

**HYPNOTHERAPEUTIC EGO STRENGTHENING
WITH CORONARY ARTERY BYPASS SURGERY
PATIENTS AND THEIR SPOUSES**

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***“But at the centre of the heart
dwells the proper soul,
the breath of God”***

(Paracelsus)

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SOLI DEO GLORIA!

Dedicated to Dalené

SUMMARY

HYPNOTHERAPEUTIC EGO STRENGTHENING WITH CORONARY ARTERY BYPASS SURGERY PATIENTS AND THEIR SPOUSES

KEY WORDS: Coronary heart disease, coronary artery bypass surgery, anxiety, depression, quality of life, dispositional optimism, ego, ego strength, hypnotherapy, hypnotherapeutic ego strengthening.

Coronary artery bypass surgery (CABS) is highly stressful for couples, since comorbid anxiety and depression are most commonly reported and hence most researched pre- and postoperative emotional states. Thus, patients' psychological well-being may contribute more to the level of disability than their physical impairment. Despite this extremely stressful process, psychological preparation is ironically often neglected in CABS couples.

The primary aim of the study was to examine the feasibility of hypnotherapeutic ego strengthening (HES) to enhance the ability of CABS couples' to cope with psychological distress associated with hospitalisation and surgery. Secondary aims were to determine the contribution of HES in reducing anxiety and depression, as well as enhancing and maintaining ego strength, quality of life and dispositional optimism in CABS patients and spouses.

An overview of coronary heart disease (CHD), risk factors involved, psychological aspects concomitant to CABS (specifically anxiety and depression) and a conceptualisation of HES according to the relevant literature, preceded the empirical study.

The experimental design consisted of a two-group, pre-post-follow-up assessment design. A sample of fifty married, male patients admitted to Unitas Hospital in Pretoria with a first, uncomplicated CABS was randomly assigned, together with their spouses, to an experimental- ($n = 25$) and control group ($n = 25$). Informed consent was obtained for all

project participants. Thus, both groups consisted of twenty-five patients and spouses. To test the hypotheses, experimental patients and spouses were required to participate in the HES intervention.

Respondents completed the Beck Depression Inventory (BDI-II) (Beck, Steer, & Brown, 1995), Profile of Mood States (POMS) (McNair, Lorr, & Droppleman, 1992), Epstein and O'Brien Ego Strength Scale (1982), Quality of Life Inventory (QOLI) (Frisch, 1994) as well as the Life Orientation Test (LOT) (Scheier & Carver, 1985). Test administration of couples occurred preoperatively, on the day of discharge, and at six-week follow-up.

Before commencing the intervention, group comparability was confirmed by means of the *t*-test for independent groups. At programme completion the significance of differences within and between groups was determined by means of *t*-tests. Statistically significant *p*-values were subjected to Cohen's *d* statistic to determine the practical significance of the findings. A confidence interval of 99% determined the values of the differences between the postoperative and follow-up findings.

Results confirmed that the HES intervention significantly reduced postoperative anxiety and depression levels in experimental CABS patients and spouses, which was maintained at follow-up. No change was observed among control group patients and spouses. Moreover, the HES intervention significantly improved and maintained postoperative ego strength, quality of life and dispositional optimism in experimental CABS couples. The overall outcome of the control patients and spouses revealed a decreasing trend with regard to dispositional optimism and quality of life. Qualitative responses largely confirmed quantitative indications of reduced comorbidity and enhanced psychological well-being among experimental participants.

Despite design limitations, the results confirmed that HES enhanced CABS couples' inner resources and attenuated concomitant negative mood states. Thus, it was concluded that HES played a meaningful role in the preparation and care of CABS couples by reducing comorbidity and improving their psychological well-being. Finally, recommendations for further studies were made.

OPSOMMING

HIPNOTERAPEUTIESE EGOVERSTERKING MET KORONÊRE VATOMLEIDINGCHIRURGIE PASIËNTE EN HULLE EGGENOTE

SLEUTELTERME: Koronêre vatsiekte, koronêre vatomleidingchirurgie, angs, depressie, lewensgehalte, disposisionele optimisme, ego, egosterkte, hipnoterapie, hipnoterapeutiese egoversterking.

Koronêre vatomleidingchirurgie (KVOG) is 'n stresvolle gebeurtenis vir egpare, weens die prominensie van komorbiede angs en depressie as mees gerapporteerde en nagevorsde pre- en postoperatiewe emosionele toestande. Pasiënte se psigologiese welstand kan selfs 'n groter bydrae lewer tot hul vlak van gestremdheid as hul fisieke belemmering. Gesien die uiterste stres van die ervaring is dit ironies dat psigologiese voorbereiding dikwels afgeskeep word in die versorging van KVOG-egpare.

'n Ondersoek na die uitvoerbaarheid van hipnoterapeutiese egoversterking (HEV) met KVOG-egpare ten einde hulle vermoë te verbeter om die sielkundige spanning van hospitalisasie en chirurgie te hanteer, was die hoofdoelstelling van die studie. Die sekondêre doelstellings was om te bepaal watter bydrae die HEV-intervensie kon maak tot die vermindering van angs en depressie, asook die versterking en volhouding van egosterkte, lewensgehalte en disposisionele optimisme in KVOG-pasiënte en hulle eggenote.

'n Literatuuroorsig van koronêre vatsiekte (KVS), gepaardgaande risikofaktore, die sielkundige aspekte geassosieer met KVOG, spesifiek angs en depressie, sowel as 'n konseptualisering van HEV vanuit relevante literatuur, het die empiriese ondersoek voorafgegaan.

Die eksperimentele ontwerp het bestaan uit 'n tweegroep, voor-, na- en opvolgevalueringontwerp. 'n Steekproef van vyftig getroude, manlike pasiënte, opgeneem in Unitas-hospitaal, Pretoria, met 'n eerste, ongekompliseerde KVOC, is individueel gewerf en ewekansig toegewys aan 'n eksperimentele- ($n = 25$) en kontrolegroep ($n = 25$). Die eksperimentele- en kontroleregroep het dus elk uit vyf en twintig egpare bestaan. Ingeligte toestemming is van alle deelnemers verkry. Ten einde hipoteses te toets is die eksperimentele pasiënte en eggenote versoek om deel te neem aan die HEV-intervensie.

Alle pasiënte en eggenote het die Beck Depression Inventory (BDI-II) (Beck, Steer, & Brown, 1996), Profile of Mood States (POMS) (McNair, Lorr, & Droppleman, 1992), Epstein and O'Brien Ego Strength Scale (1982), Quality of Life Inventory (QOLI) (Frisch, 1994) en die Life Orientation Test (LOT) (Scheier & Carver, 1985) voltooi. Voortoetsing is pre-operatief afgeneem, natoetsing tydens ontslag en opvolgtoetsing na ses weke.

Die interventie is voorafgegaan deur die vergelykbaarheid van groepe aan die hand van die *t*-toets vir onafhanklike groepe te bevestig. Na die HEV-intervensie is die betekenisvolheid van verskille binne- en tussen groepe met toepaslike *t*-toetse bepaal. Statisties betekenisvolle *p*-waardes is aan Cohen se *d*-statistiek onderwerp, om die praktiese betekenisvolheid van bevindinge vas te stel. 'n Vertrouensinterval van 99% het die waardes van die verskille tussen postoperatiewe- en opvolgresultate bepaal.

Statistiese ontleding het bevestig dat die HEV-intervensie die postoperatiewe angs- en depressievlakke van KVOC-pasiënte en hulle eggenote beduidend verminder het en dat veranderinge tydens die ses weke-opvolg gehandhaaf is. Pasiënte en eggenote in die kontrolegroep het nie verandering getoon nie. Hierbenewens, het die HEV-intervensie gelei tot beduidende verhoging en handhawing van postoperatiewe egosterkte, lewensgehalte en disposisionele optimisme in die eksperimentele KVOC-egpare. Pasiënte en eggenote in die kontrolegroep het 'n algehele neiging tot verminderde kwaliteit van lewe en disposisionele optimisme getoon. Kwalitatiewe response het die kwantitatiewe uitkomst in terme van verminderde komorbiditeit en verhoogde psigologiese welsyn in die eksperimentele deelnemers bevestig.

Ten spyte van ontwerpkeuses, het die resultate bevestig dat die HEV-intervensie KVOC-egpare se innerlike hulpbronne versterk en gepaardgaande negatiewe gemoedstoestande

verminder het. Die gevolgtrekking is dus gemaak dat HEV 'n beduidende bydrae gemaak het tot die voorbereiding en versorging van egpare betrokke by KVOG, deur komorbiditeit te verminder en psigologiese welstand te verbeter. Die studie is afgesluit met aanbevelings vir verdere ondersoek.

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REMARK

The reader is reminded that the writing style as well as the references as prescribed by the *Publication Manual of the American Psychological Association (2001) 5th edition*, were followed in this thesis.

CHAPTER 1

PREAMBLE, PROBLEM STATEMENT, AIM AND PLAN OF THE STUDY

1.1 INTRODUCTION

Coronary heart disease (CHD) is one of the major causes of death in middle-aged and elderly adults in South Africa (Van der Poel & Greeff, 2003). Heart disease results in substantial disability and loss of productivity, and contributes considerably to the escalating costs of health care in South Africa (Wood et al., 2000). Statistics South Africa (1995) suggests that CHD is responsible for 35% of all deaths in the economically active white male population, while also claiming the lives of about 20% of white South African females annually. CHD remains relatively uncommon among black South Africans (Seedat, Mayet, Latiff, & Joubert, 1992, 1993). According to the South African Heart Foundation [SAHF] (1995) and Horning (2002), one in three white men and one in four white women will develop CHD before the age of sixty years.

CHD has been causally associated with various Western lifestyle factors, such as diets rich in saturated fats and calories, smoking, hypertension, diabetes mellitus as well as physical inactivity (American Heart Association [AHA], 2002). According to Kruger, Venter, and Vorster (2003), habitual physical activity levels of black South Africans, as well as low-fat diets and favourable lipid profiles, contribute to the low prevalence of CHD among them. However, the incidence of CHD is gradually rising in the black population as risk factor prevalences are altered by changes in lifestyle, westernisation and urbanisation (Seedat et al., 1992, 1993). Although research studies have confirmed the dominant role of physiological risk factors, psychological factors such as metabolic stress and depression can also be linked to the etiology of heart disease (Miller, Stetler, Carney, Freedland, & Banks, 2002; Sinatra, 1999).

In CHD, vulnerability to psychological symptoms is aggravated by the possibility of coronary artery bypass surgery (CABS) to this vital organ. The loss of control is an enormous assault on the ego (Allan & Scheidt, 1998). Some refer to this vulnerability as ego-infarction (Barsky, 2001). CABS may place great strain on the coping resources of patients and their spouses. The heart may recover more rapidly after CABS than the patients' mental state. Fear, uncertainty, depression, emotional lability and difficulty adjusting to a new lifestyle are common responses of recovering CABS patients and their spouses (Rankin & Monahan, 1991).

1.2 PROBLEM STATEMENT

The high prevalence of both pre- and postoperative depression is a major finding. Almost 50% of patients feel depressed prior to surgery and even more after surgery (Duits, Boeke, Duivenvoorden, Passchier, & Erdman, 1996). The reported prevalence of preoperative depression ranges from 27% to 47% and postoperative depression from 19% to 61% (McKhann, Borowicz, Goldsborough, Enger, & Selnes, 1997). Untreated depression and anxiety can deplete CABS patients' physical and emotional reserves and complicate the course of recovery (Shuster, Stern, & Tesar, 1992). The psychological effects can become dangerous and impair patients' quality of life (Cohan, Pimm, & Jude, 1998). Life stress and depression are also associated with a greater rate of postoperative morbidity and mortality in cardiac patients (Barefoot & Schroll, 1996; Ford et al., 1998; Kawachi, Sparrow, Vokonas, & Weiss, 1994; Burg, Benedetto, Rosenberg, & Soufer, 2003).

Similarly, spouses report anxiety, fear, a high degree of vigilance and dissatisfaction with their altered social activities, economic situation, role changes and sexual relations (Cohan et al., 1998). Spouses report frustration and difficulty dealing with recovering patients' mood swings, irritability and non-compliant behaviour, which may be transmitted to the patients (Mulcahy, 1990). Spouses assume a significant care-giving role during the recovery period (Van Elderen, 1994). This role transition is not always smooth as the increased dependency of patients may be perceived as a threatening role reversal for the spouse. The stresses experienced by spouses have been operationalised as a care-giving burden with potential outcomes of distress and depression (Kulik & Mahler, 1993). As many as 40% of spouses continue to report physical and emotional distress a year after their spouses' bypass surgery (Ockene, Clemow, & Ockene, 1995).

The problem is that patients and their spouses are often poorly equipped psychologically to deal with the physical and emotional changes of the surgical experience (Papadopoulos, 1995). Since they are unprepared, a significant number experience acute psychological distress. Patients experience an increase in physical symptoms which they attribute to bodily illness, and tend to report physical symptoms, rather than affective or emotional complaints, to their surgeons (Duits et al., 2002). Medical professionals sometimes disregard emotional complaints because they assume these to be consistent with and appropriate to cardiac surgery. Anxiety and depression in CABS patients and their spouses can be so ambiguous that they can go undiagnosed and untreated (Burg et al., 2003; Wool, 1990). The psychological state of patients as well as their spouses has an important influence on quality of life and other aspects of postoperative behaviour (Cohan et al., 1998). Lamarche, Taddeo, and Pepler (1998) propose that the way in which patients cope with the stressful event of CABS is determined by their psychological state pre- and postoperatively. Proper psychological management can greatly improve the quality of life of both the patients and their spouses and may be the single most important contributory factor to the positive outcome to CABS (Prevost & Deshotels, 1993). Emerging evidence also suggests that early targeted psychological interventions can be of positive therapeutic value to patients and partners in a variety of quality of life domains, including anxiety and depression (Johnston, Foulkes, Johnston, Pollard, & Gudmundsdottir, 1999; Martin & Thompson, 2000; Sullivan, LaCroix, Russo, & Walker, 2001).

From the foregoing, it becomes clear that CABS couples may be in psychological need and require immediate pre- as well as postoperative interventions. The surgical experience can be made much more tolerable if patients are incorporated into a holistic and multidimensional therapeutic environment which has the potential to affect all aspects of illness (Crisp, 1996; Dantas, Motzer, & Ciol, 2002; Ockene et al., 1995; Okkonen, 2000; Wright & Arthur, 1996).

Hypnotherapy has increasingly been shown to enhance the efficacy of cognitive-behavioural interventions and is used as an adjunct to treatment in the hospital milieu (Ginandes, 2002; Schoenberger, 2000; Sunnen, 2000; Varga & Dioszeghy, 2003). It has been shown that techniques of suggestion, hypnosis, and relaxation can positively influence the recovery of patients following surgery (Blankfield, Zyzanski, Flocke, Alemagno, & Scheurman, 1995; Greenleaf, Fisher, Miaskowski, & DuHamel, 1992).

Numerous clinicians value the use of brief hypnotherapeutic interventions in the emotional preparation of patients for major surgery. Since patients and their spouses are under considerable emotional stress, they are highly responsive to hypnotherapeutic suggestions. Patients admitted to hospital for major surgery spontaneously enter a state of altered awareness and behave as though hypnotised (Fredericks, 2001). Clinicians consider preoperative suggestions and reassurance vital to patients' recovery from surgery and maintaining an acceptable quality of life (Ashton et al., 1995; Fredericks, 2000; Sunnen, 2000; Weinstein & Au, 1991).

The available literature suggests that only a few studies published to date involved an experimental design to test the effectiveness of pre- and postoperative hypnotherapeutic intervention in the recovery of surgical patients. Prior studies of psychological preparation for surgery have focused on reassurance given to patients preoperatively and informing them of what to expect postoperatively, including suggestions of relaxation and confidence, breathing techniques, music as well as verbal rehearsal of routine procedures undergone by surgical patients (Lamarche et al., 1998; Linden, 2000; Robb, Nichols, Rutan, Bishop, & Parker, 1995). These interventions can enhance quality of life by promoting recovery of CABS patients and assisting in the positive psychological response of patients and their spouses both pre- and postoperatively (Ashton et al., 1997). However, more attention needs to be given to further research on hypnotherapeutic interventions to evaluate their relative effectiveness (Lynch, 1999).

Mobilising ego strength is perceived as the main coping mechanism in patients undergoing surgery (Gahlaut, Srivastava, & Rastogi, 1993). The ability of CABS patients and their spouses to cope with psychological distress depends on their inner strengths, preoperative feelings and attitudes (Ockene et al., 1995). Hypnotherapeutic ego strengthening (HES) enhances patients' ability to feel and access resources within themselves. The hypnotic state allows for an increased access to imagery, fantasy, emotion and memories, which takes place during a period of decreased defensiveness and increased receptiveness (Frederick & McNeal, 1999). Presenting HES interventions when patients are in a hypnotic trance enhances their effectiveness. HES techniques appear to be powerful interventions, because they increase conscious, unconscious and superconscious complementarity and endeavour to activate the deepest internal healing powers (Phillips, 2000).

To date no research concerning the effectiveness of HES interventions in the pre- and postoperative management of patients and their spouses could be traced by the current researcher. The “inner-strength” hypnotherapeutic technique can activate internal survival mechanisms and can be used to access patients’ resources of strength. However, very little is known about the nature and effectiveness of these techniques. The applicability of inner-strength techniques and other projective interventions to the field of HES has only been partially realised and deserves further exploration (Frederick & McNeal, 1999). Researchers have not yet investigated the potential of projective HES interventions to help patients and their spouses to cope with the psychological stresses of hospitalisation and surgery as applicable to CABS. Thus, the research questions are:

- (a) To what extent will the pre- and postoperative hypnotherapeutic ego strengthening intervention:
 - reduce anxiety and depression; and
 - enhance ego strength, quality of life and dispositional optimism in **CABS patients** as measured on the day of discharge; and
 - maintain the longevity of the hypnotherapeutic intervention at six weeks follow-up?

- (b) To what extent will the pre- and postoperative hypnotherapeutic ego strengthening intervention:
 - reduce anxiety and depression; and
 - enhance ego strength, quality of life and dispositional optimism in **spouses** of CABS patients as measured on the day of discharge; and
 - maintain the longevity of the hypnotherapeutic intervention at six weeks follow-up?

- (c) Qualitatively speaking, what would the HES intervention mean to the participant patients and spouses?

1.3 AIMS OF THE STUDY

The aims of this study are the following:

- (a) To determine the contribution of pre- and postoperative hypnotherapeutic ego strengthening intervention in:
 - the reduction of anxiety and depression;
 - the enhancement and maintenance of ego strength, quality of life and dispositional optimism of postoperative **CABS patients**;
 - the maintenance of the longevity of the hypnotherapeutic intervention at six weeks follow-up.

- (b) To determine the contribution of pre- and postoperative hypnotherapeutic ego strengthening intervention in:
 - the reduction of anxiety and depression;
 - the enhancement and maintenance of ego strength, quality of life and dispositional optimism of the **spouses** of postoperative **CABS patients**;
 - the maintenance of the longevity of the hypnotherapeutic intervention at six weeks follow-up.

- (c) To determine what the HES intervention meant to patients and spouses qualitatively.

1.4 HYPOTHESES

- (a) Pre- and postoperative hypnotherapeutic ego strengthening intervention will reduce the postoperative anxiety and depression levels of **CABS patients** significantly, while simultaneously increasing and maintaining the ego strength, quality of life and dispositional optimism in **CABS patients** at follow-up.

- (b) Pre- and postoperative hypnotherapeutic ego strengthening intervention will reduce the postoperative anxiety and depression levels in **spouses** of **CABS patients** significantly, while simultaneously increasing and maintaining the ego strength, quality of life and dispositional optimism of spouses of **CABS patients** at follow-up.

- (c) No hypothesis will be set in this regard.

1.5 METHOD OF INVESTIGATION

1.5.1 Literature study

Coronary heart disease will be defined. Its characteristics, etiology, epidemiology, prevention and impact on quality of life will be discussed with specific reference to the South African context. Psychological comorbidity to CABS, particularly anxiety and depression and its manifestation will be discussed. The feasibility of HES with special reference to hypnotherapeutic ego strengthening with CABS couples will be explored.

1.5.2 Empirical study

1.5.2.1 Design

A two-group, pre-post-follow-up evaluation design will be used with patients and spouses respectively.

1.5.2.2 Statistical analysis

Intervention outcome will be determined by the significance of post-assessment differences between and within groups respectively by means of *t*-tests. The significance of differences within groups will be computed by means of paired *t*-tests. The *t*-test for independent samples will be utilised to detect differences in changes between groups. Statistically significant findings will be subjected to Cohen's *d* (1988) to determine the practical significance of the HES intervention. A 99% confidence interval will be calculated to provide plausible values for the differences between post-test and follow-up means.

1.6 PROCEDURE

Preoperative assessment of consenting patients and their spouses will be completed individually. The HES intervention will be conducted in five separate sixty-minute sessions, two pre- and three postoperative in the case of consenting experimental patients and their spouses individually. A postoperative assessment will be scheduled separately for patients and spouses on the day of discharge and during patients' six-week follow-up visit.

The control group will not participate in any pre- and postoperative HES intervention. Pre-postoperative assessments of control patients and spouses will be scheduled similarly.

1.7 SUMMARY AND PREVIEW

To keep within the framework designed for this study, the chapters deal with the following aspects. The first chapter provides a general orientation, states the research problem and describes the aims of this study. Chapter 2 deals with coronary heart disease and the risk factors involved. Chapter 3 focuses on the psychological aspects concomitant to CABS, with specific reference to anxiety and depression. Chapter 4 describes and elaborates on hypnotherapeutic ego strengthening (HES) as conceptualised in the literature. Chapter 5 explains the methodology employed to conduct the study. Chapter 6 discusses the results of the empirical investigation. Lastly, chapter 7 presents the conclusions and recommendations for future research.

CHAPTER 2

THE HEART, CORONARY HEART DISEASE, RISK FACTORS AND CORONARY ARTERY BYPASS SURGERY

2.1 INTRODUCTION

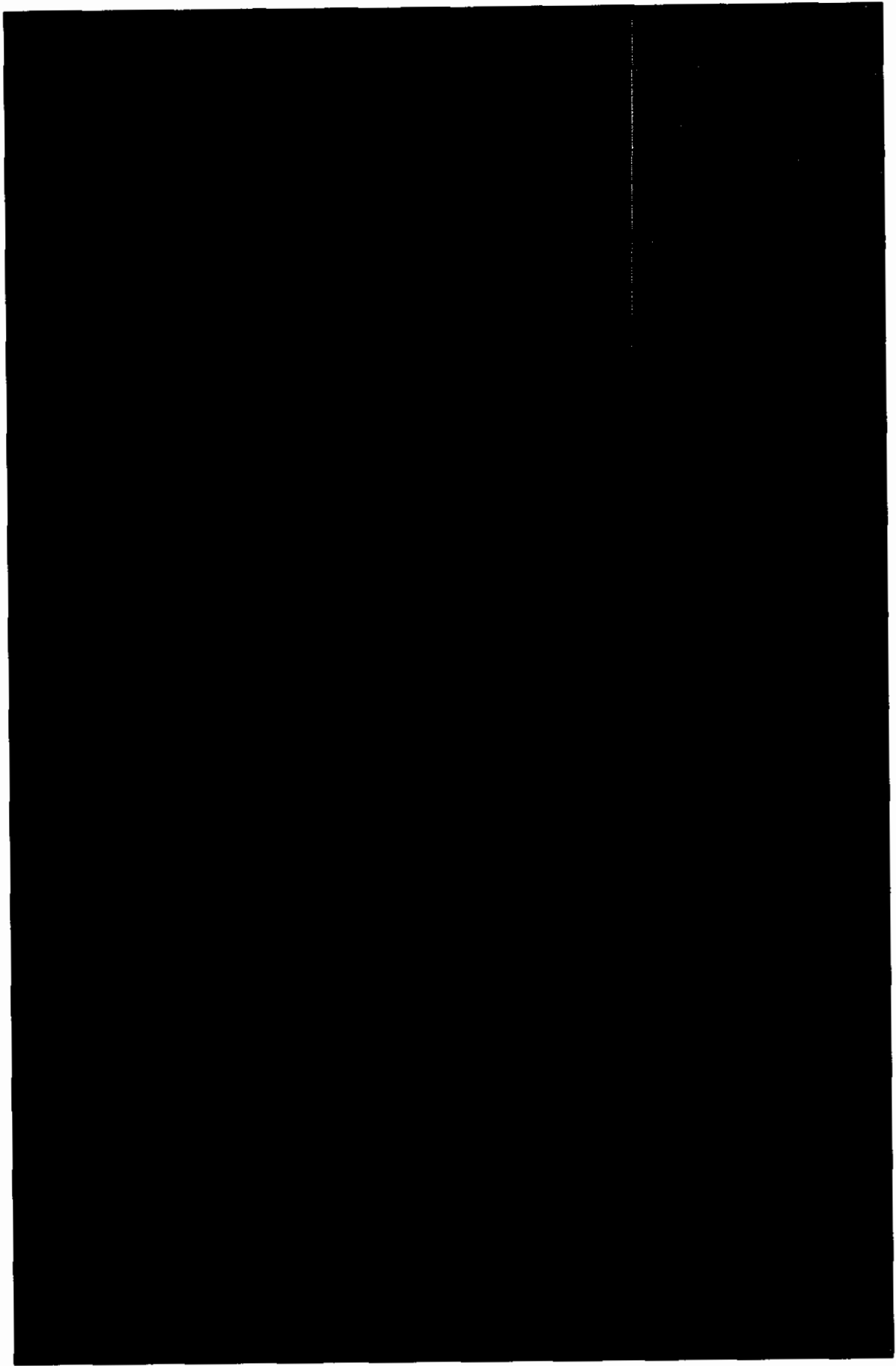
South Africans are in the unenviable position of having one of the highest incidences of hereditary heart disease in the world. According to the SAHF (1995), over four million South Africans suffer from heart disease. In terms of premature death from CHD (i.e., deaths between the ages of 30 and 69), South Africa has the highest rate in the world. Atherosclerotic disease results in substantial disability and loss of productivity and contributes to escalating costs of healthcare in South Africa (Wood et al., 2000). Professionals involved in the treatment and prevention of CHD have become increasingly sensitised to the vascular system and the multi-factorial nature of CHD (Allan & Scheidt, 1998; Barsky, 2001; Levy & Wilson, 1998). Overwhelming evidence confirms that when the necessary lifestyle modifications are enacted in combination with risk factor management, the incidence of CHD, quality of life and life expectancy can be improved both before and after CABS (Wilkinson, Waring, & Cockcroft, 2003; Wood et al., 2000). It behoves professionals, therefore, to optimise the prevention and treatment strategies of CHD.

