

CHAPTER 1

Orientation to the research

1.1 INTRODUCTION

Cardiovascular disease is on the incline and threatening to become a global social and health issue for developing countries. By the year 2020 it is predicted that cardiovascular disease will be the leading cause of death and disability worldwide (Mitka 2004:2533).

In a comparison of heart disease patterns in both developed and developing countries, Mitka (2004:2533) states that although tremendous advancement has taken place in the treatment modalities of cardiovascular diseases, the rise in heart disease is a major concern for researchers and cardiologists the world over. Developing countries will face an intolerable burden of death, disability and economic loss by 2020, if no urgent action is taken. Table 1.1 represents the mortality rate from acute myocardial infarction per one hundred thousand (100 000) of the population in various developed and developing countries.

Table 1.1 Mortality rates related to acute myocardial infarction (AMI)

COUNTRY	DEATHS PER 100 000 OF THE POPULATION
United States	50
Portugal	48
Russia	250
South Africa	98
India	80
Brazil	65
China	46

(Mitka 2004:2533)

According to Table 1.1, the developed countries of the United States (USA) and Portugal have a mortality rate of 50 and 48 per 100 000, respectively. Among the developing countries, Russia has

an exceptionally high mortality rate of 250 per 100 000 (with the leading cause named as high alcohol intake and tobacco use), followed by South Africa with 98, India with 80, Brazil with 65 and China with 46 per 100 000. Mitka (2004:2533) goes on to say that “by the year 2020 cardiovascular diseases will become an urgent threat to global health”.

World governments should take urgent action in improving health care for their people through educational efforts to curb heart disease by promoting healthier lifestyles and creating better workplace environments, including enforcing smoke-free environments. Mitka (2004:2534) cites the example of the Polish government who, in the 1990s, imposed increased taxes on animal fats, forcing people to buy vegetable fats instead which contributed to lowering their heart disease mortality rate.

Sara (1999:182) declares that myocardial infarction (MI) is becoming a serious health issue worldwide in developing as well as developed countries and states that cardiologists have realised this danger and are urging the nations to engage in ways to combat this disease with a higher mortality and morbidity rate than any other commonly occurring condition.

Cardiologists have also realised the danger of acute myocardial infarction in developing countries and are urging nations to engage in ways to combat a disease that has a higher mortality and morbidity rate compared to other commonly occurring diseases. Poor nutrition or unhealthy eating, lack of physical exercise, excess alcohol and tobacco use and overindulgence in “fast foods” lead to diabetes and obesity, which are the major diseases contributing to coronary heart diseases in the developed and developing countries (Beller 2001:2428).

Danchin, De Benadetti and Urban (2002:9) and Norris (2000:726-727) state that although MI is the leading cause of death worldwide, its decline in Western countries over the years is not due to primary but to secondary prevention, despite the research and education in this field. Friedman, Chelluri, Sirio, Angus, Ogunyankin, Topol, Califf, Fuster and Van de Werf (1994:723-725) report that acute myocardial infarction (AMI) is the commonest cause of death in Western countries with the annual death rate at approximately four million.

MI results when prolonged ischemia leads to myocardial cellular necrosis, characterised by severe chest pain lasting more than twenty minutes, discomfort with exertion and may be accompanied by nausea, vomiting and epigastric pain (Crawford 2003:57). After the initial onset, cell necrosis takes place within fifteen minutes and complete necrosis can occur in six hours, in the absence of collateral blood flow or therapeutic measures to decrease myocardial oxygen demand (Alpert 2003:378; White & Van de Werf 1998:1638). Topol (2003:111) states that "time" is therefore the crucial factor for the restoration of blood flow to the ischemic myocardium. This patient is in imminent danger and needs life-saving interventions soon after the onset of symptoms to restore perfusion and improve the chance of survival. With each passing second, the myocardium is susceptible to potential necrosis with subsequent loss of cardiac function and death from the consequences of the infarct-related artery (Welsh, Ornato & Armstrong 2003:1).

The major problem facing health care providers in the treatment of AMI is the "time" factor and delays related to thrombolytic therapy administration (Antman, Anbe, Armstrong, Bates, Green, Hand, Hochman, Krumholz, Kushner, Lamas, Mullany, Ornato, Pearle, Sloan & Smith 2004a:679-680). Rawles, Sinclair, Jennings, Ritchie and Waugh (1998:576) maintain that the urgency in stating treatment for the patient with AMI is similar to that to the patient who has sustained cardiac arrest.

1.2 THE UNITED ARAB EMIRATES (EMIRATES)

Although the researcher conducted the present study through the University of South Africa, the research was done in the United Arab Emirates (UAE). Accordingly, figure 1.1 below presents a map of the UAE. In addition, the researcher provides an orientation to the country in order to highlight the issues that exist in this multinational affluent country, the available services and the care related to AMI. The researcher also describes the cultural diversity of the Emirates, the people living there, and the health care possibilities in limiting the debilitating effects and mortality rates of patients with AMI.



