** ☐
  - e. Fresh fruit **Yes** ☐ **No** ☐
  - f. Eggs **Yes** ☐ **No** ☐
  - g. Dairy products **Yes** ☐ **No** ☐
  - h. Bread **Yes** ☐ **No** ☐
  - i. Maize porridge **Yes** ☐ **No** ☐
  - j. Other starch **Yes** ☐ **No** ☐
30. From the following list choose your appropriate diet type
- a. Vegetarian **Yes** ☐ **No** ☐
  - b. Non-vegetarian **Yes** ☐ **No** ☐
  - c. Low fat **Yes** ☐ **No** ☐
  - d. No salt diet **Yes** ☐ **No** ☐
  - e. Not sure of diet type **Yes** ☐ **No** ☐

31. On a scale of 1-10 how would you rate your current health status?
- a. Poor (1-2) ☐
  - b. Fair (3-5) ☐
  - c. Satisfactory (6-8) ☐
  - d. Excellent (9-10) ☐
32. From your clinic visits what is your usual diastolic Blood Pressure range?
- a. Less than 90mmHg diastolic ☐
  - b. Between 100-110mmHg diastolic ☐
  - c. More than 120mmHg diastolic ☐

### **C. Complexity – Psychological functioning**

33. How do you rate your ability to communicate with others ?
- a. Poor ☐
  - b. Fair ☐
  - c. Good ☐
  - d. Excellent ☐
34. How do you rate your ability to cope with stressful situations ?
- a. Poor ☐
  - b. Fair ☐
  - c. Good ☐
  - d. Excellent ☐
35. How would you describe your experience of the chest pain/discomfort?
- a. "I was afraid I would die" ☐
  - b. "Extremely frightened" ☐
  - c. Frightened ☐
  - d. Not frightened ☐

36. After the chest pain/discomfort experience were (are) you worried that you will experience another episode?  
Yes ☐ No ☐

### **C. Complexity – Family dynamics**

37. What is your role in your family ?
- Breadwinner ☐
  - Parent (not the breadwinner) ☐
  - Dependant ☐
38. During the episode to what extent were you satisfied with the support you got from your family and/or friends?
- Very satisfied ☐
  - Fairly satisfied ☐
  - Not satisfied ☐
  - Not present ☐

### C. Complexity – Alternative Therapies

39. When you are ill (in an emergency) which is your initial choice of health care source?
- a. Traditional medicine ☐
  - b. Non-traditional medicine ☐
40. Do you participate in family health traditions? (Do you use the traditional therapies?) Yes ☐ No ☐
41. Were you taking any cardiac related medications at the time of your emergency situation? Yes ☐ No ☐
42. List the other treatment(s) were you using at the time of your emergency situation?
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_

### D. Participation in decision-making – Self participation

43. Who made the decision/ initiated the call for help?
- a. Self ☐
  - b. Other (s) ☐
  - c. Not sure ☐
44. On a scale of 1-10 what was your level of participation in decision-making?
- a. Full participation (8-10) ☐
  - b. Minimal participation (5-7) ☐
  - c. No participation (1-4) ☐
45. How long after you experienced chest discomfort did you call for help?
- a. Less than 15 minutes ☐
  - b. 15 – 30 minutes ☐
  - c. Between 30 minutes - 1 hour ☐
  - d. More than 1 hour ☐
  - e. Not sure about time ☐
  - f. Never called ☐

### D. Participation in decision-making – Family/Other(s) participation

46. On a scale of 1-10 what was the family/other(s) level of participation in decision-making?
- a. Full participation (8-10) ☐
  - b. Minimal participation (5-7) ☐
  - c. No participation (1-4) ☐
  - d. Not present ☐

### E. Participation in Care – Self participation

47. What did you do when you experienced one or more of the symptoms?
- a. Called / phoned for medical advice Yes ☐ No ☐
  - b. Took some medication Yes ☐ No ☐
  - c. Informed relative / friend Yes ☐ No ☐
  - d. Called for an ambulance Yes ☐ No ☐
  - e. Arranged transport to go to clinic/hospital Yes ☐ No ☐
  - f. Rested and waited for the symptoms to subside (go away) Yes ☐ No ☐