This chapter briefly describes the functioning of the heart and the cardiovascular system, outlines the multi-factorial causes of CHD and major literature findings, and reviews the treatment of CHD and its effect on quality of life.

2.2 THE STRUCTURE AND FUNCTIONING OF THE HEART

The heart is a hollow muscular organ in the chest with a mass of approximately 250 to 500 grams. It is situated behind the sternum somewhat to the left, between the two lungs. The heart is enclosed by a double protective membrane known as the pericardium, which is filled with fluid (5 to 10ml). The pericardium prevents friction against the other organs when the heart contracts. It is divided into halves by means of a muscular wall called the septum. Each half has an upper chamber, known as the atrium, and a lower one, called the ventricle. The atrium and the ventricle are separated by a valve which prevents the flow of blood from the ventricle to the atrium. The left ventricle (LV) is the thickest, strongest muscle and the most important of the four heart chambers, since it performs the greatest amount of pumping work and needs the most oxygenated blood for its own muscle (Gould, 1998).

The heart's main function is the **circulation of life-sustaining blood** to and from every major organ and structure in the body. The blood that circulates in the body is pumped from the LV of the heart through the aortic valve into the aorta and arteries of the body, and supplies oxygen to the organs of the abdomen, thorax, and brain as well as to the upper and lower limbs. Deoxygenated blood is carried back to the heart by the veins from the head, body, limbs and all internal organs. It enters the right atrium (RA), where the blood immediately flows through a heart valve (tricuspid valve) into the right ventricle (RV). Once the RV is filled with blood, the pressure forces the pulmonary valve that leads out of the heart to open and blood flows into the pulmonary artery directly to the lungs (Gordon & Gibbons, 1991). Within the lungs, carbon dioxide waste is released to be expelled by exhalation and oxygenated blood derived from the inspired air is transported to the left atrium (LA) through the pulmonary vein to the LV, with the mitral valve regulating the flow in between (Gould, 1998). The exchange of oxygen is one of many vital chemical transactions that take place between the blood and other body tissue fluids. In the kidneys, stomach, intestine and heart, other essential interactions occur. All of these depend on the maintenance of pressure within the circulatory system. This pressure is called blood pressure (Johnson, Gentry, & Julius, 1992) (see Figure 2.1).



Phasic **blood pressure (BP)** is essential in order to move blood forwards to reach all the vital organs of the body. Blood is pumped out of the LV and through the arteries and pushes against the arterial walls. The force exerted against the walls by the blood is called blood pressure. Each time the ventricles contract (the systole part of heart rhythm), a surge of blood enters the arteries, making the blood pressure rise. The level to which it rises is referred to as systolic blood pressure (SBP) (the top measurement). In contrast, each time the heart relaxes between beats, the blood pressure falls. Thus, diastolic blood pressure (DBP) (the bottom measurement) reflects the lowest amount of pressure in the arteries at any given time (Opie, 2000).

Heart rate and rhythm enable perfusion of blood flow throughout the body. This is achieved by the number of contractions (beats) of the heart per minute. The heart is endowed with a special electrical conduction system which generates rhythmical impulses. The source of the impulses is the sino-atrial node (SA-node), located near the top of the RA. The SA node is the heart's natural pacemaker that determines how fast the heart beats. These impulses travel rapidly through the myocardium and cause the chambers to beat rhythmically. In anxiety-provoking situations the rate of the heart beat changes (Clark, Nash, Cohen, Chase, & Niaura, 1998).

2.3 THE CORONARY ARTERIES

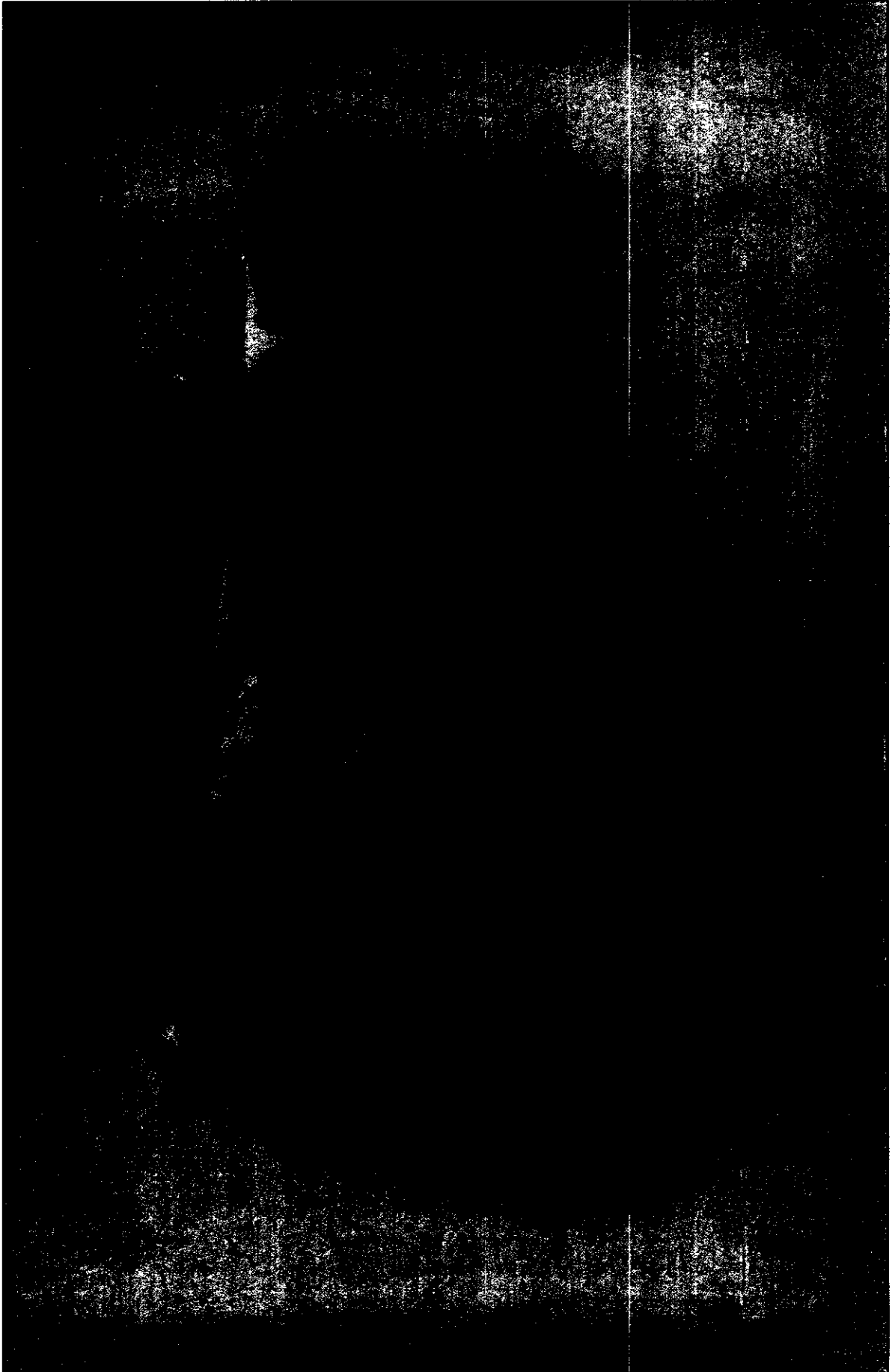
The key to understanding CHD (which is a threat to a healthy life) lies in the coronary arteries. The coronary arteries provide the myocardium with a constant supply of oxygenated blood which ensures that the heart has enough energy to continue its pumping action. The heart pumps blood throughout the body, but also needs blood for its own nourishment. The myocardial circulation is managed by two major coronary arteries, which arise at the root of the aorta. The right coronary artery courses around the right side of the heart to the back or posterior surface of the heart to its tip. The right coronary artery supplies both the RV and part of the LV. The left main stem vessel divides into the left anterior descending coronary artery and the left circumflex coronary artery. The left coronary artery supplies oxygenated blood to the left side of the heart, mostly the LV. Both these coronary arteries lie at the surface of the heart and subdivide into a myriad of branches which penetrate the myocardium. The heart receives its nutritive blood supply primarily from the coronary arteries. When obstruction of the coronary arteries occurs due

to thickening of the arterial walls, atherosclerosis develops which evolves into CHD (Gordon & Gibbons, 1991; Gould, 1998; Guyton, 1991; Levien & Pantanowitz, 1997b) (see Figure 2.2).

2.4 CORONARY HEART DISEASE (CHD)

CHD refers to a clinical disease of the coronary arteries in which atherosclerosis (a degenerative, symptomless disorder characterised by hardening and narrowing of the arteries) is the primary characteristic (Columbia Broadcasting Systems Healthwatch [CBSH], 2000). Gould (1998) and the National Heart, Lung and Blood Institute [NHLBI] (1993) assert that CHD is a progressive disease resulting from the narrowing of the coronary arteries and the resultant lack of an adequate oxygen supply to the myocardium. This narrowing is caused by atherosclerosis of the coronary arteries, which restricts and disrupts the blood supply to the myocardium. This failure can be attributed to a buildup of cholesterol and other fatty substances in the coronary arteries over many years. This cholesterol (plaque) deposition causes hardening, scarring and calcification of the arteries, giving rise to the term “atherosclerosis”. Atherosclerosis leads to partial blockage (chest pain or angina) or complete blockage (heart attack or myocardial infarction) of the arteries and inadequate blood supply to various parts of the body. The most common pathophysiological process underlying these symptoms is myocardial ischaemia – an inadequate supply of oxygen to the myocardium. There are three major manifestations of clinical CHD:

Angina pectoris (AP) is a clinical syndrome caused by insufficient oxygen delivery to the myocardium, leading to myocardial ischaemia (oxygen deficiency). This syndrome is characterised by feelings of heaviness, tightness, burning, pressure or squeezing, usually behind the breastbone, lasting up to fifteen minutes (NHLBI, 1993). Angina may be experienced in different ways and can be mild, moderate or severe (Levy & Wilson, 1998; Nazim, 2002). Some patients with severe CHD do not experience angina pain, a condition known as **silent ischaemia**. This is a dangerous condition because patients have no warning signs of heart disease and have much higher complications and mortality rates than those with angina pain (CBSH, 2000).



Myocardial infarction (MI) occurs during an acute complete blockage of a coronary artery and cessation of coronary blood flow to a segment of the myocardium, which necroses (dies) and later forms a scar (Gould, 1998; NHLBI, 1993). The patient's ability to survive MI depends largely on the location of the blockage in the coronary artery, the amount of blood still reaching the affected myocardium via collateral flow and the duration of the ischaemic attack (Gordon & Gibbons, 1991).

Sudden cardiac death (SCD) is the most common and dramatic manifestation of CHD. It is a witnessed death that occurs suddenly (within one hour of the onset of symptoms in an apparently healthy person), due to the unexpected cessation of normal, rhythmic, coordinated heart contraction. SCD is diagnosed when death could not be ascribed to other causes and heart disease is felt to be the underlying etiology (Levy & Wilson, 1998).

Now that the functioning and malfunctioning of the heart has been described, the causes of CHD, or coronary risk factors, will be explored.

2.5 RISK FACTORS FOR CORONARY HEART DISEASE

According to Ridker, Genest, and Libby (2001), a cardiac risk factor can be defined as a characteristic or feature of an individual or population present early in life and associated with an increased risk of developing future heart disease. The risk factor may be a behaviour (e.g., smoking), an inherited trait (family history), a laboratory measurement (e.g., high cholesterol), and environmental or emotional factors that may play a causal role in the pathogenesis of CHD or the likelihood of CHD progression.

Coronary heart disease is multi-factorial in nature and is caused by a complicated interplay of physical and emotional factors, each of which increases the risk of atherosclerosis and the development of CHD. The effects of risk factors vary depending on the particular factor as well as the constellation of risk factors present. Risk factors interact in a multiplicative manner so that individuals with more than one risk factor are at high risk due to synergism (Gould, 1998).

According to the AHA (1995), major risk factors are those that research has shown to be definitely associated with significantly increased risk of CHD. Contributing factors are

those associated with increased risk of CHD, but their significance and prevalence have not yet been precisely determined. Risk factors can be classified into modifiable and unmodifiable factors.

2.5.1 Unmodifiable physiological risk factors

2.5.1.1 Age

As mentioned, CHD is a progressive disease which involves the buildup of atherosclerotic plaque. Hence with age, more plaque accumulates, which may increase the risk of CHD. Similarly, with increasing age, there is a greater likelihood of other medical conditions that constitute a CHD risk factor, such as hypertension, diabetes, physical inactivity and obesity (Gordon & Gibbons, 1991). The incidence of CHD in South Africa is the highest in Caucasian men aged 45 years or older and women aged 55 years or older (Raal, 2000). Age is a major influence on the absolute risk of CHD events and therefore, the impact of any one risk factor or combination of risk factors increases with advancing age (Wood et al., 2000).

2.5.1.2 Gender

According to Gordon and Gibbons (1991), CHD is more likely to develop in men. In a twelve-year follow-up, Jousilahti, Vartiainen, Tuomilehto, and Puska (1999) found that the incidence of CHD was three times higher in men than women and mortality was five times higher. Women have on average ten to fifteen more years free of heart disease than men, because their advantage appears to end with the onset of menopause (Gordon & Gibbons, 1991). Men develop higher total and lower density lipoprotein (LDL) cholesterol levels earlier in life than women. Women tend to have higher levels of high density lipoprotein (HDL) cholesterol earlier in life and higher total and LDL cholesterol levels later in life (Roberts, 1998). In women, oestrogen seems to act as a protective mechanism, but around the age of 50 years, as the body dramatically reduces the production of oestrogen, immunity fades and the risk of CHD increases (Gordon & Gibbons, 1991). Men may also have a greater physiological response to environmental stressors, exhibiting greater production of stress hormones, higher blood pressure and LDL cholesterol levels than women. They are more likely to be overweight, smoke more frequently, eat less healthily

and drink more heavily than women (Bennett & Murphy, 2001). The average age of death from CHD in men is 60 years while in women it is 68 years (Roberts, 1998).

2.5.1.3 Heredity

Raal (2000) and Gordon and Gibbons (1991) maintain that individuals are considered to be at increased risk of early CHD if they have close relatives who die of MI at a young age (a father or brother before 55, or a mother or sister before 65). Some medical conditions that are CHD risk factors can also be inherited; for example, hypertension, diabetes and cholesterol (Gordon & Gibbons, 1991). Some families are more vulnerable to CHD due to the adverse effects of habits such as smoking, physical inactivity and high fat diets. Although nothing can currently be done about an individual's genetic predisposition, the management of other modifiable risk factors may become important (Mulcahy, 1990). According to Bennett et al. (1993), familial CHD is more prevalent among Afrikaans-speaking individuals than any other Southern African group.

2.5.2 Modifiable physiological risk factors

2.5.2.1 Cholesterol

Cholesterol plays a major role in the development of CHD and appears to be the greatest risk factor of all (Gordon & Gibbons, 1991; Kottke, Allison, & Squires, 1992; Levien & Pantanowitz, 1997a; Raal, 2000). According to Ridker et al. (2001), cholesterol can be defined as a polycyclic molecule constituting a waxy and fat-like substance (lipid), which is insoluble in the watery medium of blood. It is an essential component of cell membranes and bile acids, it serves as the substrate for the synthesis of corticosteroid hormones (cortisol, androgen, oestrogen) and vitamin D, and aids in the digestion of food. It is manufactured by the liver, synthesised by cell membranes and transported in the bloodstream by two protein/lipid molecules. Cholesterol combines with lipoproteins at different stages of its metabolism within the body to form HDL- and LDL cholesterol. LDL cholesterol is known as "bad cholesterol", because it releases cholesterol into the blood (arterial wall) where it contributes to the formation of plaque within the arteries, setting the stage for atherosclerosis. HDL cholesterol is called "good cholesterol", as it is involved in transportation from the arteries and other tissues. It helps to remove excess

cholesterol from the blood and arterial walls, transporting it back to the liver to be excreted (Bennett & Murphy, 2001; Gould, 1998; Raal, 2000).

Hypercholesterolemia (high blood cholesterol) affects approximately 4.8 million South Africans, placing them at high risk of developing CHD (SAHF, 1995). High cholesterol levels have several causes, including heredity, obesity, physical inactivity, stress, various disease states and lifestyle choices. Excessive dietary intake of cholesterol and saturated lipids can increase blood cholesterol. Diseases of the kidney, liver, endocrine and immune systems are associated with lipid abnormalities and certain medication may cause abnormal lipid levels (Raal, 2000).

2.5.2.1.1 Cholesterol as a risk factor: research review

Substantial evidence from epidemiological research reports a causal relationship between elevated serum cholesterol and CHD. Caggiula and Mustad (1997) found a consistently strong relationship between elevated cholesterol levels and increasing risk of CHD. Both within and between populations there is a highly significant association between total plasma cholesterol and CHD (Swales & De Bono, 1993). Moderately raised blood cholesterol levels can alone double the risk of CHD. High levels lead to four times the risk (SAHF, 1995). Compelling evidence confirms that in individuals with no other risk factors of CHD, consistently high LDL cholesterol levels are enough to cause CHD (Gordon & Gibbons, 1991; Rifkind, 1995).

Major epidemiologic studies confirm hypercholesterolemia as a major CHD risk factor. According to Daly-Nee, Brunt, and Jairath (1999), The Framingham Study by Anderson, Castelli, and Levy (1987) examined the association between elevated cholesterol levels and CHD mortality and morbidity based on a history of angina, stroke, transient ischaemic attacks and congestive heart failure. Data analysis of a thirty year period indicated that cholesterol levels were directly related to the overall morbidity and mortality rates for individuals under 50 years of age. For each 10 mmol/l increase in serum cholesterol, the overall death rate increased by 5% and the cardiovascular-related death rate by 9%. In the Seven Countries Study by Pekkanen et al. (1994), baseline data on diet and other potential risk factors were collected from men aged 40 to 59 years ($N = 12\,763$) in Yugoslavia, Finland, Italy, the Netherlands, Greece, the United States and Japan. Data analysis

indicated that saturated dietary fat consumption was associated with total serum cholesterol levels within and between populations. Risk varied widely according to other risk factors, such as elevated cholesterol, hypertension and smoking. On average, the latter doubles individuals' risk of developing CHD. Individuals with all three risk factors are eight times more likely to develop CHD (NHLBI, 1993). The Japanese Migrant's Study (Daly-Nee et al., 1999) followed Japanese men who had migrated to the United States and adopted the Western high fat diet. Data analysis indicated that the incidence of CHD increased in Japanese migrants to the United States relative to Japanese men who did not migrate. Furthermore, the greater the acculturation to the American diet, the greater the cholesterol elevation and subsequent CHD risk.

Reducing LDL and total cholesterol levels and boosting HDL cholesterol levels have been shown to improve survival and prevent CHD (CBSH, 2000). The reduction of elevated blood cholesterol levels slows, stops or potentially reverses fatty buildup on the artery walls and therefore reduces the risk of MI. Reducing a total cholesterol level from 6.5 mmol/l to 5.2 mmol/l (a decrease of 20%) can lessen the risk of MI by 40%. A 1% reduction in blood cholesterol can produce a 2% reduction in death due to MI (SAHF, 1995).

The Monitored Atherosclerosis Regression Study (Blankenhorn et al., 1993) established the benefits of cholesterol reduction for secondary prevention. Lowering serum cholesterol levels seems to stabilise plaques, decrease vasospasm and permit endothelial healing. On average, treated patients were half as likely to experience overall progression of their coronary lesions. Furthermore, the experimental subjects were three times more likely than the control group to experience a regression of selected lesions (Jones & Gotto, 1994). Further clinical trials supported these findings, with a 25% decrease in recurrent coronary events and a 10% reduction in overall mortality (Daly-Nee et al., 1999; Grundy, 1997).

The current researcher noted consensus among investigators regarding the major impact of high blood cholesterol in the development of atherosclerosis. However, blood cholesterol levels are significantly mediated by dietary intake of fat, regular physical exercise levels, and smoking, all of which are important components of the effective management of individuals with hypercholesterolemia.

2.5.2.2 Hypertension

Hypertension is the second major cardiovascular risk factor that directly contributes to CHD and premature mortality. It refers to abnormally high arterial blood pressure (Rudd & Hagar, 1998). Blood pressure is the force exerted by the heart and arteries to keep blood flowing through the body. When this force becomes excessive and persistently high, it causes hypertension. This excess force increases myocardial workload and eventually cardiac dilation and failure. If this pressure is not controlled, the heart enlarges and arteries become scarred, hardened and less elastic. The overworked heart may not be able to pump blood, which could lead to congestive heart failure (backup of fluid into the lungs) (Hyman & Pavlik, 2003; Wilkinson et al., 2003).

Blood pressure can be classified as:

- **Normal blood pressure:** systolic BP < 120 mmHg and diastolic BP < 80 mmHg
- **Pre-hypertension:** systolic BP 120 to 139 mmHg or diastolic BP 80 to 89 mmHg
- **Stage 1 hypertension:** systolic BP 140 to 159 mmHg or diastolic BP 90 to 99 mmHg
- **Stage 2 hypertension:** systolic BP > 160 mmHg or diastolic BP > 100 mmHg

(Chobanian et al., 2003, p. 2561).

The classification of blood pressure applies to adults aged 18 years or older. It is based on means of two or more properly measured BP readings in seated position during separate consultations (Chobanian et al., 2003). The systolic and diastolic pressures are of equal importance; if there is a disparity in category, the higher value determines the severity of the hypertension. The difference between the systolic and diastolic, referred to as the pulse pressure, is an even better predictor of coronary events (Verdecchia, Schillaci, Reboldi, Franklin, & Porcellati, 2001).

Hypertension commonly produces structural changes in arteries and target organs in a variety of patterns. The most common organ systems involved in these destructive processes include the heart itself (diastolic dysfunction, left ventricular hypertrophy, endocardial scarring, congestive heart failure and coronary insufficiency), the large and medium arteries (accelerated atherosclerosis, aneurysm formation with or without dissection) and the brain and intracranial circulation (ischaemia, infarction, whether

haemorrhagic or thrombotic). The risk of CHD increases in the presence of other risk factors, such as dyslipidemias, smoking, diabetes mellitus, obesity as well as other factors like a sedentary lifestyle, high salt intake and situational stress (Rudd & Hagar, 1998).

Opie (2000) estimates that there are about eight million adults with hypertension in South Africa. Hypertension is often called the “silent killer” because it is frequently asymptomatic, especially if mild or moderate (Kaplan, 1998). Among hypertensives, death usually results from ischaemic heart disease or stroke. The risk of cardiovascular disease tends to increase progressively at all ages with SBP. In individuals with elevated SBP, the precise level of DBP adds little to the risk assessment and each standard deviation increase in SBP (10 to 13 mmHg) in men increases cardiovascular disease risk by 40% to 50%, while for DBP, the increment is 30% to 35% (Kannel, 1996).

2.5.2.2.1 Hypertension as a risk factor: research review

Researchers are in agreement that hypertension is a major CHD risk factor. The presence of demonstrable atherosclerosis substantially increases mortality among patients with hypertension. Over a four-year follow-up period, mortality among patients with atherosclerosis was five times higher (23% vs. 5%) than among patients without atherosclerosis (Rudd & Hagar, 1998).