Figure 1.1 A map of the United Arab Emirates
(Al Fahim 2001:11)

The United Arab Emirates (UAE) is bordered by Qatar and Saudi Arabia to the West and South and Oman to the East, separated from Iran by the expanse of the Arabian Gulf with an estimated population of approximately 2 407 460 (Weiss & Michael 1996:5).

The Emirates comprises seven emirates, namely Dubai, Sharjah, Fujairah, Ra's Al Kaimah, Umm Al Qaywaim, Abu Dhabi and Ajman occupying a total area of 77 000 square kilometres similar to that of Scotland (Al Fahim 2001:19) (see figure 1.1).

Despite the size, the UAE has become well known worldwide over the last two decades, due to the extent to the abundance of oil reserves and the role it plays in the world's energy market.

Before 1971 the situation was different, as the people of the UAE were virtually unknown to the world but a select few who had contact with the sandy shores. The UAE did not possess a name and the local people called it the "Coast of Oman" up to the 1950's (Al Fahim 2001:19).

Abu Dhabi is the capital city of the UAE and is also one of the Emirates with the most industrial activities. Many of the official buildings of the country are situated here such as the Ministry of Health, Immigration and Visa control, embassies and commissioners of various countries. Abu Dhabi is the largest oil producer and the President; late Sheik Zayed had one of his palaces here.

Al Ain, (often also spelled Al Ayn) is about 160 kilometres away and is part of Abu Dhabi. Al Ain means the "eye" in Arabic, and it is regarded as the "eye" of the Emirates. Al Ain is the interior oasis renowned for its beauty, greenery, dates and hot springs. Al Ain is situated approximately 120 kilometres from Dubai which is known for its cosmopolitan population and is the tourist city of the UAE (Fairservice 2003:15).

The Emirates evolved just over thirty years ago and today are among the most prosperous countries in the world. About 85,00% of the population live in the urban areas as work in industry and tourism is increasing.

Foreign male workers from the South Asia Pacific region, including Filipinos, Indians and Pakistanis, and also Arab nationals from Egypt, Iran, Yemen, Jordan, Syria, Lebanon and Tunisia make up a large portion of the workforce. The majority of these workers are single males with families in their own countries to support. The labour force is unique in that 90,00% are expatriates. The term "expatriate" in the Emirates refers to people who are not of Emirati nationality. Expatriates are nationals belonging to other countries and seeking employment in the UAE. They are provided with a resident visa by the Immigration and Naturalization Department, on behalf of their sponsors if their services are required. Due to the need for skilled and unskilled labour and the tax-free salaries, many foreign workers (expatriates) relocate for a specific length of time to work there. Many raise families and also arrange visas for their entire family as soon as they establish themselves. Some work there for up to forty years, and eventually return to their own countries at about 60 to 65 years of age on retirement, as most companies will not recontract anyone over 60 years of age (Fairservice 2003:15).

The late President Sheik Zayed Bin Sultan Al Nahyan, who passed away on the 2nd of November 2004, was responsible for the vision that led to the development of the Emirates as the local people were not equipped to assisting in this development. The economic development and transformation since 1971 is largely attributed to the oil production and the wise rulership of the late Sheik Zayed. As further development took place in Dubai and other Emirates, tourism increased as well as the standard of living and affluence in the Emirates. The culture is deeply rooted in Islam, but less austere than Saudi Arabia, allowing freedom of worship to others, especially in Dubai. Christian places of worship can be found in almost all the Emirates. A change in cultural values is also evident in the lifestyle of the people. Human resource development is well underway to improve the ability of Emirate nationals to take charge of their own country. The emancipation of Emirati women is moving towards higher education in preparation to join the workforce, which has for so long been occupied by expatriate nationals. Women have more freedom than Saudi Arabian women in matters of employment, driving and being able to choose whether or not to cover their faces. This is particularly true of women who hold executive positions in society and have to deal with the public in their work. Universities from the USA, South Africa, Australia and Canada, among others, are some of the educational institutions engaged in preparing students for higher education. The International Council of Nursing is also preparing leaders in the Emirati nursing workforce and

has now formed the Emerati Nursing Association of which board members are exclusively Emerati, but allow other nationalities to join in the association. Arabic is the commonly spoken language. However, English, Urdu, Hindi, Persian and other languages can be heard.