### **E. Participation in Care – Family /Other(s) participation**

48. Who were the people responsible for your care during the emergency situation?
- |                  |  |
|------------------|--|
| a. Family member | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| b. Friend        | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| c. Colleague     | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| d. Other         | Yes <input type="checkbox"/> No <input type="checkbox"/> |
49. What action did your family or other(s) take during the emergency situation?
- |   |  |
|---|--|
| a. Called / phoned for medical advice                                 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| b. Gave patient some medication                                       | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| c. Informed relative / friend   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| d. Called for an ambulance  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| e. Arranged transport to go to clinic/hospital                        | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| f. Asked you to rest and waited for the symptoms to subside (go away) | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| g. No family or others were involved                                  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
50. On a scale of 1-10 indicate the extent to which your family or other(s) were involved in your care?
- |                                |  |
|--------------------------------|--|
| a. Full participation (8-10)   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| b. Minimal participation (5-7) | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| c. No participation (1-4)      | Yes <input type="checkbox"/> No <input type="checkbox"/> |

### **F. Stability – Perceived level of responsiveness to therapy**

51. What was your response to pain relief measures given?
- |  |  |
|--|--|
| a. Pain decreased                                  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| b. Pain did not decrease (remained about the same) | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| c. Pain increased                                  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| d. No Pain relief measures given                   | Yes <input type="checkbox"/> No <input type="checkbox"/> |

### **F. Stability – Perceived risk of death**

52. Did you consider death as a possible outcome of your emergency situation?
- Yes ☐ No ☐

### **F. Stability – Perceived risk of developing complications**

53. Did you at any time think that you would experience chest pain/discomfort?
- |                   |                          |
|-------------------|--------------------------|
| a. Yes, often     | <input type="checkbox"/> |
| b. Yes, sometimes | <input type="checkbox"/> |
| c. No, never      | <input type="checkbox"/> |

### **G. Resiliency –Ability to utilize coping/compensatory mechanisms after an insult**

54. To what extent were you able to bear with the chest pain?
- |                    |                          |
|--------------------|--------------------------|
| a. Very well       | <input type="checkbox"/> |
| b. Fairly well     | <input type="checkbox"/> |
| c. Poorly (barely) | <input type="checkbox"/> |
55. Did the nurse tell you what to do while waiting for the ambulance? Yes ☐ No ☐  
Other (specify) \_\_\_\_\_
56. Were you satisfied with the assistance provided by the nurse when you called? Yes ☐ No ☐  
Other (specify) \_\_\_\_\_

57. Specify your reason(s) for dissatisfaction with the assistance given

- a. \_\_\_\_\_  
b. \_\_\_\_\_

58. Do you think that if you knew what to do during the emergency it would have made a difference in the way you responded to the emergency situation? **Yes** ☐ **No** ☐  
Other (specify) \_\_\_\_\_

59. What method (s) did you use to control your symptoms after your cardiac episode?

- a. Alternative medical systems (indigenous/traditional) ☐  
b. Mind-body interventions (prayer) ☐  
c. Biologically based treatments (dietary/herbs supplements) ☐  
d. Energy therapies (healing touch / therapeutic touch / exercise) ☐  
e. Conventional medicine ☐

**H. Predictability - Ability to determine a course of the illness according to the presenting signs and symptoms (severity of the situation)**

60. What was the outcome of your chest pain/discomfort episode?

- a. Survived with no complications ☐  
b. Admitted to hospital ☐  
c. Referred to cardiologist ☐

61. Choose the most appropriate response(s) showing how the experience change your life?

- a. Improved your understanding of the nature of the condition ☐  
b. Increased your knowledge on the management of your condition ☐  
c. Increased your awareness of the need for behaviour / lifestyle change ☐

**This marks the end of the questions – Thank you for your participation.....**