Data from nine observational studies indicate a direct, continuous relationship between blood pressure values and CHD risk. In these analyses, the combined sample of 420 000 participants was divided into five groups, based on DBP (<79, 80-89, 90-99, 100-109, >110 mmHg). Patients with a DBP in the highest range (>110 mmHg) had a ten to twelve times greater risk of CHD than patients in the lowest range (<79 mmHg) (MacMahon, Peto, & Cutler, 1990). Furthermore, the Framingham Heart Study indicates an incidence of CHD up to two times higher in hypertensive individuals than in a non-hypertensive cohort (Daly-Nee et al., 1999). In this study, hypertensive patients were seven times more likely than normotensive individuals to develop a stroke, six times more likely to develop congestive cardiac failure, four times more likely to develop CHD and twice as likely to develop peripheral arterial disease. The risk of developing major cardiovascular disease increases by approximately 30% for each 10 mmHg in SBP in both men and women of all ages (Swales & De Bono, 1993).

Successful reduction in BP and other cardiovascular risk factors can dramatically reduce the incidence of coronary morbidity and mortality, especially for patients with the highest elevations of blood pressure, patients with multiple risk factors and the elderly (Rudd & Hagar, 1998). Treating moderate and severe hypertension with an average reduction of 6 mmHg in diastolic blood pressure reduces the impact on CHD by 14% (Swales & De Bono, 1993). Epidemiologic studies indicate that hypertension can be successfully treated so that cardiovascular damage is reduced. In a systolic hypertension programme with elderly patients, treated hypertension patients showed a 36% reduction in stroke, 25% reduction in CHD and an overall 27% reduction in cardiovascular mortality (Daly-Nee et al., 1999).

Hypertension is often strongly associated with other cardiovascular risk factors, including diabetes mellitus, dyslipidemia, hyperinsulinemia and obesity. In the National Health and Nutrition Examination Survey II, the prevalence of hypertension (BP > 160/95) was 2.9 times higher among overweight patients compared to normal weight patients. Obesity increases the probability of developing hypertension between two- and six times, and may account for 65% to 78% of the attributable risk (Kannel, 1995). Upper body or android (apple-like) fat patterns are at higher risk for CHD, than lower body or gynoid (pear-like) patterns, perhaps more so in women than in men (Haffner et al., 1992).

According to Milne (2002), lifestyle modification of individual factors (e.g., ideal body weight, salt restriction, reduced alcohol intake, prudent eating plan and regular, moderate aerobic exercise lowers blood pressure). If most or all of the above mentioned modifications are implemented, the effect is cumulative and blood pressure drops by approximately 10/8 mmHg. Smoking cessation will rapidly decrease (over months) MI and stroke risk. A weight reduction of 3 kg will achieve a drop in blood pressure of about 7/4 mmHg.

In conclusion, patients with hypertension have a higher risk of developing CHD. It is vital that hypertension be correctly identified and adequately controlled. Many patients with raised BP remain undetected and under-treated. The risk of morbidity and mortality with CHD is related to heightened BP and becomes increasingly greater in the presence of clustering risk factors. Lifestyle modifications, including dietary changes, smoking cessation, exercise and stress management, seem to be the cornerstone of hypertension

treatment. The potential contribution of stress should be considered, and stress management techniques should be tailored to the patients' needs.

2.5.2.3 Smoking

Smoking, the third major independent risk factor of CHD, contributes to the pathogenesis of CHD through a variety of mechanisms. Nicotine and carbon monoxide cause an increase in heart rate, peripheral vasoconstriction and BP, and increase the viscosity of blood platelets. These changes increase the cardiac workload and necessitate greater myocardial oxygen consumption, which implies decreased oxygen available to the myocardium (Bennett et al., 1993). A packet of cigarettes a day reduces the heart's oxygen supply by one tenth. Nicotine causes vasoconstriction of blood vessels, slowing the flow through them and increasing the possibility of clot formation. Carbon monoxide displaces oxygen from the bloodstream and damages the inner lining of arteries, which contributes to atherosclerosis. Apart from this, smoking also raises oxidized LDL cholesterol levels, lowers HDL cholesterol and triggers coronary artery spasm and cardiac arrhythmias (Rudd & Hagar, 1998).

Adverse effects of smoking are widely acknowledged as it is associated with 25% of all CHD-related deaths (Bennett & Murphy, 2001). South African records reveal that local smoking rates are higher than in most countries and smoking causes 25% to 30% of all deaths due to CHD. Smoking, a highly prevalent South African habit, has been estimated to cause between 17% and 30% of all deaths due to cardiovascular disease (SAHF, 1995).

Almost half a billion individuals worldwide will eventually die of smoking-related complications (Ridker et al., 2001). The risk of dying of CHD is nine times higher in smokers than non-smokers and is proportional to the number of cigarettes smoked (Bennett et al., 1993). Each cigarette reduces a smoker's life by about 5.5 minutes, so that for each year of smoking, it reduces a smoker's life by one month (SAHF, 1995). The average loss of life for all smokers is approximately 8 years and sixteen years for smokers whose deaths are attributed to tobacco (Peto, Lopez, Boreham, Thun, & Heath, 1992). Chronic exposure to environmental tobacco smoke also increases the risk of CHD (Bennett et al., 1993). Regular exposure to passive smoke is estimated to increase the risk of CHD in non-smokers by 25% to 91%, causing 30 000 to 60 000 deaths annually in the US. Pipe and

cigar smokers may be at higher risk of premature death from CHD, although evidence is much stronger for cigarette smoking (CBSH, 2000). Age, gender, education, social environment and social attitudes play a key role in smoking patterns and its impact on CHD (AHA, 1994).

2.5.2.3.1 Smoking as a risk factor: research review

Studies spanning four decades have clearly documented the effects of smoking on coronary risk (Ridker et al., 2001). In ten major international cohort studies, each found a higher incidence of MI and CHD among smokers, averaging 70% higher in smokers versus non-smokers. In five major studies it was found that middle-aged men (40 to 59 years) who smoked twenty or more cigarettes per day have two to three times the risk of developing a major coronary event compared to non-smokers. An analysis of the 30-year Framingham data found that the relative risk of CHD is almost three times as great in male smokers aged 35 to 44 than in non-smokers, though the relative CHD risk for smokers declines for each successive age group (Goldstein & Niaura, 1998). The Framingham findings support the direct relationship between smoking and increased risk of MI and CHD mortality in both sexes. The CHD rate is ten times higher in male smokers and five times higher in female smokers. Major CHD risk factors, such as high cholesterol and obesity, can have a cumulative effect when combined with smoking. A male smoker with higher total cholesterol and DBP has a fourteen times greater risk of dying of CHD than a male smoker with lower levels of cholesterol and DBP (Daly-Nee et al., 1999).

The risk of CHD among smokers is dose-related and the consumption of one to four cigarettes daily significantly increases the CHD risk (Wannamethee, Shaper, & Whincup, 1995). Heavy smokers (40 cigarettes/day) have a four times greater chance of CHD than light smokers (5 to 10/day) (Webster, 1996). Smoking a packet of cigarettes a day increases an individual's risk of developing CHD by 2.5 times (Sutker & Adams, 1993).

Passive smoking through the inhalation of smoke arising from a burning cigarette accelerates the development of CHD. The amount of nicotine absorbed by non-smokers over a period of four hours produces nicotine concentrations similar to those in light smokers (1 to 10 cigarettes/day) (Webster, 1996). In fact, it is believed that environmental tobacco smoke is responsible for approximately 40 000 additional deaths from heart

disease annually in the USA (Penn & Snyder, 1993). Smokers who suffer MI are at a higher risk of dying from it. Survivors of MI or CABS who continue to smoke increase their risk of dying soon after (Swales & De Bono, 1993). Survivors of MI who quit smoking have a 19% chance of recurrence of MI, but if they continue smoking, the rate increases to 27% (Daly-Nee et al., 1999). Most published studies of smoking cessation after MI reflect a long-term benefit in terms of subsequent mortality, namely, 25% mortality rate among initial smokers who stop, compared to 50% for those who continue (Mulcahy, 1990).

Smoking cessation after the development of CHD reduces the risk of mortality. Patients in the Framingham study who stopped smoking by the age of 65 reduced their risk for initial or recurrent serious coronary events by 50% compared to those who continued smoking. Though the risk of CHD after smoking cessation drops by about 50% one year after cessation, it approaches that of a patient who has never smoked within three to four years. Smoking cessation also decreases the risk of recurrent cardiac arrest by about 30%. It may also decrease the rate of restenosis after coronary angioplasty and recurrence of disease in saphenous vein bypass grafts after CABS (Goldstein & Niaura, 1998).

In the current researcher's opinion, smoking is probably the most pernicious risk factor of all and has a staggering impact on the manifestations of CHD. Smoking remains the most important preventable contributor to CHD. Breaking the smoking habit can reduce the risk of CHD or SCD almost immediately.

2.5.2.4 Physical inactivity

Physical inactivity is the fourth major risk factor in CHD and may independently contribute to the development of CHD (Goldberg & Elliot, 1994). Physical inactivity implies a lack of adequate physical activity, including intensity, duration and frequency of exercise (American College of Sports Medicine, 1995). The intensity of physical activity is best defined in terms of target heart rate during peak exercise. The preferred target heart rate is 60% to 90% of the average maximum heart rate for the person's age. This target heart rate is achieved by aerobic exercises that involve the use of large muscle groups, such as brisk walking, jogging, cycling, swimming and rowing activities. The duration of

physical activity should preferably be 30 to 40 minutes. This regimen should be carried out as frequently as four to five times per week (Wood et al., 2000).

Regular exercise is negatively associated with other CHD risk factors. In addition to preventing hypertension, regular exercise has also been found to lower BP. In mildly hypertensive men, short-term physical activity decreases BP for eight to twelve hours after exercise, and average BP is lower on exercise than non-exercise days (Sherman & Balady, 1998). Physical activity has beneficial effects on both glucose metabolism and insulin sensitivity. These benefits include increased sensitivity to insulin, decreased production of glucose by the liver, and larger numbers of muscle cells that utilise more glucose than adipose tissue and reduce obesity (Wasserman & Zinman, 1995).

Physically active individuals have a lower incidence of mortality and morbidity from CHD whereas physically inactive individuals are associated with increased CHD (Halbert, Silagy, Finucane, Withers, & Hamdorf, 1999; Lyne & Jairath, 1999). Individuals who are more physically active live longer than those who are sedentary (Bennett & Murphy, 2001). Individuals who maintain an active lifestyle have a 45% lower risk of developing CHD than sedentary individuals (CBSH, 2000). Physical activity reduces the risk of atherosclerosis and slows down the progression of narrowing in the coronary arteries due to atherosclerosis (Gould, 1998).

2.5.2.4.1 Physical inactivity as a risk factor: research review

On many occasions physical activity has been found to be inversely related to CHD. A sixteen-year Harvard follow-up study reported a 39% reduction in cardiovascular morbidity and a 24% reduction in cardiovascular mortality in patients with exercise energy expenditures of more than 2000 kilocalories per week (Sherman & Balady, 1998). The relative risk of dying from CHD in physically inactive compared to active individuals is approximately two times higher (Pate, Pratt, & Blair, 1995). The degree of cardiovascular fitness as determined by duration of exercise, is also associated with reduced CHD risk and cardiovascular mortality (Myers et al., 2002).

Body composition and fat distribution are obviously linked to CHD mortality and are favourably affected by exercise. On average, exercise programmes reduce body fat by

approximately 1.6%. A meta-analysis of ninety-five studies concluded that exercise leads to a 6.3% reduction in total cholesterol, a 10.1% reduction in LDL cholesterol, a 13.4% increase in cholesterol/HDL cholesterol ratio and a 5% increase in HDL cholesterol (Sherman & Balady, 1998).

Blair et al. (1996) found that physical inactivity, smoking, elevated SBP and high cholesterol levels are significantly associated with CHD mortality in men. CHD death rates were between 17% and 39% lower in moderately fit men compared to unfit men who smoked, had hypertension and elevated cholesterol levels. In men, low fitness levels are strongly associated with CHD mortality (estimated relative risk 1.70) and elevated cholesterol level (estimated relative risk 1.65). Researchers report that exercise, alone, without any specific attempt at psychological intervention, produced significant reductions in anxiety and depression (Kugler, Seelbach, & Kruskemper, 1994).

In the current researcher's view, the overall impact of regular exercise is cardioprotective and may have a variety of beneficial effects. Regular physical exercise reduces cardiac risk by promoting weight loss and reduces total and LDL cholesterol levels and hypertension. Active individuals tend to smoke less. Physical activity may help patients to feel that they are fighting back, and improves their self-image and their belief in the controllability of CHD. What is clear, however, is that physical exercise has important positive effects on individuals, both physiologically and psychologically (exercise can operate as an antidepressant), which in turn, increase CHD resistance and cardiovascular endurance. There is an urgent need to get South Africans involved in primary care physical activity and rehabilitation programmes.

2.5.2.5 Obesity

Obesity is a common condition associated with increased risk of CHD and endangers the heart in several ways. Kannel and Cupples (1989) define obesity as an excessive storage of energy in the form of fat and weight which is 30% or more than that considered standard for an individual's height and body build. Obesity tends to cluster with other risk factors, including increased levels of total and LDL cholesterol, which is strongly implicated in atherosclerosis (Rossi, Jonnalagadda, & Kris-Etherton, 1999). Obesity is associated with hypertension, which is three times more likely to develop in obese individuals than

individuals of normal weight. As obesity increases, the heart size grows, causing increased myocardial oxygen consumption. In addition, an increase in Type II diabetes in obese individuals is common. This is also related to physical inactivity (Ornish, 1996).

The risk of CHD in obese individuals is twice that of individuals of normal weight (Bennett et al., 1993). South Africa has one of the highest rates of obesity in the world, with over 40% of the South African population classified as obese (SAHF, 1995). Excess body weight results in greater constant physical exertion and puts a significant burden on the cardiovascular system, which means strain on the heart. Each kilogram of additional weight carried implies an additional 3km of blood vessels through which the heart must pump blood (Bennett et al., 1993). The increased risk of CHD is proportional to the degree of obesity (Lewis, Collier, & Heitkemper, 1996). Fat distributed on the front of the abdomen is the most dangerous because it correlates with increased CHD incidence and mortality. The lower the waist-to-hip ratio, the more protection from CHD (Gordon & Gibbons, 1991). Excess body weight defined in comparison to average values for age and height is directly related to increased risk of death and disability from CHD (Gould, 1998).

2.5.2.5.1 Obesity as a risk factor: research review

Several studies found obesity to be associated with CHD. A thirty-year follow-up of the Framingham study revealed a positive link between MI, CHD, angina and increased weight in males (Webster, 1996). Modest weight gain in mid- to late adulthood also increases the risk of CHD among both genders, as does the distribution of body fat (Gaziano, 2001). Kannel et al. (1991) found that excess body weight distributed in the abdominal area versus the hips and thighs is associated with increased CHD risk because of adverse effects on plasma lipids and lipoproteins, BP and insulin resistance.

By changing their lifestyle and losing weight permanently, individuals lower the risk of further CHD (Bennett et al., 1993). Langford et al. (1991) found that weight reduction significantly decreased BP in hypertensive people who are 10% above their ideal body weight. Significant decreases in BP can occur with only a moderate reduction in weight. According to Servello (1999), MacMahon, MacDonald, and Bernstein (1985) found that a 1kg loss in weight decreased SBP by 1.6 mmHg and DBP by 1.3 mmHg. Weight reduction in obese, hypertensive individuals also enhances the BP lowering effect of anti-

hypertensive agents and can significantly reduce the risk factors for CHD (Corrigan, Raczynski, Swencionis, & Jennings, 1991).

The current researcher believes that obesity promotes or aggravates the development of CHD. Individuals who have excess body fat are more likely to develop CHD even in the absence of any other risk factors. Obesity is unhealthy because excess weight puts increased strain on the heart and can greatly complicate the management of other risk factors, namely diabetes, hypertension and cholesterol abnormalities. Excess weight and obesity should be identified and treated in CHD patients. Therefore, maintaining an ideal body weight through diet, exercise and psychological well-being remain important goals for obese patients in the prevention of CHD.

2.5.2.6 Diabetes mellitus (DM)

Diabetes mellitus, a powerful, independent risk factor of CHD is a chronic disorder affecting the body's sugar metabolism, and occurs when the pancreas produces little or no insulin, a hormone that controls the blood glucose level (Aronson & Rayfield, 1998). These insulin alterations result in the disordered metabolism of carbohydrates, lipids and proteins. In time, structural abnormalities develop in the heart, kidneys and eyes (Gordon & Gibbons, 1991). **Type I diabetes** is characterised by an absolute insulin deficiency, meaning that glucose is unable to enter the muscle and adipose tissue. **Type II diabetes** involves impaired insulin secretion, insulin resistance and abnormally elevated glucose production by the liver (Fain, 1999).

Diabetic patients have other cardiac problems, including a specific form of cardiomyopathy which leads to silent ischaemia, increased risk of ventricular arrhythmias and a greater atherosclerotic burden, both in the major arteries and in the microvascular circulation (Nesto & Libby, 2001). DM has been identified as a risk factor for the progression and occlusion of atherosclerotic lesions. Higher rates of restenosis following angioplasty limit the efficacy of this procedure in diabetic patients (Aronson & Rayfield, 1998). Risk factors cluster in diabetics and patients with impaired glucose tolerance. Type II diabetics (non-insulin dependent) are most likely to suffer from abdominal obesity, hypertension and adverse serum lipid profiles (increased LDL cholesterol with decreased HDL cholesterol). Conversely, hypertensive patients are more likely to have impaired

glucose tolerance. Type II diabetes carries a greater CHD risk than Type I (insulin-dependent) diabetes (Vinicor, 1996).

CHD is two to four times more common in diabetic patients and manifests not only more frequently, but also at an earlier stage (Aronson & Rayfield, 1998). There is no age difference between diabetic men and women for the onset of manifestations of CHD. It accounts for approximately 25% of deaths among individuals with onset before the age of 20 (Fain, 1999). Diabetics have a three to five times higher rate of future cardiovascular events, with even higher rates reported among women (Ridker et al., 2001). Atherosclerosis is the major cause of premature death in patients with either insulin-dependent or non-insulin-dependent diabetes and accounts for virtually 80% of all deaths. The risk of CHD increases rapidly after the age of 40 years, and by the age of 55, 35% of men and women with DM die of CHD (Aronson & Rayfield, 1998). Adult-onset diabetes (Type II) occurs after the age of 40 and increases the CHD risk, often remaining undiagnosed for years. Diabetes and cholesterol abnormalities are closely intertwined. Untreated mild diabetes is a CHD risk factor because of its negative influence on blood lipid levels (Gould, 1998).

2.5.2.6.1 Diabetes mellitus as a risk factor: research review

Several studies strongly suggest that diabetes is a major contributing risk factor for CHD. Insulin resistance, hyperinsulinemia and glucose intolerance appears to promote atherosclerosis (Gerstein, Pais, Pogue, & Yusuf, 1999). The Framingham study confirms the well-known fact that every second diabetic suffers from CHD. This finding emphasises the danger of CHD to an undiagnosed or untreated diabetic. Arterial vascular disease occurs twice as frequently among diabetics than among healthy individuals. The Framingham study also revealed average BP values to be higher among diabetic men and even higher among diabetic women than among non-diabetic populations (Levy & Wilson, 1998).

CHD mortality and morbidity contributes to 75% to 85% of all deaths in diabetics (Vinicor, 1996). It has consistently been found that mortality rates among diabetics experiencing MI are higher than non-diabetics. Diabetic women have a particularly poor prognosis, with an almost twofold increase in mortality compared to diabetic men (Granger

et. al., 1993). Diabetics who survive MI suffer from higher late-mortality rates than their non-diabetic counterparts. Late mortality is mainly related to recurrent MI and the onset of cardiac failure (Karlson, Herlitz, & Hjalmarson, 1993).

Hellman, Regan, and Rosen (1997) found that intensively treated diabetic patients show a 41% reduction in cardiovascular events and that Type II DM is associated with lower cardiac-related mortality. The control of other risk factors, such as physical inactivity, diet, obesity and hypertension, remains a primary target of risk reduction in Type II diabetes (Liu et al., 2000). With reduced carbohydrate intake and weight loss, adult-onset DM as well as vascular diseases become less severe. Reduction in carbohydrate consumption and weight often allow a reduction in dose or the elimination of insulin. Improved metabolic status on reversal treatment markedly improves survival and reduces atherosclerotic complications. Therefore, diabetics with CHD are particularly good candidates for reversal treatment (Gould, 1998).

The current researcher is of the opinion that individuals with diabetes are inclined to develop CHD more easily and it is therefore essential that their blood sugar be effectively controlled. The maintenance of normal body weight and a prudent diet low in sugar and fat content, together with regular exercise and stress management, may assist in preventing the damaging effects of their condition.

In conclusion, it can be said that a Western lifestyle plays a significant causal role in and contributes to the mass occurrence of the six major physiological risk factors in CHD, mentioned above. Clusters of risk factors have a multiplicative effect and individuals with a number of risk factors may be at considerably greater risk. The role of these major risk factors varies from individual to individual. The current researcher is convinced that although these physiological risk factors are highly significant variables in the relationship between lifestyle and CHD, they do not fully explain the nature of the disease. The integrative mind-body perspective is slowly superseding the view of the separateness of the emotional and physical self and helping professionals to view the individual as interconnected and whole. It is essential to acknowledge that these risk factors are extensions of hidden psychosocial factors that place individuals at risk of CHD. They influence the cardiovascular system indirectly through their role in lifestyle behaviours such as smoking, eating habits and physical inactivity. The following section explores the

importance of the second major category of risk factors, namely, the powerful psychosocial factors which increase CHD risk.

2.5.3 Modifiable psychosocial risk factors

Although empirical evidence confirms an intimate relationship between the psyche and the heart, the concept of stress and the psychosocial stressors which many believe contribute to the development and progression of CHD remain a controversial subject. The relationship between psychosocial factors and the onset and course of CHD seems to be bi-directional. Emotions and stressful experiences affect the heart directly through the autonomic nervous system and indirectly through neuro-endocrine pathways (Barsky, 2001). A heart that has suffered emotional hurt will often, in turn, become physically sick as well (Dahlke, 1996). To explore the multi-determined nature of psychosocial stressors in CHD, the most prominent risk factors are briefly outlined below.

2.5.3.1 Psychological stress

Stress is an elusive but important precipitating factor in the development of CHD (AHA, 2002). Since psychological stress is a complex phenomenon, it eludes an adequate definition. Strelau (1995) defines stress as a condition characterised by strong negative emotions, such as fear, anxiety, anger and hostility, resulting in distress, which together with physiological arousal endanger individuals' wellbeing. Acute stress has been associated with a higher risk of serious cardiac events, such as arrhythmias, MI and death in patients with CHD (CBSH, 2000). Approximately 50% of cardiac patients show evidence of myocardial ischaemia with mental stress (Allan & Scheidt, 1998; Barsky, 2001; Kozicz & Casey, 1999).

2.5.3.1.1 Stress response and CHD

Several physiological responses may contribute to the development of CHD. The stress response is related to CHD by a mechanism involving the two divisions of the autonomic nervous system, namely, the sympathetic and the parasympathetic. When the sympathetic system, which is involved in hormonal arousal reactions, is constantly activated, neuro-endocrine hormones (epinephrine and nor-epinephrine) are released (Kozicz & Casey,

1999). Simultaneously, adreno-corticotrophic hormones (corticosteroids) are released by the pituitary gland. These hormones increase availability of energy stores of lipids and carbohydrates in the bloodstream, all of which help to maintain activation and arousal. If these energy stores are not completely utilised during the period of stress, they are metabolised by the liver into cholesterol and deposited as atheroma within the arteries (Bennett & Murphy, 2001). Catecholamines released during the stress process affect arterial BP, cardiac output, myocardial oxygen demand and blood viscosity. Excessive cortisol and other steroids cause blockages to build up more rapidly in the arteries by increasing platelet aggregation. The result is the development of atherosclerosis (Barsky, 2001; Ornish, 1996).

2.5.3.1.2 Stress as a risk factor: research review

Clinical researchers acknowledge the importance of stress (physical or mental) as a major factor in the onset of cardiac symptoms that contributes to the development of CHD. Cardiovascular mortality rises in the month immediately after the death of a loved one and the incidence of cardiac events also rises immediately after natural disasters and military attacks (Barsky, 2001). CHD patients who exhibit mental stress during daily life or in a laboratory setting appear to be at increased risk of subsequent fatal and non-fatal cardiac events (Jiang, Babyak, & Krantz, 1996).