There are no political parties and the government is made up of the Supreme Council of Rulers, all of whom are hereditary rulers. Power is vested in the rulers of individual Emirates to carry out their justice system as they see fit. The legal system is made up of Islamic law (Sharia law), civil and criminal courts. The chief of the legal system was the late, His Highness Sheik Zayed bin Sultan Al Nahyan. The crime rate is low and it is very safe to live, travel and work, contributing to low stress levels for those coming from war-torn and crime-ridden countries.

However, there are other factors responsible for the stress levels in the single males working in the Emirates, which can contribute to cardiovascular diseases. They live alone among friends and co-workers, far from their families and countries for many years. Some go home to their countries and families only every two or three years, creating dysfunctional families. Their diet therefore consists mainly of fast foods bought from restaurants at prices they can afford and is also sometimes unhealthy, being rich in fat and oil content. Many are unaware of the benefit of exercise to the body in terms of healthy living and do not seek appropriate care for illness early, leading to major health problems. Cardiovascular diseases and diabetes are common among these workers and the incidence of AMI is high. Health care is not a priority for these workers as their aim is to earn money to send back to their families and they tend to neglect themselves.

Al Ain Hospital, also known as Al Jimi Hospital as it is situated in the Jimi District, predominantly treats the expatriate community and is funded by the government. Emergency care is free for the first 24 hours for all patients, but a fee is charged thereafter according to care given. The Emerati can choose to be treated here if they desire. The hospital is a 427-bed hospital and extremely busy due to the large population of expatriates living and working in Al Ain. Tawam Hospital is another government hospital reserved for the Emerati, situated in the Maqam District, approximately 7 kilometres from the Al Ain Hospital. The Emerati can choose to be treated here if they desire.

The accident and emergency unit in Al Ain is extremely busy with many workplace injuries, cardiovascular emergencies, and road traffic accidents. Disasters involving, for example, burns from explosions and chemical gas intoxication, and occupational accidents are frequent occurrences.

Acute Myocardial Infarction is common and patients sometimes travel long distances for hospital care after symptom onset, causing delays even before they arrive at hospital.

The seven adult beds and one paediatric bed in the intensive care unit at Al Ain hospital are insufficient to meet the demands for intensive care monitoring. A shortage of critical care beds is always an issue at this hospital, largely due to the population served. The cardiac care unit with ten beds is also insufficient to meet the needs of the city of Al Ain. However, the critical shortage of intensive care and coronary care unit beds is a worldwide problem and not restricted to the United Arab Emirates or Al Ain. As a temporary measure, patients are moved around to other hospitals belonging to the General Health Authority if beds are available, in an effort to meet patients' needs. Plans for further renovation, expansion and restructuring of the facilities are underway as a solution to meet the growing needs of the multinational community.

Al Ain Hospital has its own police department attached to the accident and emergency unit to deal with any police matters, for example, prisoners, accidents and facilitating legal issues. It also has its own ambulance service to transfer and fetch patients. This service is free for emergencies and under the control of the transport manager. The ambulance is a modern and fully equipped facility that is able to deal with major emergencies.

The Division Manager of the accident and emergency unit is also partly responsible for the staffing (nurses) of the ambulance service in emergency situations. The nurses are male and female, Arabic and English speaking and are specifically assigned to assist in the transport of patients to other areas and also bring in patients requiring emergency hospital care. In some cases, patients are airlifted by helicopter to health centres. In this country, nurses must take written orders from the doctor prior to administering medication hence emergency care given will constitute basic cardiopulmonary resuscitation only, among other routine nursing care. The staff in the ambulance

section must complete basic mandatory training every two years, consisting of intravenous cannulation and medication competency, CPR, back awareness and infection control. They also receive basic training from the doctors in the accident and emergency unit in transporting of patients in emergencies like spinal and multiple trauma.

The preceding description of the United Arab Emirates, the people, their culture and health service indicates that although there are excellent facilities, there is a high risk of cardiovascular diseases.

1.3 BACKGROUND AND INTEREST

Myocardial Infarction remains one of the most intensively studied medical conditions. One of the main reasons for this is the devastating effect of this condition and the need to save lives (Topol 2000:122). Early thrombolytic therapy contributes to improved left ventricle function and a reduction in mortality and morbidity rates. The Fibrinolytic Therapy Trialist (FTT) Collaborative Group (1994:311) demonstrated the benefit of early thrombolysis. Out of 1 000 patients treated with thrombolytic therapy in the first hour, 65 lives were saved. The benefit decreased in the subsequent hour and only 37 out of 1 000 lives were saved.

The Gruppo Italiano per lo studio della Streptochinasa nell Infarcto Miocardico (GISSI-1 1986:397), Estudio Multicentrico Estreptoquinasa Republica de America de Sur Collaborative Group (GISSI-1 1993:767) and Assessment of Safety and Efficacy of New Thrombolytic Investigators (ASSENT 2 1999:716) studies indicate that if the blood supply can be restored to the myocardium within one to two hours after the onset of symptoms, the chances of survival are great with reduced morbidity and mortality rates.

In their study in Seattle, in the United States of America (USA), Welsh, Ornato and Armstrong (2003:1) found that time is the main determinant of the outcome of thrombolytic therapy and that early administration of thrombolytic therapy revealed a seven-fold reduction in the mortality rates in patients treated within 70 minutes. Welsh et al (2003:1-6) state further that although results have been recognised and disseminated worldwide for more than a decade, the time to thrombolyse is still stalled at approximately three hours after symptom onset.

In Plymouth, Keeling, Hughes, Shaw, Barton and Price (2003:28) found that the maximum benefit of thrombolytic therapy is "time dependent", with a 40,00% reduction in mortality if the treatment is received within one hour and that timely reperfusion was not achieved because of lengthy delays in the transportation of patients to hospital. The above mentioned authors recommend prehospital thrombolysis to reduce mortality and morbidity rates. Topol (2000:122) is of the opinion that prehospital thrombolysis might be the solution to this type of delay in many countries, especially the United Kingdom (UK), Scotland, Denmark and Ireland in rural areas, where the population is dense. Kucia and Zeitz (2002:113-121) also recommend reducing the time to thrombolysis.

Transport difficulties, location, ignorance and illiteracy, denial and financial implications are among the factors that cause prehospital delays for patients seeking medical attention at the Al Ain Hospital. Restoration of the blood flow in the infarct-related artery is a life-saving action and all efforts must be made to administer thrombolysis soon after the onset of symptoms or arrival at the hospital, as this is the only available therapy at this facility. In some cases, even after thrombolytic therapy has been administered, the patient dies, due to probable cardiogenic shock because of compromised cardiac function. Some of the patients are young and many are expatriates working in the Emirates.

This study wishes to identify the specific areas of delay and establish the causes of these delays with a view to improving the overall management of the patient suffering from MI. The "door to needle time" is a rough estimation of the time delay a patient faces after arriving at a hospital for treatment and the "door to needle time" will be closely investigated and analysed to determine where the delays occur. At the Al Ain Hospital, the only form of reperfusion therapy is thrombolytic therapy therefore, as Alpert (2003:377) emphasises, the time to treat is of paramount importance as the benefit from thrombolysis depends on the time factor.

1.4 GLOBAL PERSPECTIVE ON MYOCARDIAL INFARCTION

The World Health Organization's (WHO 2004:1) statistics, on AMI indicate the death rates, per 1 000 000 people for one hundred countries. Table 1.2 depicts the statistics for some of the developed and developing countries in the WHO report.

Table 1.2 AMI mortality rates, 2004

COUNTRY	DEATHS PER 1 000 000 PEOPLE
USA	664,37
UK	121,90
Australia	733,98
Canada	617,03
Germany	791,61
Poland	716,54
Norway	1006,13
Spain	810,67
Denmark	623,46
South Africa	165,61
Qatar	88,12
Egypt	56,45
Kuwait	165,51

Source: WHO (2004:1)

According to Barradel and Goa (1995:428), in 1995 it was estimated that around 1, 5 to 2, 5 million people suffered AMI each year and approximately 515 000 died from the condition in the USA. Dracup and Cannon (1999:2) state that each year, approximately 500 000 die within one hour after the attack, and 36,00% die immediately after arrival at hospital or several days after admission. Only 50,00% of patients are diagnosed in time to receive thrombolysis, if eligible. Approximately 35 000 people are misdiagnosed and discharged from emergency rooms only to die 24 hours later. Ischemic heart disease accounted for 6,3 million deaths in the 1990s, and in the USA alone 900 000 people experience AMI annually, of whom 225 000 die within the first hour, some even before reaching the emergency rooms (Casey, Bedker & McElmeel 1998:39).

Topol and Keriakes (2003:1466) state that in the USA, death from MI exceeds death from trauma by seven-fold and yet centres for trauma only have been established throughout the USA in all the major cities of the world. More surgical interventions are performed in the USA than thrombolysis despite the cost as the benefit derived from surgical intervention in terms of saving lives is greater and only 30,00% are reported to be treated with thrombolytic therapy.

According to Pearson (2004:1), approximately three million people are living with coronary heart disease in Britain, and this has increased by 5,00% since 1989, while one million others have

blocked arteries and do not know it. However medical treatment is so far advanced that such conditions are treatable. Pearson (2004:1-2), however, adds that over the last thirty years a decline of 2,00% per year in the incidence of MI was noted. Furthermore, the reduction in the mortality rate was due to a decrease in certain habits like smoking, improving dietary intake like a reduction in fats and oils from fast foods, contributing to a decrease in cholesterol and hypertension, accounting for 35 944 fewer deaths. According to the WHO (2004:2), the mortality statistics for 2004 in the USA are 664, 37 in 1 000 000 persons.