Epidemiological research suggests that the onset of symptoms of acute MI is triggered by external factors (strenuous physical work, violent quarrels, excessive mental stress) in 10% of cases (Behar, Halabi, & Reicher-Reiss, 1993). Work settings have become one of the most commonly studied environmental precipitants of stress-related cardiac disease; indeed, it is argued that work settings are more important to consider than individual factors (Marmot, 1994). Johnson, Stewart, Hall, Fredlund, and Theorell (1996) found that job strain was associated with increased rates of CHD prevalence, and that workers with low levels of social support had higher prevalence rates, regardless of level of job strain.

Fourteen-year follow-up data revealed that Swedish men with low control jobs had significantly elevated risks of CHD mortality compared to men with high control jobs (Johnson et al., 1996). CHD risk factors may also be affected by work stress. A study of 715 male shipyard workers found that the threat of job loss was associated with increased

serum cholesterol, especially among those reporting sleep disturbance (Emery & Becker, 1998).

The current researcher concludes that individuals under chronic stress are more prone to CHD. Regular exercise and relaxation techniques can act as a buffer against stress and may thus help to protect the cardiovascular system and reverse CHD. Although stress is detrimental to the body and mind because it may precipitate hypertension and other cardiac instabilities, it does not cause CHD per sé. The cause of stress lies in the way individuals perceive stress and how they react when they feel that they are losing control over themselves and the environment. The answer in dealing with stress lies in individuals' responses to these perceived stressors, responses which may include fear, hostility, anger, anxiety and depression. Stress management programmes have many advantages. Managing stress means controlling one's underlying emotions, understanding the effects of stress on individuals and learning to apply methods of coping.

2.5.3.2 Type A behaviour pattern (TABP)

The Type A behaviour pattern (TABP), often simply called the Type A personality (TAP), entails behaviours which have been associated with CHD (Wilson, 1996). According to Plug, Louw, Gouws, and Meyer (1997), TABP is characterised by an eagerness to compete, constant involvement in self-imposed time limits, an intense desire for recognition, psychological and physical alertness and celerity, and strong motives in the direction of self-chosen, but poorly defined goals. This behaviour pattern is characterised by: (a) behavioural dispositions such as ambitiousness, aggressiveness, competitiveness, time urgency, impatience, a craving for recognition and a need to win, (b) specific behaviours such as muscle tenseness, alertness, rapid vocal stylistics and accelerated pace of activities, and (c) emotional responses such as irritation, hostility and increased potential for anger (Donker, Breteler, & Van der Staak, 2000; Kozicz & Casey, 1999).

2.5.3.2.1 TABP and CHD

A lack of unconditional love during childhood and parental overemphasis on accomplishment are assumed to cause TABP's free-floating hostility, dependency conflicts and a sense of omnipotence (Strean, 1996). Individuals are believed to become overly concerned with personal accomplishment as a symbolic, yet unattainable quest for self-worth. Hence, achievement leaves such individuals unfulfilled (Allan & Scheidt, 1998). To cope with their disappointment during childhood, TABP individuals may use their rage and pain to control others. TABP individuals begin to feel helpless in the face of their omnipotent desires and thwarted hostility causing guilt. However, they defend their dependency wishes and present as autonomous and self-reliant (Strean, 1996). It is possible that eventually, pervasive and chronic time urgency, hyper-aggressiveness and free-floating hostility cause a deterioration of personality (Allan & Scheidt, 1998).

According to Bennett and Murphy (2001), TABP is assumed to exert its influence through heightened emotional levels (during episodes of anger), frequent or excessive increases in BP within the coronary arteries and continuous release of hormones controlled by the pituitary gland. Constant exposure to these hormones may result in increased blood cholesterol levels and increased blood viscosity resulting in deposits on the coronary artery walls. Blood clotting elements decrease blood flow through the small capillaries which feed the coronary arteries, resulting in further complications with cholesterol deposits. The increased insulin in the blood may further destroy the coronary arteries. Therefore, the reaction of the pituitary gland to TABP is believed to be responsible for its connection with CHD (Wilson, 1996).

2.5.3.2.2 TABP as a risk factor: research review

Studies show that TABP is a risk factor of CHD equal to physiological risk factors. The relationship between hostility and anger in the development of CHD is substantial (Bennett & Murphy, 2001). According to Allan and Scheidt (1998), Rosenman et al. (1975) discovered strong links between TABP and the clinical emergence of MI and CHD, and found that TABP is as strongly associated with CHD prevalence and incidence as other risk factors. TABP can increase cholesterol levels, BP and the likelihood of developing diabetes (Cortis, 1995).

Longitudinal studies of healthy adults support the association of TABP with CHD, MI and SCD. The Western Collaborative Group Study indicated that men classified as type A had significantly elevated rates of 1.7 to 4.5 times the rate of CHD, were twice as likely as type B men to have a fatal MI, were five times more likely to have a second MI and were more likely to have more severe CHD (Barsky, 2001; Emery & Becker, 1998; Wilson, 1996). Subsequently, positive TABP-CHD relationships were found for both men and women in the Framingham Heart Study. In this study, type A women manifested twice the incidence of CHD and three times the incidence of angina than type B women. Among type A men, there was a twofold risk of angina, MI and CHD compared to type B men. In the Framingham study, this behaviour pattern explained cardiovascular morbidity when somatic or social risk factors were present at the same time (Allan & Scheidt, 1998). Several studies of psychological interventions to treat TABP reported significant success in reducing TABP and recurrent coronary events (Ockene et al., 1995).

Thus, according to the current researcher, there is little doubt that individuals with TABP have a higher incidence of CHD. Excessive hostility, time urgency, competitive achievements, ambition and an antagonistic interpersonal style appear to be the components of the global type A pattern most strongly related to CHD. Alienation seems to be the root of the unholy trinity of coronary-prone type A characteristics – hostility, cynicism and self-absorption. The relationship between hostility and anger has been proposed as the true pathogenic element related to CHD.

2.5.3.3 Anxiety

Anxiety has lately been acknowledged as a risk factor for CHD (Allan & Scheidt, 1998; Barsky, 2001). For the purpose of this overview, anxiety can be defined as a psychological and physiological response similar to fear but occurring in response to internal stimuli or inappropriate to the reality of external stimuli. It may be a lifelong constant trait or a transient state relative to specific life events. Psychological components of anxiety include edginess, nervousness, tension or worry. Physical signs and symptoms consequent to sympathetic arousal are angina, chest tightness or faintness, fatigue, flushing, muscle tension, palpitations and tachycardia (Barsky, 2001). Studies indicate that anxiety disorders occur in approximately 15% of individuals with CHD, double to triple the general population rate (Ockene et al., 1995).

2.5.3.3.1 Anxiety and CHD

Fear of losing one's self-esteem and anticipating failure and criticism result in hyperactivation of the stress sympatho-adrenomedullary axis. This in turn leads to helplessness and feelings of inadequacy, due to a gradual exhaustion of the noradrenergic input in the hypothalamus, as well as stimulation of the hypophysis-suprarenal gland system. This may cause morphological changes in the coronary arteries which may be significant for the progression of CHD (Barsky, 2001).

2.5.3.3.2 Anxiety as a risk factor: research review

Anxiety has been found to predict CHD in large-population studies. Kawachi et al. (1994) followed a large sample of 33 999 men over a two-year period. They found an increased relative risk of 2.45 from fatal CHD and a 6.08 relative risk of SCD among men with the highest levels of anxiety. Frasure-Smith, Lespérance, and Talajic (1995) found anxiety to be an independent predictor of cardiac events following MI. There is also suggestive evidence for anxiety as a risk factor which predisposes individuals to developing CHD (Barsky, 2001).

Kawachi et al. (1994) found that men who reported phobic anxiety had a strikingly increased likelihood of subsequent death due to CHD. Anxiety may also influence behaviour and habits relevant to cardiovascular disease. Individuals may take refuge from anxiety in eating. Diet and weight are related to serum lipids, BP and CHD (Webster, 1996). High scores on an anxiety scale correlate with the severity of CHD. Kawachi et al. (1994) point out that chronic anxiety exerts a negative influence on the heart and increases cardiac morbidity and mortality.

The current researcher concludes that chronic anxiety and emotional lability may be negative prognostic factors in the development of CHD. Psychological intervention strategies that cultivate positive emotions may promote cardiac health and well-being. However, the relationship between anxiety and CHD deserves further scrutiny.

2.5.3.4 Depression

Depression is associated with a three- to four-fold increase in risk of subsequent cardiovascular morbidity and mortality (Miller et al., 2002). It can be described as a mood disturbance caused by a change in perceived health, inability to work, restriction of enjoyable activities, concern about the future or a loss of self-esteem secondary to patient-role issues (Clark et al., 1998). The psychological state of the depressed individual manifests in some combination of the following dejected moods: despair, helplessness, hopelessness, disinterest in normally stimulating activities, sleep and appetite disturbances, low energy, difficulties in thinking and concentrating, feelings of inadequacy, low self-esteem and guilt, worthlessness and medical complaints (Barsky, 2001; Hammen, 1997; Stefanis & Stefanis, 2002).

A thirty-year study found that men who were clinically depressed had a greater risk of CHD and MI than men who were not depressed and the increased risk lasted for decades (CBSH, 2000). A continuous linear relationship exists between the number of depressive symptoms and the risk of subsequent cardiac events. The degree of risk associated with depression is comparable to that of other risk factors (e.g., cholesterol, smoking, hypertension) and is largely independent of them. Depression is associated with less exercise, lower socioeconomic status, poor social support systems, failure to use social support resources and poor adherence to recommendations (Jiang, Krishnan, & O'Connor, 2002). Depressed individuals may take poorer care of themselves, pay less attention to diet, drink more alcohol, smoke more and have less motivation and energy to exercise regularly. The risk is elevated for women as well as men. It is not limited to the major depressive disorders, but also applies to depressive symptoms (Barsky, 2001).

2.5.3.4.1 Depression and CHD

The link between depression and CHD is assumed to be an inflammatory response caused by depression that promotes maladaptive health practices (e.g., smoking, physical inactivity). This triggers regulatory problems in the hypothalamic-pituitary-adrenal axis, resulting in a high cortisone level, which in turn is linked to the redistribution of body fat (Carney, Freedland, Miller, & Jaffe, 2002; Jiang et al., 2002). Depression also causes excessive secretion of norepinephrine which stimulates the production of catecholamines.

The effects of this on cardiac function, blood vessels and platelets can contribute to CHD by facilitating the growth of atherosclerotic plaque (Libby, 2001; Ross & Epstein, 1999). Depression may also be accompanied by changes in platelet aggregability. Serotonin, which plays a role in depression, influences thrombogenesis and enhances platelet activation and responsiveness to other thrombogenic agents. Individuals diagnosed with depression show diminished heart rate variability which may result from a relative increase in sympathetic tone and/or a relative decrease in parasympathetic tone. This process increases the risk of fatal arrhythmias (Rozanski, Blumenthal, & Kaplan, 1999).

2.5.3.4.2 Depression as a risk factor: research review

Several large, prospective, longitudinal studies have examined the relationship between depression and the development of CHD and found that the relationship is significant and independent of physiological risk factors. Depression has been associated with a relative risk of between 1.5 and 2 of the subsequent development of CHD and this risk is largely independent of more traditional risk factors (Barefoot & Schroll, 1996; Hippisley-Cox, Fielding, & Pringle, 1998). The Cardiovascular Health Study (Ariyo et al., 2000) found that each five-unit increase in depression score was associated with an adjusted hazard ratio of 1.15 and 1.16 for the development of CHD and all-cause mortality respectively. Individuals with the highest depression scores had a 40% to 60% increased risk of CHD and SCD compared to individuals with the lowest scores. Pratt et al. (1996) used a structural interview to diagnose major depression and found that patients with this condition had a 4.5 times higher risk of experiencing an MI than those without a major depressive disorder. According to Emery and Becker (1998), Frasure-Smith and Prince (1985) confirmed the importance of negative emotions, including depression, in influencing the prognosis of post-MI patients. These authors maintain that post-MI depression is strongly associated with arrhythmic deaths.

In a prospective study of 2 832 individuals, Anda et al. (1993) found that a depressed mood significantly predicted both fatal and non-fatal CHD. According to Allan and Scheidt (1998), a meta-analysis by Booth-Kewley and Friedman (1987) found that depression had the strongest association with the end results of CHD. Depression appears to have an effect on morbidity and mortality. It increases the risk of re-infarction and mortality in cardiac surgical patients (Carney, Freedland, Eisen, Rich, & Jaffe, 1995). Shuster et al. (1992)

found that depressed psychiatric inpatients had CHD mortality rates eight times higher than the general population. Penninx et al. (2001) found an increased mortality risk of 3.9 in CHD patients who met DSM-III criteria for major depression compared to those with no sign of depression.

In summary, it is fair to conclude that depression plays a significant role in the development of CHD, independent of physiological risk factors, and that its adverse impact endures over time. The consequences of these important psychosocial risk factors are often overlooked. Understanding the causes of depression and recognising it as early as possible, together with appropriate intervention, may have clinical utility in that a reduction in depression may reduce the risk of CHD.

2.5.3.5 Anger and hostility

Chronic anger and hostility, including cynicism and mistrust of others, are the most pathogenic components of the coronary-prone personality. These emotions are strongly related to CHD (Allan & Scheidt, 1998; Barsky, 2001). Hostility is defined as a set of negative attitudes, beliefs and appraisals in which individuals are viewed as sources of mistreatment, frustration and provocation and are therefore distrusted (Clark et al., 1998). Clinical hostility is the tendency to experience anger, irritability and resentment in response to everyday events or to react to these events with expressions of antagonism, disagreeableness, rudeness, surliness, criticalness and unco-operativeness. It is considered to be an underlying, enduring personality trait that encompasses a cynical, suspicious and denigrating attitude toward others. It results in more frequent, intense or longer-lasting episodes of anger when individuals are provoked, challenged or otherwise stressed (Barsky, 2001; Ketterer, 1993).

2.5.3.5.1 Hostility and CHD

Hostility impacts on CHD in many ways. Various theoretical models link hostility with CHD, such as the health behaviour model and the psychosocial vulnerability model. The latter model postulates that hostile individuals experience a more conflict-laden environment with less social support, while the health behaviour model points out that hostile individuals may engage in poor health habits (Emery & Becker, 1998). The

behaviour highlighted in this model is associated with lower education and socioeconomic status and poor health behaviours, such as increased alcohol and tobacco consumption and increased calorie intake. Hostility is also associated with metabolic disturbances such as insulin resistance and dyslipidemias, which contribute directly to CHD risk. It may indirectly increase CHD risk by increasing sympathetic nervous system reactivity to behavioural challenges, especially interpersonal provocation, and by decreasing social support. Hostility often overlaps with other negative affective states, such as anxiety and depression, which are also linked to increased risk of CHD. Clark et al. (1998) found that hostile individuals are less likely to seek treatment when they experience symptoms of CHD. This is possibly due to their deeply held mistrust of others. The psychophysiological reactivity model suggests that individuals who show high levels of hostility may show increases in heart rate, BP and stress hormone levels in response to environmental stressors.

2.5.3.5.2 Anger and hostility as risk factors: research review

A few prospective studies point to hostility and anger as risk factors for CHD. Long-term anger, hostility, antagonistic interactions, cynicism and mistrust are associated with the incidence of CHD, coronary events and total mortality (Barsky, 2001). The Atherosclerosis Risk in Communities Trial (Williams et al., 2000) found that individuals with high trait anger were at higher risk for all CHD events, including acute MI or cardiac mortality (hazard ratio 2.69). In a seven-year follow-up study, the relative risk of cardiac events (SCD, non-fatal MI and angina) for men with high levels of anger was 2.66 times higher compared to men with the lowest levels of anger (Kawachi, Sparrow, Spiro, Vokonas, & Weiss, 1996).

Patients with suppressed anger and high hostility ratings show more severe CHD than patients without these features (Shuster et al., 1992). In an eight-year study, suppressed anger was a significant predictor of a major cardiac event (1.70; 95 % confidence interval [c] = 1.26 to 2.29) (Gallacher, Yarnell, Sweetnam, Elwood, & Stansfeld, 1999). Mittleman et al. (1995) found that episodes of anger are capable of triggering the onset of an acute MI. Boltwood, Taylor, Burke, Grogan, and Giacomini (1993) maintain that anger may produce coronary vasoconstriction (contractions in blood vessel walls which decrease blood flow and cause a rise in BP) in previously narrowed coronary arteries. According to

Allan and Scheidt (1998), Dembroski, MacDougali, Costa, and Grandits (1989) report that participants with a potential for hostility had from 1.5 to 1.7 times the incidence of CHD in comparison to control participants. The Family Heart Study (Knox, Siegmund, & Weidner, 1998) found that hostility was associated with a history of revascularisation in high-risk men. Another study by Billing, Hjemdahl, and Rehnqvist (1997) report that patients with chronic stable angina had higher scores for hostility.

In summary, the current researcher contends that the components of anger and hostility are indirect psychosocial predictors of CHD. They can be regarded as proxies for other psychosocial variables that constitute dysphoric emotional states such as depression and anxiety. However, because of their mistrust of health care systems, patients with these symptoms are less likely to comply with recommended treatments.

2.5.3.6 Denial

Denial has emerged as a risk factor of CHD. Plug et al. (1997) define denial as a defence mechanism by which individuals refuse to admit or acknowledge that they find certain conditions or circumstances unpleasant or threatening. In this way patients suffering from an incurable disease may insist that they will be well again soon. Denial plays an important role in keeping patients' emotional distress in check. In other words, it is the negation of personal danger to reduce and eliminate the threat (Dennis, 1995). Denial is a psychological coping strategy that allows patients to engage in behaviour with little conscious awareness of the consequences. Rationalisation and displacement are also forms of denial (Allan & Scheidt, 1998).

2.5.3.6.1 Denial and CHD

Certain theories suggest that denial become rooted in the cardiac patients' character from an early age. This may be associated with early rejections and loss of parental love, a devastating experience which can threaten the child's survival (death layer experience). Patients find that their only way to survive these intense emotions is to forget, block and bury them. They do this by denying emotions, which include frustrated omnipotence, repressed hostility and unresolved dependency problems. Difficulties may arise later as denial of hidden emotional trauma, although superficially protective, makes patients

tremendously vulnerable and weakens their sense of self. The use of denial as an unconscious mechanism to control emotion blocks perception of impulses. Consequently, emotions become bottled up and can later implode in the form of an MI (Sinatra, 1999).

2.5.3.6.2 Denial as a risk factor: research review

Statistically, denial is clearly identified as a CHD risk factor. A review of twenty-one empirical studies on denial in CHD over a twenty-five year period, concluded that denial has a long-term negative effect on CHD outcome (Sirous, 1992). According to Suls (1990), denial increases CHD risk when it co-occurs with TABP. TABP individuals subject themselves to more stress and/or endure stress for a longer period, which may lead to adverse effects on cardiovascular functioning.

The denial of self, which is characteristic of MI patients, contributes to coronary-prone behaviour and subsequent CHD risk (Sinatra, 1999). Denial can play the role of an enemy to the CHD and MI patient (Barsky, 2001). Overcoming emotional resistances of cardiac denial may lead to reduced morbidity and mortality for patients with acute coronary syndromes (Allan & Scheidt, 1998).

The current researcher is of the opinion that suppression of deep emotions or denial contributes to coronary-prone behaviour and subsequent CHD risk. Psychologically speaking, suppression of feelings and rigidification from vital loss may have pervasive effects on the individual and ultimately have an impact on the heart. Overcoming the emotional resistance of cardiac denial may lead to reduced morbidity and mortality for CHD patients.

2.5.3.7 Social isolation and low social support

Social isolation, often a feature of depression, appears to be related to CHD and has emerged as a risk factor of CHD (Barsky, 2001; Manolio & Furberg, 1994). One of the most obvious characteristics of cardiac personalities is their strong propensity to make harsh judgements about others and themselves. Driven by perfectionistic standards and hostility, and unable to tolerate childhood yearnings and human vulnerabilities in themselves and others, cardiac personalities are rarely able to accept family, friends,

colleagues and themselves. This causes problems in their relationships. Pervasive social isolation leads to estrangement from themselves (which is perceived as a sense of unworthiness), others (including fears of rejection and criticism) and from God (spiritual dimension) (Ornish, 1996; Streat, 1996).

A sense of social support is crucial to the recovery of heart patients. CHD is a disease of loneliness and the inability to share oneself and hence is a disease of isolation. Thus, to achieve a complete cure, it is necessary to re-establish connections with others and with oneself. A sense of support and control in life induces neuroregulators to trigger the body's self-healing mechanisms (Cortis, 1995).

2.5.3.7.1 Social isolation as a risk factor: research review

Research surveys have found that social isolation and low social support are associated with an increased incidence of CHD (Barsky, 2001). According to Ornish (1996), patients with weak social ties are twice as likely to die from CHD as those with strong ties. In a large-scale study of the impact of social relationships on health, House, Landis, and Umberson (1988, in Allan & Scheidt, 1998) concluded that lack of social support is a major risk factor for CHD. Increased risks for those with lower social support are significant for both genders, with relative risk ratios higher for men. Ruberman, Weinblatt, Goldberg, and Chaudhary (1984) found that with other risk factors held constant, patients initially classified as being socially isolated and having a high degree of life stress had four times the risk of SCD.

Research surveys reveal that social isolation and low social support (living alone, having few friends or family members and not belonging to organisations, clubs or churches) are associated with increased incidence of CHD and poorer outcomes after diagnosis of CHD. Thus, those who live alone, are unmarried or without a confidante, have a higher rate of recurrent MI, fatal MI and all-cause cardiac mortality than those who have close interpersonal relationships. Among patients with documented CHD, being unmarried and without a confidante confers a significantly worse five-year prognosis, even after medical risk factors have been taken into account. Elderly men and women who reported less emotional support from others before they sustained MI, were almost three times more likely to die in the following six months, after controlling for severity of infarction,

comorbidity, CHD and socioeconomic status. This effect may be particularly robust in men (Barsky, 2001).

In a three-year follow-up study of 2 330 post-MI patients, Ruberman et al. (1984) found that two major psychosocial factors affected subsequent mortality: stress levels related to traumatic events such as marital separation, forced retirement or financial difficulty, and social isolation with a lack of contact with family, friends or social organisations. Individuals with high levels of either stress or social isolation suffered an approximately twofold increase in mortality, especially due to SCD. In addition, the two factors demonstrated an additive effect (Ockene et al., 1995). Marital status alone is also associated with post-MI survival, since married patients have significantly better survival rates than unmarried individuals. Even membership of clubs or churches significantly decreases premature death risk and disability from all causes regardless of genes or risk factors of CHD (Ornish, 1996).

In conclusion, social isolation constitutes a risk factor equivalent to the major physiological risk factors. Perceived isolation leads to stress and suffering and predisposes individuals to CHD. Time-pressured lifestyles often prevent South Africans from sustaining and nourishing relationships, sometimes leading to stress and misunderstandings in relationships. Stress management procedures can reduce individuals' sense of isolation as they relate to a therapist and learn how to resolve the resistance which interferes with their relationships.

2.5.3.8 Loss of love

The repressed experience of a loss of love (heartbreak) is indirectly responsible for CHD. Sinatra (1999) defines heartbreak as the emotional response to the loss of love and intimacy in life. The heart is influenced by emotions, passion and connections to other individuals. Many patients have experienced heartbreak in childhood (e.g., conditional love, unavailable parents). This is the true vulnerability that predisposes individuals to further heartbreaking experiences, loss of love and eventually CHD. The stress of losing a loved one through death, divorce or the break-up of a relationship can also be so strong that it can trigger a fatal MI. Many cases attest to the fact that CHD has occurred in patients upon learning of such a loss. The pain of longing for loved ones who are absent is

heartbreaking. This, in itself, is a profound stress that affects the core of an individual's being, the heart. The passion of love or the pain of loneliness may affect the heart rate, BP and, ultimately, the functioning of the heart. It is the armoring process and rigidification of the chest wall which imposes a chronic stress upon the heart, eventually resulting in CHD (Sinatra, 1999).

The current researcher contends that a loss of love and intimacy can subject an individual to great emotional stress which, in turn, may have a negative impact on the functioning of the heart and can promote the development of CHD. Feeling more connected to and intimate with others can enhance health and well-being.

2.5.3.9 Life stress and job strain

Stressful life events and job strain are associated with increased risk of CHD, incidence of MI and cardiac mortality (Barsky, 2001; Bosma, Peter, Siegrist, & Marmot, 1998; Schnall, Landsbergis, & Baker, 1994). These authors found a positive correlation between either job strain and cardiovascular or all-cause mortality, or job strain and risk factors of cardiovascular disease or mortality. In a large prospective study done by Alfredsson, Spetz, and Theorell (1985), both men and women in higher strain jobs had significantly higher rates of MI than those with low job strain.