Norris (2000:726) states that besides increased dietary fat and oil intake, smoking also contributes to coronary artery diseases. In a study conducted in East Sussex from 1994-1997 termed "The United Kingdom Heart Attack Studies", conducted by Norris (2000), 74,00% of hospital deaths were due to MI and the author is of opinion that secondary rather than primary prevention is the factor contributed to the change of attitude.

In a study at a Western Australian hospital, Bryant and Kelly (2001:157-160) found that "the door to needle time" was 30 minutes in the emergency department, with 80,00% of patients being treated 60 minutes after symptom onset. Furthermore, the "point of entry" treatment in the accident and emergency unit enabled a shorter time to thrombolysate therefore increasing the survival chance of the patients. The authors (2001:157) recommend the commencement of thrombolytic therapy in the accident and emergency units. However, as the following study shows, delays in the treatment of patients suffering from AMI are often the reason for death and morbidity.

To support the above statement, a study done in Italy, the Gruppo Italiano per lo studio della Streptochinasa nell Infarcto Miocardico -1 (GISSI-1 1986:397) and the Gruppo Italiano per lo studio della Streptochinasa nell Infarcto Miocardico -11 (GISSI-2 1990:65) and other studies have contributed to the knowledge and management protocols of MI and thrombolytic therapy. Yet the mortality rates are still rising, mainly due to patient-related prehospital delays. Berton, Cordiano, Palmieri, Guanieri, Stefani and Palatini (2001:766) found that in Italy, only 184 out of 500 patients presented six hours after symptom onset in their study.

In another study related to the time delay from the onset of pain to hospital presentation and thrombolysis in Germany at the Kantonsspital Schaffhausen, Ritzman, Frey and Ruttiman (2000:657) found that 27,00% of patients presented after six hours of symptom onset and 73,00% before six hours.

In a study at the Ostfold Hospital in Ostfold Fredikstad, Norway, Ghanima, Skulstad, Falk and Ringstad (2000:1851) found that due to prehospital delays, 85,00% of patients are ineligible for thrombolysis and 12,00% of the delays were patient-related.

At the Chennai Hospital in Rangaragan Memorial Hospital, Tamil Nadu in India, Rajgopalan, Chandrasekeran, Pai, Rajaram and Mahendra (2001:8) found that almost 36,00% of patients with MI delay seeking help by almost six hours after the onset of symptoms. At the London Chest Hospital, Yang, Wragg and Timms (2002:386) found that patients of South Asian origin have an increased incidence of coronary heart disease, which is a major contributory factor on its own.

Bosch, Sambola, Aros, Lopez-Bescos, Mancisidor, Ila and Claramonte (2000:490), indicate that over the last fifteen years there has been no change in the mortality rates in MI in Barcelona and that thrombolysis is underused in high-risk patients. Furthermore, little information was available on the use of these agents for acute myocardial infarction; therefore there is a tendency to overuse primary angioplasty. According to Bosch et al (2000:491), pre- and in-hospital delays are too long because of insufficient information and knowledge about on the use of thrombolytic therapy by health care professionals in Spain.

Chan, Leung, Lee, Hung, Kung and Lau (1998:219) found that at the one emergency department in Hong Kong, 43 out of 159 patients were misdiagnosed and sent home. Chan et al (1998:219) recommend more education and training for medical personnel on the condition and treatment to improve AMI patients' chances of survival.

Brink (2001:2) and Disler (2001:278) point out that despite the education and awareness programmes in South Africa, the incidence of coronary artery diseases is rising. However, excellent treatment modalities (including thrombolysis) are available, such as highly specialised

cardiac centres in many cities offering patients emergency surgical intervention, including cardiac bypass grafts and heart_transplants. The availability of skilled and experienced medical and nursing professionals contribute immensely to the outcome of this condition in South Africa. The WHO (2004:2) reports South Africa's mortality rate for AMI as 165, 6 per 1 000 000 people.

The mortality rates in Middle Eastern countries appear to be much lower in comparison to Western countries. According to the WHO (2004:2), the mortality rate is 56, 45 per 1 000 000 in Egypt, and 88, 12 per 1 000 000 in Qatar. The researcher was unable to establish the reasons for this.