2.5.3.10 Sociodemographic characteristics

The best single social predictor of CHD is social status. Lower socioeconomic status is associated with increased risk of CHD and poorer prognosis after MI because beneficial health habits, including non-smoking and weight control, tend to be associated with socioeconomic status. In addition, exposure to stressful life events, greater job strain, lack of social support and diminished sense of self-control may contribute to the relationship between socioeconomic status and CHD (Barsky, 2001). Unemployment, financial difficulties, job loss and family disruption have been measured as significant in the incidence of CHD. A lack of home ownership is also associated with higher incidence of CHD. Class-related risk is, to a minor degree, explained by health-related behaviour like smoking and overeating (Lewin, 1995).

2.5.3.11 Vital exhaustion

Vital exhaustion refers to symptoms of excessive fatigue, increased irritability, perceived lack of energy, demoralisation as well as problems in initiating and maintaining sleep (Kop, 1999). It is a debilitating physical and emotional state and may be a precursor of MI, especially in the context of Type A individuals who incessantly struggle to achieve more in less time (Allan & Scheidt, 1998). In an eighteen-month follow-up study, Kop, Appels, Mendes de Leon, De Swart, and Bar (1994) found that 35% of 43 vitally exhausted patients suffered new cardiac events in comparison to only 17% of 84 non-exhausted patients. These individuals are rarely rewarded by the satisfaction of accomplishment, but instead doggedly toil on to a state of psychic exhaustion or emotional drain.

In conclusion, psychosocial factors appear to play a causal role in the genesis and maintenance of CHD, and CHD plays a causal role in the generation of emotions. Furthermore, these risk factors tend to cluster together; for example, individuals who are isolated tend to be depressed. Psychosocial factors may also promote CHD via their effect on physiological risk factors (e.g., serum cholesterol levels rise in stressful situations). Psychosocial factors are treatable risk factors. Professionals in South Africa need to become increasingly sensitised to the importance of psychosocial factors and the onset and cause of CHD. These factors need to be repeatedly identified as possible mediators of coronary risk. Becoming aware of their contribution to CHD is critical to healing and protecting the heart. A psychological approach to the management of psychosocial risk factors is fundamental in reducing the burden of CHD and thus improving the quality of life and life expectancy of South Africans.

2.6 THE TREATMENT OF CHD

Coronary heart disease is dangerous and places patients in a high risk category for MI and SCD. Although CHD results in life-threatening conditions, CHD lends itself to excellent and effective forms of treatment. Treatment options for myocardial ischaemia include:

- lifestyle changes
- medication (beta-blockers, nitrates and calcium antagonists)
- coronary balloon angioplasty

- stent implantation
- coronary artery bypass surgery (CABS) (CBSH, 2000).

Coronary balloon angioplasty and stent implantation remains the only available alternatives to conventional bypass. They have made a major impact on the management of CHD and accomplish the same results as CABS, at considerably lower financial, emotional or physical cost. However, an optimal procedure should be chosen for each individual (Pepine, Hill, & Lambert, 1994).

In **coronary balloon angioplasty**, the blocked vessel is opened during an angiogram, where a tiny deflated balloon is passed through a catheter to the vessel. The balloon is inflated to compress the plaque against the walls of the artery, flattening it out so that blood flow is improved. In order to keep the artery open afterwards, a device called a **coronary stent**, which is an expandable metal mesh tube, is implanted during angioplasty at the site of the blockage. The stent pushes against the wall of the artery to keep it open (CBSH, 2000).

Coronary artery bypass surgery revolutionised the treatment of coronary artery disease. Patients with severe coronary obstruction whose physical activity is severely limited by myocardial ischaemia and who fail to respond to medical treatment, or who are unsuitable for angioplasty or stent implantation, or who suffer from left main stem disease and triple vessel coronary artery disease, are normally considered for CABS (Vetrovec, 1994). Correctly selected, about 90% to 95% of patients can be completely relieved of their angina symptoms by successful CABS (Levien & Pantanowitz, 1997b).

The ultimate goals of CABS are preservation of life, relief of angina symptoms, a return to an appropriate level of social functioning, combating the deadly effects of MI and improving the quality of life for both patients and their families (Burg et al., 2003; Jenkins, Jono, & Stanton, 1996; McHugh et al., 2001).

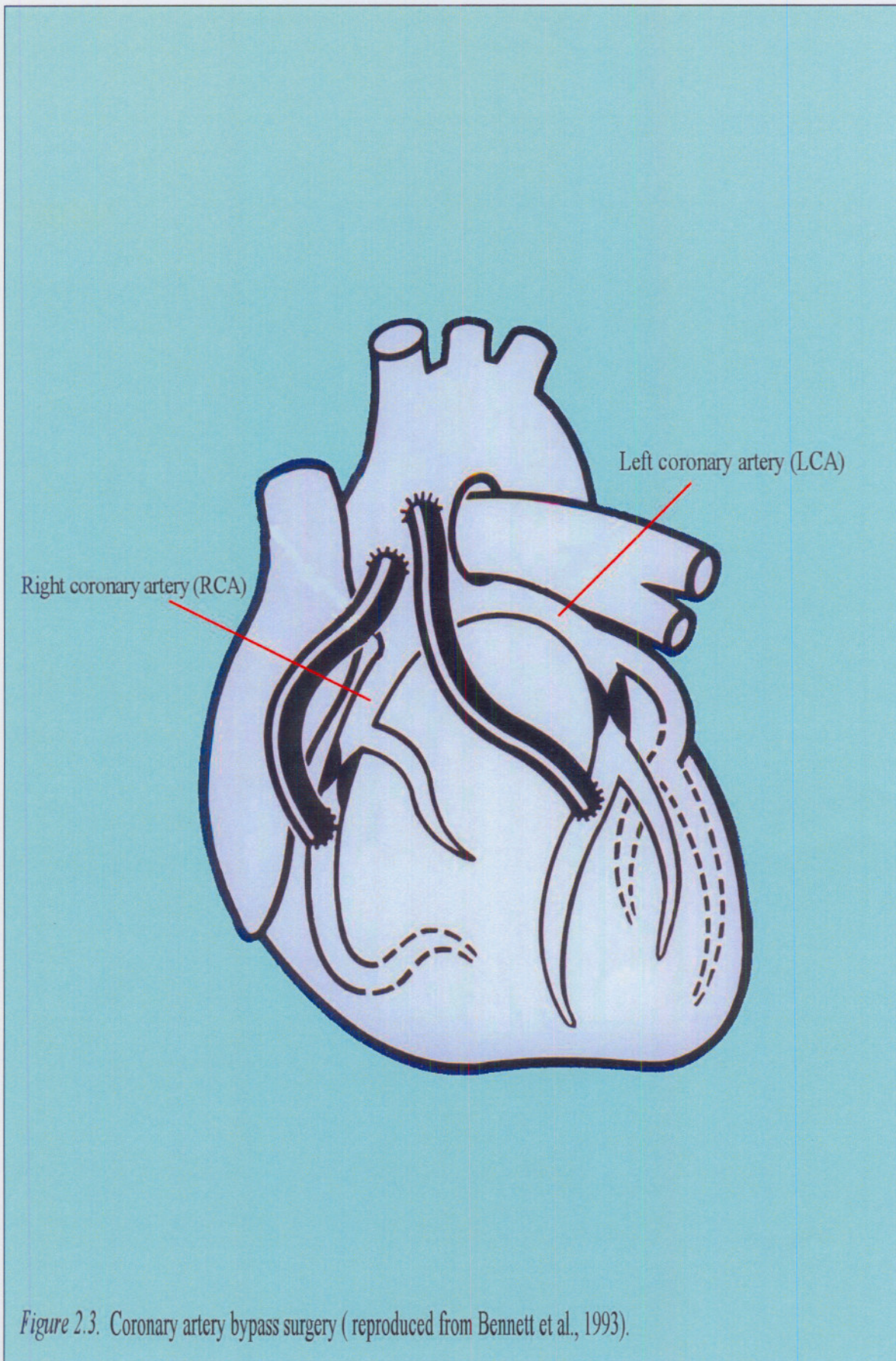
The following are important considerations when deciding on CABS:

- the patient's symptoms
- how well the patient responds to drug therapy
- the patient's age
- atherosclerotic obstructions (50% or more) in the left main coronary artery
- impaired left ventricular function (ejection fraction < 40%)
- obstructions in all three major coronary arteries
- unsuccessful angioplasty and stent implantation
- sites and severity of the plaque build-up (CBSH, 2000; Gordon & Gibbons, 1991).

CABS is the only revascularisation procedure that should be used in patients who have atherosclerotic obstructions in the left main coronary artery. The left main coronary artery is the most dangerous spot in which to have a blockage. Patients with long-standing total occlusions, left ventricular dysfunction or obstructions in all three or more of the other major coronary arteries are more appropriately treated with CABS. It has become the most commonly performed vascular surgical procedure in the world (Mack, Magee, & Dewey, 2001).

2.6.1 CABS procedure

Levien and Pantanowitz (1997b) provide a brief overview of the CABS procedure. Coronary artery bypass surgery consists of making an incision in the sternum (chest bone), and connecting the patient to a heart-lung bypass machine during the operation to maintain blood flow to the body. The blocked or narrowed coronary arteries are bypassed with a graft. For this purpose, vein grafts harvested from the long or short saphenous vein of the legs and arms are normally used. The best long-term results are obtained by using the patient's own internal mammary artery, a branch of the subclavian artery, which supplies blood to the chest wall in front of the heart. The bypass graft is attached from the first part of the aorta, to the healthy coronary artery beyond the blockage or stenosis. After all the grafts are placed, the heart is taken off the bypass machine. The skin is closed using a variety of techniques according to the surgeon's preference. The procedure lasts four to six hours (see Figure 2.3).



Although the main goal of CABS is to relieve angina and prolong life-expectancy, the primary purpose is to improve quality of life (Duits, Boeke, Taams, Passchier, & Erdman, 1997). The quality of life issues related to CABS are discussed in the following section.

2.6.2 Quality of life and CABS

CABS patients usually return to premorbid lifestyles which enable them to resume a higher quality of life. Quality of life is the subjective appraisal of a patient's current life, based primarily on social, economic, psychological and spiritual functioning and to a lesser degree on physical functioning (Smith, Avis, & Assman, 1999). Improvements in physical capabilities (largely due to angina relief) seem to be the most impressive benefit. A majority of CABS patients experience improvements in their social functioning (social participation and pursuit of hobbies), psychological well-being (decreased anxiety, depression, fatigue and sleep problems), sexual functioning (increased libido and desire and decreased chest pain and worry), as well as role functioning (Rumsfeld et al., 1999). CABS leads to substantial improvements in general pleasure, increased performance of everyday activities and improvements in mental state (reduction of anxiety and depression), leisure activities and job and family roles (Ben-Noun, 1999). Usually CABS involves a heightened sense of the preciousness of life, changes in perceptions, reappraisals of life goals and a deepened level of religious experience as well as a renewed appreciation of the support rendered by friends and family (Fullard & Foxcroft, 1998).

CABS patients report relief of angina, improvement in functional status and reduction in mental distress (Ben-Noun, 1999). Particularly patients with triple vessel and left main stem disease can enjoy considerably better life expectancy when compared to similar patients treated with medication (Levien & Pantanowitz, 1997b). Improvements in general health status and well-being are reported one year following CABS (Duits et al., 1997).

According to the literature, CABS continues to be a proven and established treatment procedure for relieving symptomatic angina, prolonging life expectancy and improving health-related quality of life. In the current researcher's experience, recipients of CABS react to the procedure in an individualised manner and it appears that optimism plays a causal role in promoting a more favourable quality of life. In addition, the coping strategies used by optimists seem to promote the surgical outcome.

The effects of an optimistic disposition on CABS will be considered next.

2.6.3 Dispositional optimism and CABS

Dispositional optimism (i.e., the tendency to expect positive life outcomes) has broad, pervasive, beneficial effects on CABS patients' mood, rate of recovery and quality of life (Ladwig et al., 2000). It is beneficial to both psychological and physical well-being after CABS (Mahler & Kulik, 2000). Faced with CABS, patients who maintain an optimistic outlook regain control or mastery over the surgical event and find ways to restore and enhance their self-esteem (Helgeson & Fritz, 1999). Optimists are thought to use more active coping strategies characterised by the belief that the future will be pleasant because they can control important outcomes (Peterson, Seligman, Yurko, Martin, & Friedman, 1998).

Optimists are more likely to use strategy-labelled positive attitudes, such as acceptance, and are less likely to use fatalism, self-blame, escape-avoidance and denial; they are also more effective in achieving positive outcomes (King, Rowe, Kimble, & Zerwic, 1998). Optimistic CABS patients with problem-focused coping strategies adjust better, have fewer physical symptoms, rapid physical recovery, fewer post-surgical complications and a reduced likelihood of rehospitalisation following CABS (Mahler & Kulik, 2000).

Given their positive orientation, CABS patients who exhibit optimism need less extra care to see them through. They express satisfaction with the treatment and care they receive from surrounding medical staff. Optimists report being less hostile and depressed prior to CABS and seem more satisfied with the amount of emotional and social support they receive from friends and family. Prior to surgery, optimists are much less likely to dwell on the negative aspects of their emotional experience (feelings of nervousness and sadness), and are more likely to deal with stressful encounters by formulating plans for action and setting goals for recovery (Scheier et al., 1989).

According to Scheier et al. (1989), optimists seem to show fewer signs of intraoperative complications. Patients exhibit lower BP and heart rate responses during surgery and experience less cardiovascular responses to the stress of CABS and its aftermath. Dispositional optimism is also associated with a faster rate of return to normal life

activities subsequent to discharge and optimistic patients report greater satisfaction with their work environments. Research confirms that optimism exerts a strong and positive effect on patients' physical well-being, both during and immediately following CABS. According to Scheier et al. (1999), optimism seems to have a positive influence on prognosis at the time of CABS. It is associated with a lower rate of rehospitalisation for cardiac events over the subsequent six months. Optimists report returning to normal life activities and resuming vigorous physical activity more quickly than pessimists. Optimism has been positively related to quality of life and reports of happiness and life satisfaction in patients six to eight months after CABS (Fitzgerald, Tennen, Affleck, & Pransky, 1993).

The current researcher is of the opinion that a positive regard for the self, an optimistic outlook on the future and the belief that one can make necessary lifestyle changes may alter patients' physical and psychological well-being as well as rate of recovery. Optimism may influence perceived control over the cause of CABS and exert influence on quality of life appraisals.

2.7 SUMMARY

The heart is the centre of the life force, but on a metaphorical level the heart is also the centre of emotions and the seat of the spirit. For many years cardiologists worldwide, including South Africa, have largely overlooked the relationship between body and mind.

The current biomedical model holds that CHD is largely the consequence of physiological risk factors including maladaptive lifestyles, poor dietary habits and a lack of physical activity. To the current researcher's knowledge, the prevailing model has failed to acknowledge the contribution of negative emotions to CHD. Specific negative emotions such as anxiety, depression and hostility have emerged as potentially important risk factors and can be just as lethal as the more accepted physiological risk factors. It seems that the harmful effects associated with these negative emotions accumulate over time until a threshold is passed and the functioning of the cardiovascular system is compromised.

For the holistic practitioner, the intricate mechanisms which interact in the functioning of the heart help individuals to understand how easily psychosocial factors can cause an imbalance in the delicate functioning of the heart. For the holistic practitioner,

pathophysiological and psychosocial factors are intimately interconnected and complementary. It is therefore important to note that it is difficult to isolate the impact of individual risk factors. Thus, the psychosocial aspects of the patient's life must be integrated and viewed as significant and approached with the same degree of concern as the pathophysiological processes affecting CHD. It seems that both physiological and psychosocial risk factors combine in a multiplicative, largely unknown way to injure the coronary arteries. It is hoped that this literature review will contribute to a better understanding of both the physiological and psychosocial risk factors involved and their intricate interplay in the development of CHD.

The heart is the centre of the human being, where the body, mind and spirit unite to become one. CHD therefore occurs on physical, emotional and spiritual levels. By excluding the psychosocial risk factors from prevention and rehabilitation programmes, professionals ignore the interrelationship between mind and body.

CABS is a life-threatening event and psychological distress may contribute more to the level of disability than the physical impairment. Chapter 3 explores the various psychological factors which contribute to the recovery of CABS patients.

CHAPTER 3

CONCOMITANT PSYCHOLOGICAL ASPECTS OF CORONARY ARTERY BYPASS SURGERY

3.1 INTRODUCTION

The diagnosis of CABS is an emotionally laden one, known to generate psychological distress in both patients and their spouses, and many have difficulties adjusting psychologically (Andrew, Baker, Kneebone, & Knight, 2000; Cohan et al., 1998; Doerfler, Pbert, & DeCosimo, 1994; Duits et al., 1998; Folks, Freeman, Sokol, & Thurstin, 1988). Although CABS results can be attributed to somatic performance, patients' emotions and psychological adaptation are integral to the outcome of surgery (Timlin, Shores, & Reicks, 2002; McHugh et al., 2001). Anxiety and depression are common ancillary phenomena and are often the most difficult aspect to endure (Cleophas, 2000; Martin & Thompson, 2000). Anxiety and depression can be considered a normal way of trying to cope with this life-threatening event, but may also interfere with couples' interactions with each other and the patients' reintegration into the family and society (Papadopoulos, 1995; Timmermans & Pelc, 1995). Patients' negative mood states before, during and after CABS may have a marked influence on their recovery. These psychological sequelae can lower physical and emotional reserves, has a direct influence on couples' well-being and quality of life and are the main factor predicting postoperative recovery (Fitzsimons, Parahoo, & Stringer, 2000; Hämäläinen et al., 2000; Karlsson, Berglin, & Larsson, 2000; Koivula, Tarkka, Tarkka, Laippala, & Paunonen-Ilmonen, 2002).

This chapter discusses the psychological issues that often emerge with CABS, particularly anxiety and depression, and reviews their manifestation in CABS patients. An overview of the psychological impact of CABS on the spouse is also presented.

3.2 THE CONCEPT OF ANXIETY

Impending CABS and hospitalisation threatens patients' sense of safety and triggers considerable stress. The degree of stress experienced is usually measured by the level of anxiety felt, and affects patients' perception of recovery (Duits et al., 1999; Horne, Vatmanidis, & Careri, 1994; Trzcieniecka-Green & Steptoe, 1996; Vingerhoets, 1998b). Although anxiety may be seen as an important mobilising part of the adaptive response, intense fear and anxiety are detrimental to both CABS patients and their spouses. Hidden fears can erode their temperaments and lead to tension in the relationship between patients, spouses and medical staff (Barsky, 2001). Excessive anxiety can activate cardiovascular excitation and contribute to the development of chest pain and amplify other cardiac symptoms (Jonsdottir & Baldursdottir, 1998; Potts & Bass, 1995). Anxiety may immobilise the CABS patient for a considerable time, if not for life. Before describing anxiety, it is necessary to examine how it arises. Accordingly, the main theories of anxiety are briefly outlined.

3.2.1 Theories of anxiety

The major theories of anxiety may be categorised as psychoanalytic, learning, cognitive and existential. Representative theories within each category are described and discussed.

3.2.1.1 Psychoanalytic theory

Psychoanalytic theory interprets anxiety as underlying intrapsychic conflict (Kutash, 1996). The roots of psychoanalytic approaches to anxiety can be found in Freud's (1916, in Josephs, 1994) theory. Freud first viewed neurotic anxiety as the direct result of repressed libido (affect), evoked by traumatic situations and transformed into a distressing symptom, such as anxiety. He theorised that when libidinal excitation produces sexual wishes that are perceived as threatening, these mental images are repressed. When the buildup of libidinal energy is blocked from expression, this develops into anxiety or somatic symptoms. Freud (1926, in Kaplan & Sadock, 1998) later shifted his position to view anxiety as a cause. He came to consider anxiety to be the result of psychic conflict between unconscious sexual or aggressive wishes and corresponding threats from the superego or external reality. In response to this signal, the ego mobilises defence

mechanisms to prevent unacceptable thoughts and feelings from emerging into conscious awareness. Because of all this, the mental apparatus is flooded and overwhelmed, the individual feels helpless and passive and the emotional experience of anxiety follows.

Sullivan (1953) sees anxiety arising from conflicting requirements of complex interpersonal relations. According to them, anxiety is the most unbearable feeling to which individuals can be subjected. Once anxiety is felt, the personality develops a strong need to avoid it. The need to avoid anxiety becomes the “need for security”. They view emotions as forms of interpersonal communication. Anxiety thus communicates a sense of insecurity, of feeling unsafe and endangered in relationships, reflecting the failure of secure interpersonal integration.

Rank (1968) traced anxiety back to the trauma of birth. In his view, the birth process is the most traumatic experience in an individual’s life because of the painful anxiety that accompanies it. The primary separation of birth, thus parting from or leaving the womb, is the first of a series of separations in an individual’s life. Every subsequent separation reignites the primary anxiety all over again. Separations such as leaving childhood behind and becoming adult represent a birth process again and again. Neurotic anxiety develops in individuals who have not yet recovered from the trauma of birth and its side effects. Anxiety therefore results from individuals rigidly refusing to leave their immediate position, which offers them safety and security (comparable to the intrauterine condition). Birth and the accompanying separation anxiety are essential for development and individualisation.

Kohut (1977) and other self-psychologists view anxiety in an entirely different context. They hold that when there is a disruption of a self-object relationship during infancy, the self may experience fragmentation or disintegration reflecting a loss of self-cohesion, self-continuity and self-esteem. This is the deepest anxiety an individual can experience, similar to the fear of death, except that what is feared is not physical annihilation, but loss of humanness – psychological death. Kohut identifies three major types of self-object transference that reflect unmet self-object needs and evoke anxiety, namely: (a) the loss of mirroring self-objects, which evokes anxiety about the loss of self-esteem, (b) the failure to idealise self-objects, which evokes anxiety about being vulnerable to hostile forces, and

(c) the failure of alter-ego self-objects, which evokes anxiety about being abnormal, alien and inhuman.

Recent psychoanalytic approaches state that anxiety falls into four major categories (Kaplan, Sadock, & Grebb, 1994, p. 575):

- **id or impulse anxiety**, related to the primitive, diffuse discomforts of infants when they feel overwhelmed with needs and stimuli over which their helpless state provides no control;
- **separation anxiety**, occurring in somewhat older but still pre-oedipal children, who fear the loss of love or even abandonment by their parents if they fail to conform to their parents' standards and demands;
- **castration anxiety**, in oedipal children, particularly in relation to their developing sexual impulses; and
- **superego anxiety**, the direct result of the final development of the superego that marks the passing of the pre-pubertal period of latency.

In summary, then, both early and later psychoanalytic theory explains anxiety as an outcome of unconscious intrapsychic processes such as instinctual discharge, conflict and defence. In psychoanalytic theory, there are three aspects to anxiety: an unpleasant feeling, a discharge process, and the perception of the phenomena involved with this discharge. Psychoanalysts differ on the source of anxiety; some trace it back to the trauma of birth and others link it to the relationship between parent and child. The more poorly integrated the individual, the greater the vulnerability to anxiety.

3.2.1.2 Learning theory

Learning theories view anxiety as a conditioned response to specific preceding environmental stimuli that is maintained by reinforcing consequences and behavioural conditioning (Kutash, 1996). Learning theories of anxiety originally derived from Pavlovian principles. According to **Pavlov** (1927, in Dilts, 2001), an individual responds to a stimulus (conditioned stimulus) that did not previously elicit a response. Classical conditioning occurs when a conditioned stimulus is paired with another stimulus (unconditioned stimulus) that does elicit the desired response (unconditioned response).

When this response is elicited by the conditioned stimulus it is called a conditioned response. The conditioned response (fear or anxiety) is seen as a secondary or acquired drive which has arisen through a process of classical conditioning.

Mowrer's (1960, in Emmelkamp & Scholing, 1994) two-stage theory of fear, based on animal experiments, has been highly influential in the field of psychology. He distinguishes between the process responsible for the conditioning of fear (classical conditioning) and the process responsible for the conditioning of the avoidance response (operant conditioning). His first stage of learning assumes that fear or anxiety is acquired through a process of classical conditioning. According to him, a conditioned stimulus which is paired with an unconditioned stimulus will, after several pairings, lead to a conditioned response. The conditioned response is fear. In the second stage, the animal learns to terminate the tone by making escape responses, thereby reducing the anxiety. The termination or avoidance of aversive stimuli leads to negative reinforcement (anxiety reduction). His view of learning has it that drive reduction follows a response, reinforces it and increases its future probability of occurrence. Thus, anxiety is learned and once learned, motivates future behaviour.

Barlow (1988) posits a variable of biological vulnerability for anxiety, which, when coupled with stressful life events, sets the stage for anxiety. Frequently, negative life events result in a frightening feeling of alarm, and the individual becomes apprehensive in case such alarms or negative life events recur. States of anxious apprehension are accentuated to the extent that such recurrences are seen as unpredictable and as beyond an individual's control. Furthermore, worry over these two factors contributes to the tendency of states of anxious apprehension to become self-perpetuating, in the sense of a vicious cycle of anxiety. Barlow differentiates between three types of alarms, namely, (a) true alarm, (b) false alarm, and (c) learned alarm. Reactions during a real life-threatening event are seen as true alarm, whereas false alarms occur in the absence of real life-threatening events. The association of false alarms with internal or external cues results in learned alarm (conditioned responses). Anxiety is thus the result of a complex interaction of biological, psychological and environmental events.