From the above summary, it is evident that while most of the industrialised nations have managed to reduce the number of deaths, the cardiovascular mortality rates in many developing countries are escalating. In the Emirates some of the factors contributing to MI are illiteracy and poor eating habits (e.g., fast foods, high fat and oil content and high salt and sugar consumption). In addition, stress related to psycho-social-economic factors paves the way for cardiovascular diseases in many migrant workers. With regard to diabetes mellitus and cardiovascular disorders in the UAE, Sebastian (2004:1) found that at the Welcare Hospital in Dubai, 65,00% of admissions were due to coronary artery disease and of these, 47,00% were diabetics. Sebastian (2004:4) goes on to say that the WHO predicts that by the year 2020 the number of diabetics will double in the Asian and Middle Eastern countries. The mortality rates are taking a toll among the younger generation predominantly due to overindulgence in dietary malpractice, lack of exercise, obesity, diabetes mellitus and coronary artery diseases.

1.5 RATIONALE FOR THE STUDY

Time is crucial for survival for the patient suffering from an AMI, therefore the researcher selected this particular area of study. Despite the major advances in thrombolytic therapy, including the availability of the latest thrombolytic agents with single dosing tenecteplase and double bolus dose Reteplase, patients succumb to death and complications related to MI (Assessment of Safety and Efficacy of New Thrombolytic-2 (ASSENT-2) Investigators 1999:716). The only form of reperfusion therapy available to the patients at Al Ain Hospital is thrombolytic therapy which is readily available, cost-effective and efficient in restoring blood flow in the infarct-related artery. The urgency of

treatment is the prompt restoration of blood supply to the myocardium for increased chances of survival of MI patients. Topol (2003:112) emphasises that the first two hours are the “golden hours” for the restoration of the blood flow to the myocardium. Patients too often arrive for treatment later than six hours after the onset of symptoms, thereby contributing to poor outcomes. Hospitals and health facilities cannot be held directly accountable for delays and deaths that occur before patients arrive at the hospital, but they are obligated to reduce further delays prior to treatment with thrombolytic therapy (Antman et al 2004a:671). The specific area of delay needs to be identified and eliminated or managed to reduce the delays to ensure that the time to treat is 30 minutes from the door to needle time as recommended by the National Heart Attack Alert Program (Antman, Anbe, Armstrong, Bates, Green, Hand, Hochman, Krumholz, Kushner, Lamas, Mullany, Ornato, Pearle, Sloan & Smith 2004a:679; NHAAP 1994:314).

In the accident and emergency unit at the Al Ain Hospital the patient has to go through the reception area and triage area, the data collection, referral and decision-making points, prior to receiving thrombolytic therapy for myocardial infarction, thus faced with delays and obstacles impeding therapy.

1.6 PROBLEM STATEMENT

The time factor is one of the greatest challenges facing medical science today in the treatment of AMI. AMI is a fatal condition, but it can be successfully halted if treated soon after the onset of symptoms, that is at least less than six hours after symptom onset (Alpert 2003:377).

With the advent of new and advanced thrombolytic therapy to treat this condition survival rates have improved significantly. However, time still remains a crucial factor in the goal to reperfusion therapy. The ongoing necrosis of the myocardial tissue in the infarct related artery must be halted by thrombolytic therapy soon after the onset of signs and symptoms. “Time is muscle” signifies that every second is valuable for the infarcting myocardium (Topol 2000:122). Delays in treatment of the patient must be identified and attempts made to reduce them in order to meet the recommended “door to needle” time of the National Heart Attack Alert Program (NHAAP 1994:314). These delays consist of the door, data collection, decision-making and drug administration time.

The health care providers in emergency settings are responsible to improve the chance of survival for the AMI patient by early identification and treatment, thus making a contribution to reducing the mortality and morbidity rates.

1.7 AIM OF THE STUDY

The overall aim of this study is to explore and identify the delays experienced by the patient suffering from AMI from the time of arrival up to the time thrombolytic therapy is administered in the accident and emergency department of the Al Ain Hospital and make suggestions to reduce the "door to needle time".

1.8 RESEARCH QUESTIONS

The following research questions were formulated to guide the study:

- What is the extent of the delays facing the AMI patient at this hospital from time of arrival till thrombolysis time?
- In what specific areas do the delays occur?
- What are the reasons for these delays?
- How long did it take to administer thrombolytic therapy after arrival at the hospital?
- How can the health care providers reduce the "door to needle" time?

1.9 RESEARCH OBJECTIVES

The specific research objectives for this study are to

- determine the extent of the delays facing the AMI patient at this hospital from the time of arrival till thrombolysis time
- identify the specific areas where the delays occur
- identify the reasons for the delays

- determine how long after arrival at the hospital thrombolytic therapy is administered
- establish ways for health care providers to reduce the “door to needle” time

1.10 SIGNIFICANCE OF THE STUDY

The significance of this study lies in identifying the areas that contribute to the delays experienced by the patient with AMI so that corrective measures can be applied at the Al Ain Hospital. The study will identify the “door to needle” time at this hospital and compare it to the NHAAP’s (1994:314) recommended 30 minutes to thrombolyse.