Eysenck (1988) bases his learning theory of anxiety on his fundamental personality theory, which depends on two major dimensions: extroversion - introversion and neuroticism -

stability. In this context, the neurotic individual is predisposed to anxiety-provoking stimuli, with this sensitivity being based on the autonomic nervous system. Neurotic introverts are considered at risk for acquiring conditioned anxiety responses because of hyperarousal. Viewed in this way, anxiety proneness is inherited and also learned. Traumatic events lead to unconditioned fear, but can then become conditioned, resulting in new stimuli producing the original maladaptive anxiety responses. Anxiety is regarded as conditioned fear. There is also another possible stage in the anxiety process, according to Eysenck. An individual inherits an excitation-inhibition imbalance. If the individual is predisposed to being easily influenced by social learning, (that is, to be introverted), then that individual is more prone to anxiety. From this perspective, then, anxiety is partly inherited and partly learned. The learning part depends firstly on conditioned fear and secondly on the state of the nervous system.

Staats and Eifert (1990) adopted a multilevel approach based on the premises that there is a central emotional response at the basis of anxiety, and that anxiety can be acquired through aversive conditioning or, more symbolically, through language. They contend that it is not necessary for an individual to have a traumatic experience in order to develop anxiety. It can come about through negative emotion, or simply eliciting words or negative thoughts that are associated with images of panic.

To sum up, then, learning theory explains anxiety in terms of a conditioned response. From this perspective, anxiety is partially inherited and partially learned, and once learned, motivates future maladaptive behaviour. Furthermore, neurotic conflicts are seen as happening in childhood and setting the scene for anxiety to develop later in life. Anxious individuals tend to overestimate the degree of danger and underestimate their ability to handle threats.

3.2.1.3 Cognitive theory

Cognitive theory recognises that cognitive mediators between stimuli and emotional responses can markedly affect the ultimate affective response pattern (Vrana, 1996). **Lazarus (1966)**, one of the most prominent coping theorists, maintains that anxiety is typified by individuals' cognitive appraisal of their circumstances. How individuals judge a threat and their capacity to cope with or avoid the threat creates the extent of anxiety.

Lazarus distinguishes between primary appraisal (which establishes that the stimulus are either irrelevant, positive or stressful) and secondary appraisal (which represents a complex set of evaluative processes dedicated to optimising coping strategies and invoked only when primary appraisal identifies the stimulus as stressful). Individuals' differences in cognitive appraisal serve as essential cognitive mediators of the anxiety experience. Anxiety occurs when appraisal results in the conclusion that a stimulus is stressful and that demand inherent in the situation may exceed individuals' resources.

Beck, Laude and Bohnert (1974) investigated the contribution of cognitive mechanisms in promoting and maintaining anxiety. They established a meaningful sequence between individuals' cognitions and fluctuations in their levels of anxiety and observed that ideational processes of individuals suffering from anxiety revolve around the theme of danger. Furthermore, these cognitions of danger consistently involve a misperception or distortion of reality. The thoughts and fantasies associated with the arousal and intensification of anxiety are mainly anticipation of physical harm, such as being violently attacked, being involved in an accident, or becoming sick; and anticipation of psychosocial trauma, ranging from humiliation or rejection in certain circumstances to complete ostracism. The individual's idiosyncratic ideation involved unrealistically heightens expectations of harm. The degree of anxiety experienced is related to credibility of the fears (to the individual) and severity of the anticipated adversity. Beck et al. (1974) maintain that the ideational elements of anxious individuals have gone relatively unrecognised and underutilised.

Eysenck (1988) argues that the cognitive system acts as a gateway to the physiological system and that self-schemas are part of the cognitive system. Eysenck shows that individuals who are high and low in trait anxiety show differences in the information that they have stored in long-term memory and also vary in their mood states and the content of their memory. This memory approach to trait anxiety helps to account for changes in trait anxiety that occur over time and explains why individuals are anxious in some stress-producing situations but not in others. Moreover, Eysenck demonstrated that individuals who are high or low in anxiety do in fact differ in the structure (content) and processes of cognition. Their memory differs both in broad schemata and in specific items, such as the type and number of specific worries that they might have. Firstly, they have more frequent and more highly organised sets of worries in long-term memory. Secondly, the worries of

the highly anxious may be more accessible because their more negative mood states assist in mood-state-dependent retrieval. Accordingly, it follows from this that individuals with high and low anxiety will also differ in their cognitive appraisal of ambiguity. Moreover, an individual might be more susceptible to stress and anxiety in some stress situations than in others.

Ohman (1993) presents an information processing theory of anxiety. He argues that the information processing sources lead to biologically-based defences that, in turn, produce anxiety. For him, anxiety is a matter of physiological cues and cognitive interpretations and beliefs that some anxiety effects occur immediately when a relevant stimulus impinges, although cognitions from unconscious biases also have their role to play in the interpretation of anxiety. Ohman suggests two types of anxiety. In his view, fear is an emotion to do with conscious avoidance and escape, and if responses are blocked, anxiety results. However, a more basic type of anxiety comes from unconscious input (from significance evaluators and the arousal system) to the conscious perception system, which results in undirected anxiety.

From the current researcher's perspective, cognitive approaches propose that faulty, distorted or counterproductive cognitive patterns accompany or precede maladaptive behaviours such as anxiety. Anxiety arises when individuals perceive themselves as not possessing the conceptions or interpretations to properly handle the situations, circumstances or events confronting them.

3.2.1.4 Existential theory

Existential theory views anxiety as a result of individuals' struggles to discover meaning in difficult life situations. It is the individual's unavoidable confrontation with the givens of the human condition. Existential theories of anxiety have their origin in **Kierkegaard's** (1844, in Leeds, 1994) contributions. His perspective pivots on the idea that development and maturity depends on freedom, choice and personal responsibility. According to him, anxiety can be located in the gap that exists between being aware of possibilities and the choices that lead to their actualisation. Anxiety is inherent in the confrontation of alternatives, the realisation of freedom. This means that anxiety is seen as a naturally occurring state of the individual. Growing towards the maturity that freedom brings means

dealing with the anxiety that is an integral part of experiencing possibility. As part of life, individuals are presented with a series of choices and every choice involves anxiety. Kierkegaard holds that the process of becoming individuated, which is every individual's essential task, proceeds through the confrontation of anxiety. In his view, anxiety is the enemy of certainty and finiteness in which the individual might learn the ultimate and experience the possibility of freedom. To become truly actualised, individuals must face the anxiety and deal with it – anxiety is thus unavoidable. Avoiding normal anxiety leads to neurotic anxiety. In running from anxiety, individuals lose their most precious opportunity for education as human beings.

Bugenthal (1965) views anxiety as the inescapable pain of being human. He describes four truths about the human condition and states that facing each of these painful truths will activate a different form of existential anxiety. The first ontological given is that whatever degree of awareness individuals may attain, it will always be insufficient. Individuals will never know all that they could or should know. There will be times when individuals will be victimised by events beyond their knowledge and control. The anxiety that individuals feel when they recognise this truth is the sense of fate. The ultimate existential anxiety that this recognition assumes is the dread of death that awaits everyone. Secondly, individuals are active, behaving creatures and actions have consequences. The recognition of the unknowable consequences of actions generates anxiety. The ultimate form of existential anxiety, associated with individuals' sense of having poorly managed their responsibilities, is the dread of condemnation. Thirdly, individuals are always able to make choices, although they often have to select among undesirable options. Because individuals have incomplete knowledge and always face unpredictable consequences, they will experience anxiety. This anxiety is a fear of emptiness, of living each day with no significance or purpose. In its ultimate form individuals experience a dread of meaninglessness. Fourthly, individuals are both separate from and simultaneously connected to others. They experience this truth as a feeling of a-part-ness and aloneness regardless of important relationships. The anxiety associated with this truth is the tension of loneliness. The ultimate dread is the anticipation of complete isolation. This awesome responsibility leads to existential anxiety. According to Bugenthal, existential anxiety blocks the potential for being and interferes with the process of actualisation. Individuals tend towards actualisation but come to recognise the existential anxiety of their pursuit. They therefore

attempt to circumvent the anxiety, which breeds neurotic anxiety. Individuals must accept and incorporate existential anxiety which frees them to move toward actualisation.

May (1977) postulates that anxiety is an inevitable characteristic of people's lives. When individuals experience their being, they come face to face with threats to their being, and ultimately non-being. They describe anxiety as an apprehension cued off by a threat that individuals hold essential to their existence as individuals. Anxiety is thus a response to the threat of non-being. When individuals become aware that their existence can be destroyed, that they can lose themselves and their world, and that they can become nothing, anxiety results. Anxiety is objectless, because it strikes at the basis of an individual's sense of self as distinct from the world of objects. Thus, anxiety causes distinction between self and object to break down. They view the potential for anxiety as innate, although the particular events that may become threatening are learned. In our contemporary, competitive culture, anxiety is heightened by interpersonal isolation and alienation that emerges from a pattern in which an individual's self is viewed as an object and self-validation depends on winning over others. Anxiety is thus necessary for mental health.

Fischer (1988) integrates previous existential theories into a new understanding of anxiety. According to him, anxiety involves five components: (a) **identity**, in the form of milestones oriented toward the establishment of a particular form of human living; if threatened, the individual becomes anxious, (b) **world**, consisting of a network of relations and involvements to differing extents in each milestone; if any milestone emerges as insurmountable and the world threatens to dissolve, anxiety may result, (c) **motivation**, which is the perpetuation and realisation of the individual's world as well as identity, (d) **action**, constituting the achievement of the particular milestone in question and expressive of the individual's being, and (e) **ability**, which is individuals' lived evaluation of their uncertain competence with regard to the achievement of the milestone.

According to **Polkinghorne (1991)**, existential anxiety differs from everyday anxiety in that it is not accompanied by the usual somatic symptoms, but is rather a deep feeling of unease that arises from an awareness of the givens: that individuals' existence is finite and mortal, and that there is no purpose in what they create for themselves. Existential anxiety is a response to understanding that individuals' responsibility is to create a worthwhile existence in the limited time they have available and, moreover, that there is no external

standard to define what that worthwhile existence should be. Existential anxiety is viewed as a positive sign rather than as a symptom in that it signals that individuals have begun the process of accepting responsibility for their lives. As such, it is not evidence of pathology but is the corollary of a worthwhile existence. Existential guilt arises when individuals feel they have shirked the responsibility to create a worthwhile existence and is a message from the deeper part of themselves to take charge of their life.

In summary, from an existential framework, anxiety is the response to a vast void of existence and meaning when individuals become aware of a profound nothingness (emptiness) in their lives, which may be more discomforting than an acceptance of their death. Normal anxiety is thus a universal, inevitable emotion, but individuals are capable of channelling it positively or negatively.

The current researcher regards anxiety as the result of individuals' perceptions of their own actions or behaviour in a particular context, which reflects their own ability to act effectively or not. CABS anxiety is understood to be caused when patients' safety is threatened and by experiencing unpleasant restlessness and worry. In the light of the above, the way CABS patients cope with the threat of surgery will depend on how they perceive:

- themselves as able to overcome the threat of surgery (i.e., the ideas and interpretations or patterns of thought that they have)
- the threat, problem or situation facing them
- the way that they acted in similar situations in the past, and
- their perception of their self-worth

3.2.2 Description of anxiety

Anxiety is one of the most common emotions and responses to routine daily stress and emotional conflict. Anxiety constitutes subjective, consciously, perceived feelings of apprehension and tension, and is associated with arousal of the autonomic nervous system (Friedman & Thayer, 1998). Despite its common occurrence, definitions of anxiety vary. Anxiety can be defined as a pervasive feeling of dread, fear, apprehension, panic or an expectancy that something unpleasant is going to happen, which occurs in response to an

intangible threat or conflict. It is an endogenous feeling of helplessness and inadequacy, and occurs when the individual's sense of self is threatened (Oregon Department of Corrections, 2000).

Anxiety is psychologically experienced as a combination of looming dread, impending danger and a vague uneasiness. It is also associated with symptoms of mild agitation, restlessness, racing thoughts, impaired sleep, fatigue and difficulty in calming the self. Physiological responses include sustained muscle tension, trembling, increased heart rate and blood pressure, disturbed breathing, hyperventilation and peripheral vasoconstriction. These symptoms produce a sense of heightened awareness or alertness that frequently disturbs concentration, memory and an individual's ability to feel emotionally comfortable. The combination of psychological and physiological responses serves to make anxiety a psychophysiological disturbance (Rainwater, 1999). The presence of these symptoms leads to a considerable loss of social and occupational functioning (Shuster et al., 1992).

Anxiety is an alerting signal which warns of impending danger and enables individuals to take measures to deal with a threat (Oregon Department of Corrections, 2000). It should be differentiated from **fear** which is, according to Kaplan and Sadock (1998) and Craske (1999), a similar alerting signal, a response to a known, external, definite or non-conflictual threat. Fear involves the urgency to escape, autonomic arousal and is instantaneous. **Anxiety** is a response to a threat that is unknown, internal, vague or conflictual and thus resides in individuals themselves. It is slow building, and involves anticipatory avoidance and cautiousness, appraisals of concern for future threat and less intense autonomic arousal. The causes of anxiety are completely or partly unconscious and difficult for individuals to handle. The main difference between fear and anxiety is the intensity of fear and the duration of anxiety. Individuals' responses depend on the nature of the events and their coping mechanisms. If an individual's ego is not functioning properly and the imbalance continues, the individual experiences chronic anxiety (Kaplan & Sadock, 1998).

Anxiety has adaptive and lifesaving qualities. It warns of threats of bodily damage, pain, helplessness, possible punishment or the frustration of social or bodily needs, separation of loved ones, a menace to an individual's success or status and, ultimately, it alerts individuals to threats to one's unity or wholeness. It prompts individuals to take the

necessary actions to prevent danger and to lessen the consequences (Kaplan & Sadock, 1998). Anxiety can be a relatively brief, unpleasant, temporary, situational condition or an enduring personality trait (Berk, 2000a). It is also used to describe a disorder in which more prolonged and diffuse emotional arousal is experienced, characterised by intense and inappropriate feelings of apprehension, uncertainty or fear resulting in maladaptive coping (CBSH, 2001).

Since anxiety can be an advantageous response due to a threatening situation, it is important to distinguish between normal and pathological anxiety. Before discussing CABS patients' anxiety, the features that distinguish normal anxiety from pathological anxiety are elucidated.

3.2.3 Normal versus pathological anxiety

Normal anxiety is diffuse, dysphoric and unpleasant. Individuals feel a vague sense of apprehension and a sense of impending threat, danger or loss of control. Anxiety is very much future-oriented and the cause of the anxiety is often totally or partially unknown. It is often accompanied by autonomic symptoms, such as headaches, perspiration, palpitations, tightness, mild stomach discomfort and restlessness. In addition to these symptoms, anxiety affects concentration, memory, perception and the ability to make associations. Normal anxiety helps individuals to focus attention, aids in performance and may enhance many life experiences. Anxiety is a normal part of growing, changing, experiencing new things and finding an identity and meaning in life (e.g., children on their first day at school, adolescents on their first date, adults contemplating marriage and individuals faced with illness) (Kaplan & Sadock, 1998).

Normal anxiety can thus be described as an appropriate emotion which helps individuals to handle particular circumstances in their lives. It is the emotional companion of motivation that is needed to be able to handle unexpected events physically or psychologically. Moderate levels of anxiety can help individuals to be more observant and aware or conscious of events in their environment. Moderate anxiety levels also improve task performance (Hoehn-Saric & McLeod, 1993).

Pathological anxiety occurs when individuals experience anxiety that is more intense, frequent and pervasive than normal anxiety. It is mostly disproportionate to its recognisable source. Pathological anxiety often arises from an unknown source (i.e., free-floating anxiety) and can paralyse individuals into inaction or withdrawal. Such anxiety may affect individuals' perception of the world so that they can no longer cope adequately with the ordinary everyday demands (Kaplan & Sadock, 1998). Although anxiety is an essential part of individuals' reaction to an external threat, if the threat is imaginary, if the anxiety is disproportionate to the severity of the threat, or if the anxiety does not pass with the threat, then it can be considered abnormal or pathological (Hoehn-Saric & McLeod, 1993).

Pathological anxiety is a highly dysphoric affective state which disrupts cognitive, behavioural and physiological functions. Three factors are important here: firstly, pathological anxiety exists when the anxiety occurs without a stimulus or is disproportionate to it. Secondly, the anxiety continues for an unreasonable period after the stimulus has been ceased. Thirdly, handling the threat contained in the stimulus would not be appropriate (Hoehn-Saric & McLeod, 1993).

3.3 ANXIETY AND CORONARY ARTERY BYPASS SURGERY

Anxiety is the first and most obtrusive reaction to CABS and there is evidence that fear and anxiety vary in different phases of hospitalisation (Duits et al., 1997; Koivula et al., 2002). Preoperatively, anxiety is at its highest as patients are anxious about surviving CABS (Davies, 2000; Duits et al., 1998). In the intensive care unit (ICU) anxiety is the lowest, because of the patient's experience of surviving the surgery and analgesic sedation (Shuster et al., 1992). Acute emotional arousal may be replaced postoperatively by long-standing feelings of emotional distress (Barsky, 2001). These feelings reflect increased worrying about the patient's health. Patients are anxious about adapting to changed postoperative circumstances since they may be disappointed with their state of physical health and uncertain about the future (Duits et al., 1999).

3.3.1 Diagnostic classification

The criteria mentioned in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association [APA], 1994) are used in diagnosing the principal anxiety conditions, which may be associated with CABS patients. The DSM-IV sets forth a system for providing professionals with precise, standardised criteria for diagnosing mental disorders. The manual gives specific information for each disorder, such as a description of symptoms and the number of symptoms that must be present to meet the criteria for diagnosis. Anxiety is classified according to the severity and duration of its symptoms and specific behavioural characteristics. According to the current DSM-IV classification system, anxiety disorders related to CABS include:

- Generalised anxiety disorder (APA, 1994, pp. 435-436)
- Panic disorder (APA, 1994, p. 395)
- Acute stress disorder (APA, 1994, pp. 431-432)
- Posttraumatic stress disorder (APA, 1994, pp. 427-428)
- Specific phobia (APA, 1994, pp. 410-411)
- Agoraphobia (APA, 1994, pp. 396-397)

The essential features for defining the above anxiety disorders can be found in the APA (1994).

Some of the patients observed by the current researcher had pre-existing anxiety disorders before the onset of CABS; some were patients in whom the stress of CABS served to precipitate the anxiety state and in others, the anxiety disorder with its multiple, somatic concomitants was the primary condition with which they presented.

3.3.2 Empirical findings concerning anxiety in CABS patients

Recent research reports anxiety as one of the most common emotional states in CABS patients. As many as 60% of patients experience anxiety while hospitalised (Cohan et al., 1998). Strauss et al. (1992) found that 60.9% of the patients in their study reported anxiety preoperatively. Younger patients reported more anxiety than older patients. Patients who

had moderate or severe preoperative anxiety shared a high risk of psychological disturbance for up to two years postoperatively. Edell-Gustaffson and Hetta (1999) evaluated the roles of state anxiety and found that 80% of preoperative CABS patients scored moderate anxiety or higher on a state anxiety scale, and 38.9% showed persistent levels of anxiety at one month and six months postoperatively. These patients were significantly more restricted in their physical functioning than the non-anxious patients. Grossi, Perski, Feleke, and Jakobson (1998) also evaluated the roles of state and trait anxiety. Their study revealed that patients with moderate to high anxiety remained psychologically distressed for one year postoperatively.

In a sample of eighty CABS patients, anxiety levels significantly increased after surgery (66%). Surgical patients experienced elevated feelings of anxiety in the early and later postoperative stage. Between 10% and 20% of patients showed clinical levels of postoperative anxiety. Patients with high, moderate or low anticipatory anxiety retained the same levels postoperatively (Vingerhoets, 1998a). Boudrez, Denollet, and Amsel (1992) confirmed that 25% of patients exhibited high anxiety scores four months after CABS. They reported that, despite improvement of psychological status, 10% to 20% of patients still exhibited postoperative anxiety. Andrew et al. (2000) found an incidence of preoperative anxiety in 27% of CABS patients and reported a significant increase of 45% in the incidence of postoperative anxiety. Hagen (1991) examined psychological distress at one to two years after CABS and found that in a sample of one hundred CABS patients, the mean scores indicated heightened levels of distress. About 40% and 12% reported high and very high levels of distress, respectively.

Thus, anxiety is an invariable companion of CABS procedures and unresolved uncertainty can lead to considerable distress for the patient.

3.3.3 Themes of anxiety in CABS

The current researcher found that patients undergoing CABS experience uncertainty, anxiety and fear. The themes of anxiety identified in the literature coincide with the themes encountered in practice. The following themes observed by the current researcher reflect the major recurrent anxiety themes associated with CABS:

3.3.3.1 Preoperative

- **Anticipatory anxiety**

The anticipation of CABS can be profoundly disturbing (Derrett, Paul, & Morris, 1999; Teo et al., 1998). Uncertainty occurs when patients perceive the situation as unpredictable and have difficulty in giving meaning to events surrounding CABS (White & Frasure-Smith, 1995). The effect of having to wait for CABS leads to frustration and anxiety. It has been found that during the waiting period patients suffer from impaired functional status, chest pain, shortness of breath and anxiety (Bengtson, Karlsson, & Herlitz, 2000; Fitzsimons et al., 2000; Jonsdottir & Baldursdottir, 1998; Lamarche et al., 1998). One of the main sources of anxiety has been reported as the fear that their health condition may deteriorate to the extent that they may suffer an MI or die prior to surgery (Hawley, 1998; Lamarche et al., 1998). According to Duits et al. (1998), patients feel more insecure during this period than on the day prior to surgery, when the time remaining can be counted off in fixed units and the patient can prepare psychologically for the procedure. Seeing other patients expressing fears or hearing them talk about CABS can indirectly lead to patients' developing increased anxiety (Horne et al., 1994). Patients are under considerable stress, both self-generated and from without, to quit smoking, change diet, exercise and modify stressful lifestyles. Patients often harbour unrealistic fears that can be debilitating. Sometimes these fears are expressed directly, but more commonly they are communicated indirectly through comments about the need for others to care for the children or discussions about a will. Such comments adversely affect the family, especially the spouse (Ockene et al., 1995).

- **Fear of death**

CABS patients often respond to surgery with concerns about life and death (Shuster et al., 1992). The implications of CABS are especially provocative since the procedure involves the manipulation of an organ (the heart) that is still generally perceived as being the essence of life itself (Underwood, Firmin, & Jehu, 1993). The prospect of death as an immediate potential reality may cause overwhelming anxiety. Anxiety is typically focused on cardiac symptoms (i.e., chest pain or shortness of breath). Characteristics of anxiety frequently observed in CABS patients include fear of death, disability or isolation, a sense

of impending doom and of dread and foreboding (Ockene et al., 1995). Fear of death may also occur in patients who objectively are at low risk of dying. They may become terrified of any physical activity or strong emotion, fearing that these can trigger sudden cardiac death. Additional anxiety may be provoked by identification with a friend or relative who died of CHD (Shuster et al., 1992). Extensive CABS procedures with an uncertain outcome about the course of events may produce more anxiety (Vingerhoets, 1998a).

- **Fear of hospitalisation and medical procedures**

The patient is often overwhelmed by ambient hospital activity, medical and surgical procedures, postoperative pain and unfamiliarity with doctors which can lead to fear of the unknown (White & Frasure-Smith, 1995). Although providing highly sophisticated coronary care, hospitals can feel like dangerous places to patients in distress (Fisher, 1998). The lack of familiar surroundings, nurses' hasty pace and the impersonal routine can be frightening (Hawley, 1998; Weiss & Puntillo, 2001). Patients find themselves in unfamiliar, alien and terrifying environments, surrounded by fearsome electronic equipment with bright lights, monitors and beepers. They feel uncomfortable with medical procedures (e.g., catheter insertion and tests which they know little about and understand less). Separation from family, friends, neighbours and all that is familiar adds to an experience of distress and may intensify patients' anxiety. Additional anxiety may be provoked by memories of previous hospital admissions and prior traumatic experiences in medical settings. It might also be related to the quality of their care (Horne et al., 1994; Koivula et al., 2002).

- **Fear of mutilation or loss of vitality**

For CABS patients whose self-concepts are strongly founded on physical appearance or mastery, concerns about scarring or disfigurement become manifest. Some patients lose confidence in themselves out of a fear of losing attractiveness (Cortis, 1995). Damage to the body represents only one component of the fear, the other major issue being fear of loss of love and respect from significant others as a result of devalued body image or physical debilitation (Barsky, 2001). Patients with an over-concern about body integrity may respond with overt anxiety reactions or hypochondriases (Williams, 1990).