This study will contribute to the continuous quality improvement of the overall nursing and medical care of the AMI patient who is eligible for thrombolysis (NHAAP 1994:311-329).

1.11 RESEARCH DESIGN AND METHODOLOGY

Burns and Grove (2001:26) define research methodology as “the application of all steps, strategies and procedures for gathering and analysing data in a research investigation in a logical and systematic way”. The researcher selected to undertake a quantitative, non-experimental, descriptive and retrospective study. Polit, Beck and Hungler (2001:167) define research design as “a blueprint for conducting a study and are necessary as it maximises control over factors that interfere with the validity of the findings”. In order to achieve the goal a strategy or plan is required to conduct the study. Burns and Grove (2001:223) state that the design guides the research in planning and implementing the study in a way that it most likely to achieve the intended goal.

Data collection, population, sample and selection of cases, context, data analysis, validity and reliability, scope and limitations, and ethical considerations will be briefly considered next.

1.11.1 Data collection

According to Polit et al (2001:36), data collection is the method used to gather pieces of information

required to conduct the research study. Research objectives in a quantitative study must be accomplished with the data collected (Burns & Grove 2001:50). In this study, the researcher collected the data, retrospectively; through the use of a structured instrument to gather the desired responses from the files of 351 selected subjects according to inclusion criteria. The information was accessed from the Coronary Care and Intensive Care Unit admission book and permission was obtained from the Medical and Nursing Directors of the Al Ain Hospital to access files from the filing record section of this hospital (see annexure A).

1.11.2 Population

Polit and Hungler (1999:278) describe a population as the representation of the entire set of individuals that meet the criteria, also known as the "target population". In addition, Polit et al (2001:233) add that the population is the "entire aggregation of cases that meet a specified set of criteria".

In this study, the population consists of all male and female patients who were treated for AMI at the Al Ain Hospital from January 2002 to December 2003.

□ Sample

According to Polit et al (2001:234), a sample is the "subset of the target population selected through a sampling process to study". In this study, 351 cases were selected according to the following inclusion criteria:

- Subjects must have had treatment for AMI with thrombolytic therapy, from January 2002 to December 2003.
- Diagnosis of AMI, according to the diagnostic criteria of chest pain and an ECG (see chapter 2, section 2.6).
- Patients who had died due to AMI and complications will also be included in this study.

1.11.3 Context

According to Polit et al (2001:44), context refers to “the setting within the site where the data collection will occur”.

In this study, the data was collected in the filing section of the Al Ain Hospital after permission had been obtained from the medical, nursing and hospital directors as well as the manager of the filing section of the hospital (see annexure A: Permission to conduct research).

1.11.4 Data analysis

The Statistical Analysis System, Version 9.1 (SAS 9.1) computer program was used in the data analysis of the data, with the assistance of a statistician. Frequencies and basic statistics were calculated and presented in table and graph format in chapter 4.

1.11.5 Validity and reliability

Polit et al (2001:308, 305) define validity as “the degree to which an instrument measures what it is supposed to measure”, and reliability as “the consistency with which an instrument measures an attribute”.

Burns and Grove (2001:399) also add that for an instrument to be reliable it must yield the same measure when used twice. During the development phase of the instrument, several steps were taken to ensure that only relevant information was collected. This was achieved by structuring the instrument so only relevant data necessary to achieve the research objectives was gathered. The researcher consulted literature and obtained critique from expert cardiologists in developing the instrument.

1.11.6 Scope and limitations

This study is unique as it was conducted at the Al Ain Hospital in the United Arab Emirates. The hospital is in a Middle East country which has a multi-national population of approximately 195 nations living and working together. Although English is not the first language, it is the medium for written communication in consultation and treatment. Although the documentation procedure may not always be accurate, which is common for retrospective studies, the researcher took precaution to ensure accuracy. Expert cardiologists verified the selective information. The total number of patient's thrombolysed consisted of those thrombolysed in the accident and emergency unit as well as admissions to the Coronary and Intensive Care Units (CCU) .

1.11.7 Ethical considerations

Burns and Grove (2001:191) declare that in order to maintain a high standard of research, "the conduct of nursing research not only requires expertise and diligence but also honesty and integrity". In addition, the authors add that ethical research is essential to generate sound knowledge for practice. Polit et al (2001:90) are of opinion that in order to ensure a high standard of research, ethical guidelines are set to direct researchers. The ethical considerations followed in this study are discussed in chapter 3.

The research proposal was sent for approval to the Ethics Committee at the Faculty of Medicine in Al Ain prior to commencement of the study (see annexure A).The proposal was also sent to the Department of Health Studies at the University of South Africa for approval (see annexure A). Permission was obtained from the Medical and Nursing Directors to conduct the study at the Al Ain Hospital and to access the confidential files of the patients.