- **Fear of loss of autonomy**

Anxiety is generally focused on a fear of loss of autonomous functioning (Dennis, 1995). CABS patients adjust with difficulty to hospitalisation, since it means losing competence and giving up control of many events in their lives (Cohan et al., 1998). How they react to this may cause persisting anxiety. If they feel uncertain about their upcoming surgery and have no control over what is going on, they are likely to be more fearful and anxious as a reflection of their general feeling of losing control (Horne et al., 1994). They stop functioning in their usual way and often have trouble effectively implementing their most effective coping strategies. Some CABS patients' sense of well-being is tied to feelings of independence and personal control over what happens to them (Cohan et al., 1998). It seems that the feeling of helplessness and being dependent on the assistance of others, increases fear (Koivula et al., 2002). Unable to exercise and not allowed out of bed for days, they even suffer the humility of bedpans. Loss of privacy and control is an enormous assault on the ego (Fisher, 1998).

3.3.3.2 Intraoperative

The feeling of insecurity experienced by patients during the intraoperative period may vary from mild distress to panic and the threat perceived may be internal, external and intrapersonal (Hankela, 1999). In the ICU patients is often overwhelmed by the activity and medical procedures, particularly being placed on a ventilator, catheter insertion and defibrillation. Being in pain, not being able to sleep, increased discomfort, separation from family members and a fear of death may further intensify patients' anxiety (Allan & Scheidt, 1998; Halm & Alpen, 1993). Most CABS patients in ICU are anxious, but few openly complain of anxiety or appear unduly apprehensive (Barsky, 2001). ICU anxiety manifests in physical signs (e.g., tachycardia, chest pain and dyspnea) (Cohan et al., 1998). Concern about cardiorespiratory complications (arrhythmias, cardiac or respiratory arrest) and anticipation of the need for lifesaving manoeuvres (mechanical ventilation) are common causes of anxiety (Shuster et al., 1992).

The sound of alarm buzzers in ICU, audible beeps, ringing telephones and visible electrocardiograms can induce considerable anxiety. Anxiety can lead to intractable sleep disturbance above and beyond normal restlessness. Some patients develop a time bomb

mentality, which translates into hypervigilant behaviour. Pain and discomfort causes them to drift in and out of sleep. Pain medication makes light seem brighter and noises louder than they actually are. At the same time, pain medication lowers patients' tolerance of light and sound. Though patients are in a state of stress, they cannot release it. Irrational fears of dying in their sleep may develop in CABS patients (Barsky, 2001). A lack of sleep may contribute to fatigue, a sense of vulnerability and apprehension (Cohan et al., 1998).

Patients may be preoccupied with their discomfort or concerned about the success of CABS (Duits et al., 1998). In the ICU, the patient's self-image changes from feeling whole to feeling damaged, feeling competent and self-sufficient to feeling incompetent and dependent on others – these changes manifest as feelings of anxiety (Dracup, Meleis, Baker, & Edlefsen, 1984). Departing from the ICU also increases anxiety as patients leave the security provided by close nursing care, a doctor within calling distance and guardian angel monitors (Barsky, 2001; Cohan et al., 1998). Shuster et al. (1992) point out that patients become fixated and dependent on the cardiac monitors and experience significant separation anxiety when disconnection occurs.

3.3.3.3 Postoperative

- **Separation anxiety**

Most patients experience separation anxiety at discharge, when they leave an area of support and care and face a situation of self-care (Ockene et al., 1995). Patients fear going home because in the hospital, they could count on skilled professionals to manage any setbacks. They are anxious and worried about coping without the nursing and medical care of the hospital (Cohan et al., 1998).

- **Financial difficulties**

For patients, money and finances are often additional core problems. The impact of CABS on present and future earnings, the cost of recent care, the possible economic impact of future disability and invalidism are sources of great uncertainty and concern and may be denied or ignored instead of being dealt with (Ockene et al., 1995).

- **Occupational incapacity**

Patients' major concerns are with problems of work, such as job advancement, meeting job pressures and their declining capacity to perform at a satisfactory level. Forty percent of patients fear occupational incapacity and are afraid of re-entering employment (Barsky, 2001; Lukkarinen, 1999). Many patients fear that returning to work will reduce the quality or quantity of their output and that they will earn less and experience greater work-related stress. They believe that their reduced health status will harm their work. Reducing work effort or choosing to retire on medical disability may be an adaptive strategy in CABS (Lewin, 1995). CABS patients may feel damaged or diminished, perceiving their job performance and future livelihood to have been irrevocably compromised and being decrepit and facing an empty future. These perceptions spell anxiety and loss of confidence and self-esteem. Patients' careers are threatened if work-related activities are deemed too strenuous, compelling them to consider a change of employment at a time in life when most individuals attempt to consolidate professional gains. Not only patients have the difficult task of dealing with diminished autonomy brought on by CABS, but must also adjust to a potential loss of income and authority (Barsky, 2001).

- **Resumption of physical activity**

The most common reaction of CABS patients is to fear and deliberately avoid physical activity. They may become terrified of any physical activity, fearing that this can immediately trigger sudden death. Reduced physical activity automatically leads to physical de-conditioning, producing more anxiety and fatigue. Furthermore patients often become trapped in a downward spiral of increasing disability (Lewin, 1995). Some retreat into unwarranted invalidism, becoming cardiac cripples, preoccupied with their health, terrified by every benign twinge or cramp and living a life of disability, because of unnecessary restriction of physical activity. According to Barsky (2001), their psychological distress contributes more to the level of disability than does the physical impairment.

- **Reduced sexual activity**

CABS has a deleterious effect on sexual activity, causing sexual difficulties or a reduction in frequency or satisfaction. Sexual behaviour constitutes one of the most sensitive and difficult concerns and is also a primary source of anxiety. Sexual activity involves individuals' concept of themselves as a masculine or feminine individual and is thus tied in complex and profound ways with feelings of personal adequacy and worth. Sexual adjustment may be affected in many ways; although the fear response usually dominates and may become a phobia (Lewin, 1995). A common fear is that of sexual performance. Patients feel that they will not be as good lovers as before CABS (Cortis, 1995). The most common sexual problems are reduced or absent sexual interest, impotence and premature or delayed ejaculation. The causes of sexual dysfunction include fear of precipitating a cardiac event or fear that sexual activity may be excessively stressful (Ockene et al., 1995). In addition, the spouse may believe that sexual activity could induce an MI and therefore may avoid sexual activity (Barsky, 2001; Dennis, 1995). Excessive spousal concern may contribute to the patient's lowered self-esteem and lack of confidence concerning sexual activity (Ockene et al., 1995). Patients fear that the potential side effects of cardiac medication may increase sexual dysfunction. Hypertensive agents and diuretics may cause impotence, problems with ejaculation, decrease potency (i.e., the ability to maintain erection to ejaculation and decreased libido) (Lewin, 1995).

- **Family dysfunction**

CABS presents a massive disruption in the psychodynamic balance of the family which intensifies upon discharge. For some patients, the change is towards a condition of subordination and chronic invalidism within the family. Since CABS is life-threatening, members of the family may press patients to alter their way of life, to become more passive and dependent individuals. Patients are discharged into family situations that include disruption of work schedules and normal routines, fear that the patient is still at risk of dying, and conflict caused by financial burdens and the demands of care (Lenz & Perkins, 2000). Increased family tension results from conflicting interpretations of patients' self-care activity and spouses' responsibilities (Miller, Wikoff, McMahan, Garrett, & Ringel, 1990). Long-term marital problem areas, particularly issues of dependence/independence, tend to worsen following CABS (Williams, 1990). Patients are temporarily at home all day

and are faced with the problems of altered work schedules and domestic routines. They have to deal with oversolicitous spouses, changes in role relationships, decision-making patterns and the balance of power, which may result in increased tensions. These domestic problems, combined with lifestyle changes (related to coronary risk factor modification), cause increased anxiety within the CABS patient. Tension within the marital relationship may be associated with sexual difficulties and patients may have a strong fear of failure combined with career and family problems (Duits et al., 1998). CABS may lead to increased conflict in the family. Hostile feelings may be exacerbated by emotional stresses associated with CABS. Emotional distress between patients and their children is common as patients often have to cope with the noise and conflict of children (Lenz & Perkins, 2000; Stanley & Frantz, 1988).

In summary, it can be said that anxiety is an inherent characteristic of CABS patients. Anxiety manifests differently in each patient and the precise nature of the relationship varies from case to case. Symptoms of anxiety are often disguised and present as somatic complaints. Anxiety sets limits on the patient's potential level of recovery. Early recognition of anxiety is essential for optimising the outcome of CABS. As anxiety diminishes, the contemplation of CABS and disability leads to a sense of sadness and loss. Depression as a response to distress and impairment is discussed in the following section.

3.4 THE CONCEPT OF DEPRESSION

Depression is highly prevalent and one of the most common, inevitable reactions to the severe circumstances accompanying CABS (Burg et al., 2003; Pirraglia, Peterson, Williams-Russo, Gorkin, & Charlson, 1999). Patients must come to terms with perceived loss; as well as a loss of security and health (Shuster et al., 1992; Williams, 1990). They mourn the loss of these qualities, the veneer of invulnerability that most healthy individuals apply everyday. Although observed before CABS, depression is more common in the postoperative period because of substantial discomfort and pain, and isolation from family, friends and the familiarity of home (Duits et al., 1998; McKhann et al., 1997; Timberlake et al., 1997). Depression can complicate the outcome of CABS, increases the risk of cardiac events and is associated with postoperative psychological maladjustment. Prolonged, debilitating depression tends to persist if left untreated and adversely affects quality of life, and cardiac prognosis. It is also associated with higher mortality and

morbidity after CABS (Barefoot & Schroll, 1996; Burg et al., 2003; Ford et al., 1998; Martin & Thompson, 2000; Sullivan et al., 2001).

Before defining depression, it is necessary to examine its source. The major theories of depression are therefore outlined briefly.

3.4.1 Theories of depression

Many theories have been developed to explain how early childhood, learning and cognition might produce clinical depression. These theories vary considerably in their primary reliance on psychoanalytic, learning, cognitive or existential perspectives. The current researcher presents the reader with an overview of the major psychological theories of depression.

3.4.1.1 Psychoanalytic theory

Psychoanalytic conceptualisations of depression explain it as an unconscious anger response to real or imaginary loss when early dependency needs are frustrated (Champion, 1999). In one of the earliest psychoanalytic formulations of depression, **Abraham** (1911, 1916, in Gotlib & Hammen, 1996) theorises that individuals who are vulnerable to depression experience a marked ambivalence towards other individuals, which has its origins in problematic object-relationships during childhood. Because of a tendency to experience pleasure in oral gratification, the depressive individual experiences exaggerated dependency needs and excessive frustrations associated with oral behaviours. As a result of early and repeated disappointments and frustrations, depressed individuals form a permanent but unconscious link between libidinal wishes and hostile destructive wishes. When depressed individuals experience disappointments later in life, these feelings of hostility re-emerge, leading to an episode of melancholia. The hostile feelings initially directed towards others (e.g., "I hate them") are projected onto others (e.g., "They hate me") and then internalised and directed towards the self. Abraham postulates that the unconscious destructive wishes of the depressed individual lead to overwhelming feelings of guilt.

Freud (1917, in Gotlib & Hammen, 1996) expands the theory of depression and compares depression with grief (i.e., mourning and melancholia), although he emphasises the loss of self-esteem. He identifies three factors that play a role in the development of depression: (a) loss of an object, (b) feelings of ambivalence, and (c) regression of the libido in the ego. He theorises that the predisposition to loss has its origins in early childhood in which the child experiences a loss of mother or her love. According to Schwartz and Schwartz (1993), Freud believed that the child is enraged and hurt by the loss and directs the disappointment inward and internalises the lost object as the introjected other. The depressed individual's animosity towards the lost love object then manifests in self-reproach. The ego identifies with the lost object and feelings of aggression towards the object make the individual feel intense guilt. A characteristic loss of self-esteem occurs because of the attempt to punish the incorporated object. The anger directed at a part of the child's own ego disposes the individual to future depressive episodes following significant losses.

Klein (1934, in Mendelson, 1990) shifts the emphasis to object relationships, arguing that depression is not linked to traumatic events such as losses, but rather to the quality of the mother-child relationship. In her view, individuals are predisposed to depression because of the inevitable frustration in this primary relationship. She maintains that a baby reacts to frustration with anger and feelings of helplessness. In other words, children react to frustration and lack of gratification with anger and sadistic fantasies unique to their stage of development. Their weak ego leads to feelings of helplessness, depression, guilt and remorse when they experience such tensions. At the same time a poor or weak ego stimulates the fear of being wiped out by these impulses. The external persecutor is now introjected and the child has fears even when the external object is not present, and distorts the dangers when it is present. Klein suggests that if children's experience with their mothers does not promote feelings of being loved and being secure, they will never be able to overcome the ambivalence toward love objects and will always be at risk of experiencing a depressive episode. According to her, a predisposition to depression results from an early failure to overcome depressive fears and anxieties and to establish an optimal level of self-esteem.

According to **Fenichel** (1945), a child may experience actual or perceived parental rejection through autocratic and rigid parenting, through the loss of a parent, especially the

mother, at an early age through death or divorce, or abusive or neglectful parenting. Whatever the cause, intense feelings of loss and anger can result. The frustration over unmet needs cannot be directed at the object of the anger but is rather directed to the inward or introjected image of the individual. This is because the lost love object is either no longer available or is too threatening a figure. This introjected image is a part of the self in analytical terms, but has yet to be adequately assimilated into the life of the individual. Consequently, a loss or stressful experience in later life may reactivate the anger and cause a kind of delayed grief. The accompanying self-criticism and guilt (e.g., anger is bad, are often expressed through symptoms of depression). Fenichel notes that dependency plays a major role in a psychodynamic understanding of depression. Depressed individuals are very dependent, showing a desire to passively meet needs and to react violently when such needs are frustrated. They interact with others in clinging or helpless ways that induce others to take care of them.

Bibring (1953), however, declares the loss of self-esteem to be the most important characteristic of depression. He believes that a loss of self-esteem originated in a sense of helplessness because individuals could not achieve their goals. These goals include the desire to be loved and appreciated, the desire to be loving and good, and the desire to feel strong and safe. He regards depression, then, as emotionally equivalent to partial or complete collapse of the ego's self-esteem. This occurs because the ego feels unable to live up to its aspirations while they are strongly maintained. Bibring is also convinced that depression results from conflict within the ego rather than from a conflict between the ego and the superego, as earlier theorists had suggested.

Kutash (1975) maintains that neurotic depression is individuals' way of trying to control anxiety. Neurotic depression is a consequence of the anxiety caused by the loss of a love object or a serious personal difficulty. Depression functions to partly relieve the anxiety. Kutash views neurotic depression as a dysfunctioning of ego boundaries. The neurotic depressive reaction constitutes an attempt to preserve a homeostatic equilibrium in the individual's ego boundaries by evenly distributing the cathexis through constricting or contracting the ego. Depression may thus be seen as a defence against developing a defect in one of the ego boundaries. It therefore dismisses the need for compensating in the other boundary in order to preserve equilibrium. In the depressive reaction, the circumferences of the two boundaries - particularly the outer boundary - become smaller through

contraction of the ego. The consequence of this is the preservation of bodily processes (hypochondriasis) and a preserved and sharpened reality sense. Rather than allow the ego to become impaired, depressed individuals choose to depreciate or squelch it until it can be expanded again when the stress or threat is lessened.

Later psychoanalytic theories of depression moved away from the “drive hypothesis” of depression. Ego psychology viewed losses as injuries to individuals’ view of themselves (the ego) rather than to displaced libido. **Basch (1980)** emphasises that individuals who are depressed feel mainly that life is meaningless; and that their perception of self, no longer functions as a unifying focus for ambitions and ideals. The goals that usually direct behaviour seem to be lost. Symptoms of depression serve to protect a self-system that can no longer meet its goals. Depression sends the message that the self-system is hopeless and in despair.

Recent psychoanalytic approaches have adopted a developmental cognitive and psychoanalytic perspective of depression. **Blatt and Homann (1992)** distinguish two types of depression, an anaclitic and an introjective depression. Anaclitic (or dependent) depression is characterised by feelings of loneliness, helplessness and weakness. The individual intensely and chronically fears being abandoned and left unprotected and uncared for. Thus, these individuals desperately need to keep in close physical contact with need-gratifying others, and they have deep longings to be loved, cared for, nurtured and protected. Other individuals are valued primarily for the care, comfort and satisfaction they can provide. Anaclitically depressed individuals rely intensely on others to provide and maintain a sense of well-being. Therefore, they have considerable difficulty with separation and loss and have great difficulty expressing anger for fear of destroying whatever need gratification others provide. Separation and loss, as sources of considerable apprehension, are often dealt with by primitive means, such as denial or a desperate search for immediate substitutes. Introjective (or self-critical) depression, in contrast, is characterised by self-criticism and feelings of unworthiness, inferiority, failure and guilt. Intense, personal, standards result in constant and harsh self-scrutiny and evaluation. These individuals have a chronic fear of disapproval, criticism and losing the acceptance and love of significant others. They constantly strive for excessive achievement and perfection, they are often highly competitive and work hard, make many demands on themselves and sometimes achieve a great deal; however, they seldom experience lasting satisfaction.

Having reviewed the major contributions of psychoanalytic theory to an understanding of depression, the current researcher believes that loss and grief remain the basic paradigm for understanding depression. It is clear that the psychoanalytic approach mainly emphasises unconscious dynamics in the etiology of depression. Psychoanalysts therefore highlight the following facets: (a) the loss of a love object, (b) repressed hostile feelings, (c) regression to an earlier developmental stage, and (d) structured adjustments in the ego. According to psychoanalytic theory, individuals' perception of rejection gives rise to depression because they are predisposed to it as a result of the loss of love during the oral stage. Individuals who, because of their perceptions, are convinced that they cannot vent their anger at the object of love become depressed because they turn their anger inwards. In the current researcher's view, psychoanalytic theory makes a valuable contribution to explaining the role played by object losses in the development of depression.

In recent years, there has been a striking convergence between current psychoanalytic, learning and cognitive perspectives on depression. The latter theories therefore deserve closer attention. An examination of the learning theories of depression follows next.

3.4.1.2 Learning theory

Learning theory explains depression in terms of response patterns in an individual's behavioural repertoire. For learning theorists, depression involves a reduction in the rate or the effectiveness of positive reinforcement received by individuals from others in their environment.

Skinner (1953, in Lewinsohn & Gotlib, 1995) proposes that depression is the result of a weakening of behaviour due to the interruption of established sequences of behaviour that had been positively reinforced by the social environment. **Ferster** (1973) provides more detail by suggesting that a depressive response pattern can be elicited by a number of factors, including: (a) a high level of exposure to aversive events and the need to avoid aversive situations, (b) a low level of positive reinforcement, (c) a sudden decrease in reinforcement from a significant source that has controlled a large variety of behaviours, (d) repeated exposure to situations that requires much effort to gain even a little reinforcement, and (e) the expression of anger that annoys other individuals and

consequently denies the individual's positive reinforcement. The frequency and duration of these experiences distinguish individuals who are vulnerable to depression.

Lewinsohn (1974) refines Skinner's model and postulated that a low rate of response-contingent positive reinforcement in major life areas, and/or a high rate of aversive experiences, can lead to a decreased activity level, dysphoria and result in the experience of depression. He holds that there are three major factors that may lead to a low rate of reinforcement: (a) deficits in the individual's behavioural repertoire or skills that prevent the attainment of reinforcers or diminish the individual's ability to cope with aversive experiences (thus, individuals who suffer social loss may lack the skills to form new reinforcing relationships), (b) a lack of potential reinforcers in the individual's environment due to impoverishment or loss, or a surplus of aversive experiences (e.g., an individual recuperating from a long illness may find little to do at home that is reinforcing), and (c) a decrease in the individual's capacity to enjoy positive experiences, or an increase in the individual's sensitivity to negative events. Lewinsohn contends that depressed individuals may lack adequate social skills and may therefore find it difficult to obtain reinforcement from their social environment, leading them to experience a reduced rate of positive reinforcement. Because of insufficient positive reinforcement, depressed individuals struggle to initiate or maintain instrumental behaviour. Consequently, they become increasingly passive and inactive, resulting in the subjective experience of dysphoria.

Rehm (1977) proposes a self-control model of depression that attempts to integrate learning and cognitive aspects of depression. He postulates that a specific deficit in self-monitoring, self-evaluation and self-reinforcement may explain the various symptoms of depression. Firstly, with respect to self-monitoring, depressed individuals selectively attend to negative events that follow their behaviour to the relative exclusion of positive events, a cognitive style that might account for the pessimism of depressed individuals. Secondly, depressed individuals selectively attend to immediate consequences of their behaviour to the relative exclusion of delayed outcomes, and therefore cannot look beyond present demands when making behaviour choices. The third deficit in the self-control behaviour of depressed individuals involves self-evaluation of an estimate of performance according to an internal criterion or standard. Depressed individuals may also manifest a self-evaluation deficit with respect to their style of attribution. Rehm hypothesises that depressed

individuals may distort their perception in order to denigrate themselves. If their performance is successful, they attribute it to external factors and, if unsuccessful, to internal factors, thus taking excessive responsibility for failure. He postulates that depressed individuals fail to administer sufficient contingent rewards to themselves and, finally, indulge in excessive self-punishment.

Nezu (1987) developed a problem-solving deficit theory of depression. According to his theory, individuals with ineffective problem-solving skills are at increased risk for the development of a depressive episode when confronted with stressful events. He contends that depression can result from deficiencies in any or all of five major components of problem-solving, namely: (a) problem orientation, (b) problem definition or problem formulation, (c) generation of alternatives, (d) decision making, and/or (e) solution implementation and verification, e.g., individuals might appraise a situation as a threat rather than a challenge. An individual may not be able to imagine effective solutions or select appropriate choices among the various possibilities. Such deficiencies could stem from a lack of skills and from negative cognitions about the self and situations. Nezu argues that if these problematic situations are not resolved, the negative consequences are likely to occur, which themselves result in a decrease in individuals' reinforcement. Depressive episodes will be severe and long-lasting, and increased relapse rates are likely, because of the high probability of problems occurring in future and remaining unresolved.

Pyszczynski and Greenberg (1987) propose a self-regulatory theory of depression that emphasises the central role of self-awareness or self-focused attention in the onset and maintenance of depression. They hypothesise that prolonged, elevated self-focus following negative events leads to a depressive self-focusing style, which maintains and exacerbates depression by magnifying the consequences of negative events. They describe a sequence of events that begins with a loss of self-esteem. The loss must represent a central source of emotional security, identity and self-worth. The loss not only undermines the stability of the individual's self-image, but also leads to an increase in self-focus. They posit that the increase in self-focus leads to an increase in the internality of the attributions concerning the loss. Escalation of self-blame further negatively influences the individual's affect and lowers self-image. The mounting negative affect interferes with social functioning, which exacerbates the negative cycle.

Champion (1999) describes depression as a lowered frequency of adjustive responses to daily life. Compared to normal individuals' responses to life, depressed individuals' responses are fewer and slower. Depressed individuals may sit silently for long periods or perhaps stay in bed all day. The time taken to reply to a question may be longer than usual and speaking, walking or carrying out routine tasks also occurs at a slower pace. Such behaviour leads to a reduction in gratification. Depressed individuals' repertoire is also a passive one. It is marked by the effort to escape or avoid any uncomfortable or aversive social consequences.

In summary, learning theories of depression emphasise response-contingent reinforcement and the behavioural dampening effects of punishment and ascribe greater importance to individuals' characteristics and their interactions with the environment. Learning theory explains depression as passive or active depressive behaviour that is reinforced if individuals perceive that they gain secondary benefit from it. They describe a cycle of depressive behaviours that tends to perpetuate itself. The low availability of reinforcement leads to depressive symptoms, which in turn lead to social avoidance, which ultimately perpetuates even lower levels of reinforcement. Should such individuals perceive that they can do nothing to solve their problem, they become depressed as a result of acquired (learned) helplessness.

3.4.1.3 Cognitive theory

Cognitive theories of depression hold that negative ways of thinking increase individuals' likelihood of developing and maintaining depression when they experience stressful life events. A central assumption of this approach is that individuals' emotions are largely determined by the way they interpret the world. Cognitions are derived from attitudes and assumptions that have developed through previous experience. These negative cognitions lead to negative emotions (Evans & Murphy, 1997).