1.12 DEFINITIONS OF TERMS USED IN THE STUDY

The following terms are used in this study:

1.12.1 Thrombolytic therapy

Swearingen and Keen (1995:375) describe thrombolytic therapy as a "pharmacological agent used

to dissolve the thrombus formed in the blood vessels”.

In this study, thrombolytic therapy refers to the treatment reserved for lysing the thrombus formed in the coronary vessels, with the aim of reperfusion of myocardium. This is the treatment given to eligible patients so that the blood flow within the infarct-related artery can be restored thereby restoring blood flow to the myocardium.

1.12.2 Acute myocardial infarction (AMI)

Dracup and Cannon (1999:2) define AMI as an “abrupt lack of blood flow to myocardium with subsequent decreased nutrient and oxygen, resulting in death of myocardial cells”. Jaffe and Miller (2003:57) describe AMI as an “injury to the myocardial cell due to imbalance of oxygen demand and supply”.

In this study AMI refers to the medical emergency occurring from critical interference with blood flow in any of the coronary artery results in ischemia, necrosis and loss of function of myocardium.

1.12.3 Barriers

Pollard and Liebeck (2000:63) define a barrier as “something that prevents advance, access or progress”. In this study barriers refer to those obstacles that prevent or hinder progress in receiving speedy and effective therapy for AMI.

1.12.4 Time

Pollard and Liebeck (2000:63) define time as “all year past, present and future, the passing away of these as a whole, but portion associated with central events, conditions and experiences”. Time is also defined by the Oxford Dictionary for Current English (1994:692) as “indefinite, continuous progress of past, present and future events, regarded as a whole”.

In this study, time refers to two significant points in the patient suffering from an AMI. The first being the time of arrival soon after experiencing chest pain, and secondly to the time when the

patient received treatment to resolve the problem. The passage of time in this study is essential to the survival of the patient with AMI especially if the patient does not receive treatment as the myocardium becomes necrosed if left untreated which leads to the death of the patient.

1.12.5 Delay

The Oxford Dictionary for Current English (1994:164) defines delay as to “postpone, make or be late”. Pollard and Liebeck (2001:211) defines a delay as “to make late, hinder progress, wait or linger before something occurs”.

For the purposes of this study, delay refers to all aspects that hinder or obstruct the patient from receiving thrombolytic therapy timeously for successful reperfusion.

1.12.6 “Door to needle” time

For the purposes of this study the “door to needle” time refers to the time from the patient’s arrival at the hospital up to the time thrombolytic therapy is administered. It is a significant phase in the treatment of AMI because of the speed at which the myocardial cells necrose in the absence of blood supply. The National Heart Attack Alert Program (NHAAP 1995:58) strongly recommends that the “door to needle” time be <30 minutes prior thrombolytic therapy administration. The “door time” signifies the arrival time at the hospital; the “needle time” is the time the thrombolytic agent is administered. This time is crucial to a successful outcome in the reperfusion of the myocardium in AMI as delays in restoring blood flow will result in fatal outcome for the patient.

1.13 OUTLINE OF THE STUDY

Chapter 1 introduced the topic and discussed the purpose of the study.

Chapter 2 discusses the literature review conducted on acute myocardial infarction and Thrombolytic therapy.

Chapter 3 describes the research design and methodology, including data collection and analysis, population and sampling, validity and reliability, scope and limitations and ethical considerations.

Chapter 4 deals with the data analysis and research findings. The statistical procedures and methods, validity and reliability are also discussed.

Chapter 5 concludes the study and discusses its limitations and makes recommendations for thrombolytic therapy and the patient with AMI as well as further study.

1.14 CONCLUSION

This chapter described the background to and rationale for the study, the problem, and the purpose of the study, defined terminology, outlined the research design and methodology, and discussed the ethical considerations.

A comprehensive background of the country (UAE) was given in this chapter for the benefit of South African students who have a limited access to the background and problems of the country. In addition, this chapter provided a brief description and verification of different research findings regarding the chances of survival of patients suffering from AMI related to 'time' before the treatment is offered, soon after the onset of symptoms, and the speed with which the infarcting myocardium is reperfused. In this chapter it was indicated and substantiated with research findings that various delays are the main factors related to reducing the chances of survival of the patient. It was also indicated that health care providers should be committed and obligated to reducing delays facing patients after arrival at the hospital prior to thrombolysis. This will, indeed, contribute to reduced mortality and morbidity rates and improve survival outcomes for AMI patients. Successful outcomes can only be achieved through excellence in practice and continuous quality improvement through ongoing research in an effort to optimise the survival of AMI patients.

Chapter 2 covers the literature review undertaken by the researcher for the study.