Beck (1967) developed the most acceptable cognitive explanation of depression. He believes that depressed individuals possess negative self-schemata (beliefs) which he terms the cognitive triad, consisting of a negative view of the world, negative concept of self and a negative appraisal of the future. Depressed individuals have a negative concept of self which is manifested in low self-esteem, a negative self-evaluation, increased self-criticism

and an underestimation of their ability. Hence, they see themselves as faulty, worthless, inadequate, unloveable and deficient. They have negative views of the environment, seeing it as overwhelming, filled with obstacles and failure and a negative, almost nihilistic appraisal of the future which they see as hopeless, and believe that no effort could change the course of their lives and negative expectations. This triad represents the essence of a depressed individual's faulty thinking. This negative way of thinking guides an individual's perception, interpretation and memory of personally relevant experiences, resulting in a negatively biased construal of the individual's personal world which is seen as hostile, non-giving and aversive. Based on these cognitions, individuals begin to interpret their experiences as failures and, as a result, maintain their negative sense of self. This leads to the hopelessness and helplessness associated with depression. Beck (1967) also describes depressed individuals' information processing as containing systemic errors, which reflect the activity of dysfunctional cognitive schemas. He cites these as including arbitrary inference, selective abstraction, overgeneralisation, magnification and minimisation, personalisation, dichotomous thinking and catastrophising.

Seligman (1975) developed a learned helplessness model based on his research on avoidance learning in animals. He found that animals trapped in painful experiences (shocks) from which they cannot escape become unresponsive or helpless. After repeated exposure to the experiments, the animals give up even trying to escape and reduce their behaviour to passive whimpering. Applied to human behaviour, learned helplessness is a state in which individuals come to believe that nothing can be done about a present painful experience. Seligman found that this response pattern accurately describes what occurs when individuals find themselves in circumstances in which their behaviour cannot alter adverse environmental events: they show resignation, hopelessness and passivity. Controllability and uncontrollability are central concepts in Seligman's theory. He believed that depressed individuals possess motivational, cognitive and behavioural deficits which determine the way they learn to construe the relationship between activity and result. According to him, exposure to events perceived as uncontrollable alone is not sufficient to cause helplessness. In order to experience helplessness, Seligman emphasises that individuals must come to expect that the outcomes of these events are uncontrollable. He contends that both learned helplessness and depression may thus be caused when individuals learn that response and reinforcement are independent.

Abramson, Seligman and Teasdale (1978) postulate that exposure to uncontrollable stimuli is insufficient for deficits in cognitive, motivational and emotional functioning to occur. Individuals must expect that future outcomes are also uncontrollable in order for helplessness to be induced. According to them, the causal attribution individuals make determine the generality and chronicity of their helplessness as well as their later self-esteem. Thus, individuals who are prone to experiencing depression derive their vulnerability from tendencies to attribute negative, uncontrollable outcomes to internal, stable and global factors. Individuals with a depressive attributional style have learned through early experiences to believe that previous events in their lives were uncontrollable, and to expect that future outcomes will also be out of control. Thus, the onset of a depressive episode is precipitated by the occurrence of a negative event that triggers the expectation of the uncontrollability of future negative events.

Abramson, Metalsky and Alloy (1989) revised the learned helplessness model of depression. According to them, when confronted with a negative event, individuals who exhibit a depressogenic thinking style, defined as the tendency to attribute negative life events to stable and global causes, are vulnerable to developing depression because they will infer that: (a) negative consequences will follow from the current negative event, and (b) the occurrence of a negative event in their lives means that they are fundamentally flawed or worthless. Thus, according to the hopelessness theory, a specific cognitive vulnerability operates to increase the risk for depression through its effects on processing or appraisals of personally relevant life experiences.

Recent cognitive models of depression emphasise negative views of the self, and a deep-seated belief that one is defective, unworthy, unwanted, incapable of obtaining or keeping important sources of meaning and gratification. **Roberts and Monroe (1994)** adopt a multifaceted approach to dysfunctional self-processes. They assert that dysfunctions of the self contribute to vulnerability to depression, including: (a) possessing relatively few, rigid or externally based sources of self-worth, (b) abnormally low self-esteem that is triggered by relevant events or negative mood, or (c) unstable, highly fluctuating self-worth.

The current researcher is of the opinion that cognitive theory makes a significant contribution to the clarification of depression. Cognitive theories of depression focus on maladaptive cognitive patterns and distortions to describe the phenomenon of depression.

Depressed individuals engage in negative information processing about themselves, their world and their existence; they experience comparatively fewer positive reinforcements, and are alienated from interpersonal processes. In cognitive theory, cognitions like assumptions and thoughts affect individuals' behaviour.

3.4.1.4 Existential theory

Existential theory is based on the primary belief that individuals' desire to discover meaning is a basic motivation for most human behaviour. Consequently, depressed individuals' perception of themselves and their world, however distorted it may be is accepted as their own unique "here and now" and their own particular experience "of being in the world". Thus, depressed individuals can be understood in the way in which they live in their world without any reservations and preconceived ideas (Krauss & Krauss, 1990).

According to **Le Mappian and Ey** (1949, 1954, in Arieti, 1959), a depressive condition is constituted by an arrest or insufficiency of all the vital activities. It is a pathetic immobility, a suspension of existence, a syncope of time. As a consequence, individuals experience a feeling of incompleteness, of unreality and/or impotence; and a special, inhibitory way of living then ensues. It is also stressed that time is lost to these individuals. Only the past has meaning. Painful memories dominate their thinking and confirm their suspicions of unworthiness.

Frankl (1959) proposes a view of life that encourages looking for meaning. He is of the opinion that individuals want to realise values in their lives and to feel that they are achieving something with their lives. Individuals do not want to exist without purpose, life must mean something for them. According to Frankl, without a sense of purpose, life becomes empty and meaningless and an existential vacuum develops. The experience of this existential vacuum has been described as absurd and empty, which is extremely painful. Existential anxiety forms the basis of depression. Depressed individuals also develop a fatalistic outlook on life in which they view themselves as the helpless victims of circumstance.

Tellenbach (1961) states that depressive individuals' lives are characterised by a paradox. On the one hand, they are so sensitive to guilt that they will do anything to fulfil their

obligations, and on the other hand, they interpret these so exactly that they can seldom achieve their aspirations. What happens then is that the distance between being and aspiration becomes an abyss.

According to **Yalom** (1980), existential depression arises when an individual confronts certain basic issues of existence. He describes four such issues, namely death, freedom, isolation and meaninglessness. **Death** is an inevitable occurrence. All individuals wish to continue to exist and are terrified at the notion of non-being. Excessive fear results in heightened dysphoria. **Freedom** entails accepting responsibility for life. Actualising themselves and their world is a frightening aspect. Individuals who believe that they are not responsible for what happens to them in the world, and who displace responsibility to another, may develop feelings of fatalism and depression. Failure to accept responsibility is associated with depression. **Isolation** refers to an unbridgeable gulf between an individual and any other being. No matter how close individuals get to others, there is an ultimate separateness that remains. This experience of existential depression is not tolerated for long and produces an uncomfortable state of dysphoria. Individuals require meaning and fear. **Meaninglessness** implies a failure to find meaning in life, and a feeling that there is nothing to live for. It entails a lack of direction and provokes considerable distress. Accordingly, this meaninglessness is considered a symptom of depression.

In **Boss's** (1994) theory, the whole existence of depressed individuals fails to openly and responsibly take all the possibilities of relating to the world, which constitute their own genuine self. Consequently, their existence has no independent standing of its own and these individuals continuously fall prey to the demands, wishes and expectations of others. Depressed individuals try to live up to these foreign expectations as best they can in order not to lose the protection and love of their surroundings. They believe that their existence ought to be subordinate to that of others. But the longer they are governed by other ways of feeling, acting and perceiving the world, the more deeply in debt they become with regard to their fundamental task in life, which is to carry out appropriately, independently and responsibly all their authentic possibilities of relating to the world. Depressed individuals see themselves as nothing but emptiness, worthlessness and culpability. The openness of their world shrinks to one of failure, guilt and punishment. The multidimensionality of time is reduced to the past, which imprisons the future and has destroyed the present. The

severity of depression varies according to the degree to which they fail to exist in openness to the world and discover its full meaning.

In the current researcher's view, existentialism makes the least contribution to explaining depression. Existentialism is primarily descriptive rather than explanatory. Existential theory holds that individuals' perceptions of what they are and the unattainability of what they think they ought to be, are the core of depression.

In the light of the above theories, the current researcher concludes that the source of CABS depression essentially resides in:

- the nature of the threat (i.e., a loss of health and security)
- the nature of patients' reaction in similar situations in the past
- patients' distorted cognitions about themselves, surgery and the future

Consequently, it is likely that a negative feedback loop of perceived cognitive impairment and depressed mood operates so that CABS patients who feel depressed may focus more on their cognitive failures, perceive cognitive impairment, feel more depressed and continue to magnify cognitive errors, thus maintaining a mood state consistent with their perception of health.

3.4.2 Description of depression

Depression is and has been a universal human affliction (Hammen, 1997). It entails a low mood and a marked decline in interest. Feelings of sadness, pessimism, or hopelessness dominates, although sometimes anxiety and restlessness prevail (Dilts, 2001; Hammen, 1997). Severe depression may include tearfulness and an inability to enjoy usual activities. Depression can also be experienced as a numb or empty feeling (Dunitz, 1996).

Depression can be defined as a condition or state of intense despondency that is generally accompanied by feelings of inadequacy, uncertainty, pessimism about the future, as well as social withdrawal and lowered psychomotor activities. It occurs as a symptom in various psychopathological conditions or as a syndrome (Plug et al., 1997).

Depression is characterised by the presence of a number of symptoms which cluster together in several combinations depending on the individual. The general domains affected by depression include cognition, psychomotor disturbances, vegetative and anxiety symptoms (Hammen, 1997; Stefanis & Stefanis, 2002).

Depressed mood is the hallmark of all forms of depression. It is a sustained emotional state that is characterised by sadness, low morale, misery, discouragement, hopelessness, emptiness, unhappiness and pessimism. Sometimes the most apparent mood is irritability (Dilts, 2001). Not all depressed individuals manifest sadness or depression; some may report feeling a loss of interest or pleasure, listlessness or apathy. Anhedonia and loss of interest are symptoms closely associated with a depressed mood. Patients are unable to draw pleasure from going out, seeing friends and engaging in sport. Pastimes and even pleasurable relationships with family and friends may no longer appear enjoyable (Dunitz, 1996; Stefanis & Stefanis, 2002). Depression consists of more than just an emotional experience of being sad or low. Mood symptoms influence and interact with sets of other symptoms in the domains of cognition. Depressed individuals typically have negative views of self, their world and the future. They experience themselves as incompetent and worthless, are relentlessly critical of their own acts and characteristics and often feel guilty as they dwell on their perceived shortcomings. Low self-esteem and poor self-confidence are therefore a common attribute of depression (Hammen, 1997). Individuals may feel helpless to manage their lives or resolve problems. They may view their lives and future as bleak and unrewarding, feeling that change is essentially unattainable. Cognitions reflecting hopelessness about their ability to control desired outcomes may be common and the resulting despair may give rise to suicidal thoughts. In addition to negativistic thinking, depression is often marked by difficulties in mental processes involving concentration, decision making and memory (Alladin & Heap, 1991; Hammen, 1997; Stefanis & Stefanis, 2002).

Psychomotor disturbances are often observed, including agitation or retardation. Agitation is usually accompanied by extreme restlessness, anxiety, hand movements, fidgeting, self-touching and gesturing. In contrast, psychomotor retardation manifests as slowing of bodily movements, a mask-like facial expression, lengthening of reaction time to stimuli and increased speech paucity, fewer words, monotonous voice and less eye contact. Agitation may be more common in individuals who also experience anxiety symptoms,

while psychomotor slowing is thought to be more typical of depression (Alladin & Heap, 1991; Hammen, 1997; Stefanis & Stefanis, 2002).

Vegetative symptoms constitute the most biologically rooted clinical features. They are manifested as profound disturbances in appetite, sleep and decreased sexual desire. Reduced energy is a frequent complaint in depressive individuals. They complain of listlessness, lethargy, feeling heavy and leaden and lacking energy to undertake and complete tasks. Because of their apathy and diminished motivation, it is common for depressed individuals to withdraw from social activities or reduce their typical behaviours. Additionally, concomitant bodily sensations such as diffuse aches and pains, complaints of fatigue and physical discomfort are reported. Anxiety symptoms are frequently encountered in depression and should be considered an integral part of its clinical manifestation (Hammen, 1997; Schwartz & Schwartz, 1993; Stefanis & Stefanis, 2002).

Depression should not be confused with other mood conditions such as grief or loneliness (Berk, 2000b). Grief and depression share many common symptoms. A sense of loss, sadness, and indecisiveness; as well as tearfulness, poor concentration, guilt, disrupted sleep and poor appetite or overeating are common to both grief and depression (Wool, 1990).

Depression signifies an affective experience as well as a syndrome defined by operational criteria. As an affective experience, sadness or depressed feelings are common to all individuals and manifest themselves in different ways and different times in an individual's life. As a symptom, depression is present in several mental and physical illnesses and, as a syndrome, it is associated with specific mental and physical disorders. It can appear obvious or can be hidden or masked (Schwartz & Schwartz, 1993).

Grief is considered a healthy and important emotional response that follows a loss and the process through which individuals disengage from significant attachments (Baron, 1994). The grieving individual endures a succession of emotions that include shock, denial, loneliness, despair, social alienation, anger and depression (CBSH, 2001). A bereaved individual will be painfully sad but will generally not suffer a loss of self-esteem. In mourning, the loss is known to consciousness, and is concrete, and as a result, the world is

experienced as empty (Wool, 1990). Grief normally has a limited duration and symptoms resolve between three and six months (Barsky, 2001).

In **depression** the mood is colorless and a loss of self-esteem is a hallmark symptom. The loss is often not clearly apparent and frequently not conscious. For the individual experiencing depression, the self feels empty. Depression tends to be more disabling, interferes more substantially with a variety of personal, interpersonal and social areas of functioning and carries the risk of suicide. Both grief and depression are intense but depression tends to be more pervasive and to affect individuals' view of the world (Lespérance & Frasure-Smith, 2000; Schwartz & Schwartz, 1993).

Loneliness is a condition that may often be mistaken for depression. In fact, while loneliness and depression often go hand in hand, some researchers believe that lonely individuals may be effectively treated for depression. Of course, every individual feels lonely now and then; debilitating loneliness, however, is often characterised by misery, hollow feelings, unrealistic expectations and feeling removed from others. Shy individuals may be more prone to loneliness (CBSH, 2001).

The differentiation between normal and pathological depression is briefly addressed below.

3.4.3 Normal versus pathological depression

Depression is a normal part of everyday human emotion. Experiences ranging from a slightly noticeable and temporary mood decrease to a profoundly impaired and life-threatening disorder are common, so much so that it is important to separate normal "blues" from a pathologically depressed state (Stevens, Merikangas, & Merikangas, 1995).

Normal depression is a temporary state of sadness, discouragement and fatigue, generally occurring as a natural reaction to upsetting or stressful life events. It may even entail an exaggerated description of typical events, such as minor failures, disappointments and disruptions (Hammen, 1997). Moods associated with normal depression do not remain dysfunctional for very long. They may last a few moments, hours or sometimes a few days (7 to 10 days is normal), but cause little impairment. Sometimes additional experiences may include negative thoughts and feelings, pessimism and uncertainty about the future,

physical experiences of low energy, as well as reduced feelings of pleasure and motivation. Individuals retain significant control and depressive periods pass quickly. Transient depression is part of the everyday process of growth and development (Gotlib & Hammen, 1996; Marsella, 1994).

Pathological depression is more prolonged and persists over several weeks. As depression gets worse, it becomes more pervasive and a range of other symptoms develop, including negativity, thoughts of personal worthlessness and incapacity, guilt about past actions, pessimism and uncertainty about the future. Individuals may begin to think that they would be better off dead, and this may lead them to attempt suicide (Dunitz, 1996). The presence of these symptoms grows in complexity and severity and requires treatment. In addition, there is a marked change from previous functioning. It can cause disruption and impairment of behaviour, physical health, academic and job performance and the ability to handle everyday decisions and pressures. When depression becomes severe, psychotic episodes are not uncommon. The individual may experience hallucinations and delusions (Marsella, 1994).

3.5 DEPRESSION AND CORONARY ARTERY BYPASS SURGERY

Depression is the most prevalent psychological manifestation before and after CABS which may influence the rate of recovery (Andrew et al., 2000; Malphurs & Roscoe, 2001; Pirraglia et al., 1999). Patients with depression evidence a high level of medical complications during follow-up, such as MI, unstable angina and continued surgical pain. Depression significantly increases the risk of cardiovascular mortality, morbidity and poorer quality of life at six months after discharge (Burg et al., 2003; Greenwood, Muir, Packham, & Madeley, 1996). Furthermore, depression before CABS is likely to persist (Burg et al., 2003). The next section focusses on the prevalence, diagnosis and associated symptoms involved with CABS.

3.5.1 Diagnostic classification

The multiplicity of symptoms of CABS depression means that its manifestation may differ widely. The DSM-IV (APA, 1994) system defines several categories of depression that cut across the variables affecting CABS patients. The DSM-IV outlines each of the mood

postoperative patients with major depression before discharge, than those without depression. Depressive symptoms may last six months to one year or longer postoperatively (Lindal, 1990).

Some researchers found an increase in the prevalence of depression from the preoperative to postoperative period. Preoperative depression and anxiety have been found to be strong predictors of depression after surgery (Fráguas Júnior, Ramadan, Pereira, & Wajngarten, 2000). Research confirms that a relatively high rate of depressive symptomology exists in CABS patients preoperatively and that this rate increases postoperatively. The reported prevalence of preoperative depression ranges from 27% to 47% and postoperative depression from 19% to 61% (Pirraglia et al., 1999). Khatri et al. (1999) reported 30% of patients to suffer from significant depression prior to surgery and 25% following surgery, while 49% of the patients who had depression prior to surgery retained this diagnosis following surgery. Among the patients who were not classified as depressed, 14% were classified as depressed six weeks after surgery. McKhann et al. (1997) reported that 53% of patients with preoperative depression remained depressed one month postoperatively and 47% remained depressed one year postoperatively. Burker et al. (1995) found that 47% of CABS patients were classified as depressed preoperatively. This number increased significantly postoperatively with 61% classified as depressed. In a large outcome trial, 40% of the patients had significant preoperative depressive scores. Approximately 68% of all patients scored in the depressive range. Clinically significant depression has been reported in 54% of postoperative patients (Gold et al., 1995).

Edell-Gustaffson and Hetta (1999) found that 42,8% of CABS patients were depressed prior to surgery, 71,4% one month postoperatively and 35,7% at six months postoperatively. In a large trial, approximately 40% of the patients had scores suggesting depression. At six months postoperatively, however, approximately 68% of all the patients scored in the depressive range. New-onset depression accounted for nearly half of the patients. Multivariate analysis showed that social isolation was associated with new onset depression (Peterson, 1994).

Pirraglia et al. (1999) found that low social support, length of hospital stay and length of ICU stay were highly correlated and significantly associated with increased postoperative depression. Timberlake et al. (1997) confirmed a 37% incidence of clinical depression

preoperatively. At eight days, this figure had risen to 50%, but at eight weeks it had decreased to 24% and at twelve months to 23%. Those assessed as having been depressed preoperatively had a higher incidence of postoperative depression. Connerney et al. (2001) found that 28% of CABS patients met the DSM-IV criteria for major depressive symptoms before discharge, and were more than twice as likely to die or be readmitted for cardiac causes. At twelve months, 27% patients had major depressive disorder and 20% had depressive symptoms. Andrew et al. (2000) found that the incidence of preoperative depression was 16% while the incidence of postoperative depression remained stable at 19%. Patients' preoperative mood was found to be a strong predictor of postoperative mood states.

Many studies have found quality of life and psychosocial functioning to be impaired after CABS in patients who show signs of depression before the surgical procedure (Burg et al., 2003; Perski et al., 1998). Researchers have found depression before CABS to predict quality of life factors such as chest pain or pressure, shortness of breath, fatigue, sleep problems and ability to return to work (Jenkins, Stanton, & Jono, 1994; Perski et al., 1998). Depression is strongly associated with postoperative maladjustment and a poorer cardiac prognosis (Martin & Thompson, 2000).

The current researcher finds that there is convincing evidence that depressive symptoms are highly prevalent in CABS patients and that they have been shown to increase all-cause mortality.

3.5.3 Dimensions of depression

Depression that CABS patients normally experience after surgery presents as a multidimensional phenomenon which varies widely in severity and duration. The features can be so elusive or ambiguous that it is often insufficiently recognised or misdiagnosed, because patients do not complain about their symptoms or even deny that depression exists (Cohan et al., 1998; Ockene et al., 1995). From the literature review, the current researcher identified seven major dimensions of CABS depression as described below.

3.5.3.1 Physiological dimension

Patients may show the following physical symptoms:

- CABS patients indicate a loss of energy and unusual physical tiredness as their core feeling. They feel depressed because of a lack of energy (Appels, 1997).
- Fatigue and exhaustion are often regarded as a symptom of bypass depression (Burg et al., 2003; Pick, Molloy, Hinds, Pearce, & Salmon, 1994). Fatigue might also be an expression of the patients' emotional state following surgery. A sad mood is often superimposed on a state of fatigue (Appels, 1997).
- Sleep disturbances may emerge, including having trouble falling asleep, waking repeatedly, early morning awakening and fragmented sleep (Burg et al., 2003; Edell-Gustaffson & Hetta, 1999).
- A change in eating habits may be experienced. Many patients report decreased appetite and weight changes (Cohan et al., 1998).
- Complaints about anxiety and nervousness sometimes accompany bypass depression (Barsky, 2001; Ockene et al., 1995).
- Sexual activity is diminished, because most patients consider intercourse as representing the peak of physical activity (Ockene et al., 1995).
- Increased physical symptoms (angina) attributed to bodily illness are experienced (Burg et al., 2003; Cohan et al., 1998).
- Impaired perception and visual disturbances are the most frequently reported psychosomatic symptoms (Vingerhoets, 1998a).
- Impairment is experienced in functional status and activities of daily living, including aspects of domestic functioning, social functioning and physical ability (Steffens et al., 1999).
- Recommended limited activity during the postoperative period may contribute to inactivity and thus account for less vigour and greater fatigue and depression (Pick et al., 1994).

3.5.3.2 Cognitive dimension

The following symptoms may be experienced:

- Disorientation, distorted perception, confusion, difficulty concentrating, impaired memory and faulty judgement (Gordon & Gibbons, 1991).
- Difficulties with problem-solving, clarity of thinking, indecisiveness, divided attention and sustaining attention (Vingerhoets, 1998a).
- Trouble with simple arithmetic (Gordon & Gibbons, 1991).
- Objective memory problems with the acquisition of new material following CABS (Vingerhoets, 1998a).
- Distorted cognitions about the self and others (Appels, 1997).
- A dense fog of hopelessness and despair (Cohan et al., 1998).
- Despondency and pessimistic thinking about the future (Ockene et al., 1995).
- Thoughts of their own demise (Shuster et al., 1992).
- Recurrent thoughts of death (Cohan et al., 1998).
- Depressive thoughts about negative personal consequences (e.g., loss of independence, decreased earning power) (Burker et al., 1995).
- Cognitive distortions, magnification of negative events and minimisation of positive events (Khatri et al., 1999).
- Magnification of everyday normal failures and performance seen as deteriorated (Vingerhoets, 1998a).

3.5.3.3 Behavioural dimension

Patients may show the following behaviours:

- Loss of drive and persistence because of energy loss (Cohan et al., 1998).
- Psychomotor retardation with prolonged response or motor restlessness (Shuster et al., 1992).
- Feelings of unusual tiredness, agitation, increased irritability and hostility (Appels, 1997).
- Loss of interest in ordinarily enjoyable activities and lack of pleasure (Cohan et al., 1998).

- Avoidance of all pleasurable activities (Barsky, 2001).
- Restrictions on behaviour, becoming overly dependent on family, too frightened to carry out activities of daily living (Cohan et al., 1998).
- Emotional vulnerability resulting from feelings of giving-up (given-up response) (Barsky, 2001).
- Frequent, spontaneous crying spells (Cohan et al., 1998).

3.5.3.4 Affective dimension

The following emotions may be experienced:

- Depressive affect (Burg et al., 2003).
- A marked loss of self-esteem (Appels, 1997).
- An injury to self-image (ego-infarction), including changes from feeling whole to feeling damaged; from feeling competent and self-sufficient to feeling incompetent and dependent on others (Cohan et al., 1998).
- Mourning the loss of a part of themselves, their sense of health, strength, intactness, vitality and independence (Appels, 1997).
- A sense of guilt, worthlessness and self-reproach (Cohan et al., 1998).
- Loss of a sense of humour (Cohan et al., 1998).
- Becoming angry and demanding (Appels, 1997).
- Irritability, masking depressive presentations (Fráguas Júnior et al., 2000).
- Decreased interest or pleasure in daily activities (Ai, Dunkle, Peterson, Saunders, & Bolling, 1998).
- Shallow or labile affect and mood swings (Fráguas Júnior et al., 2000).

3.5.3.5 Interpersonal dimension

Interpersonal interaction may be characterised by:

- Avoidance behaviour or withdrawal (Appels, 1997).
- Limited social interaction with relatives (Allan & Scheidt, 1998).
- Decrease in religious or organisational activities (Allan & Scheidt, 1998).
- Unnecessary restriction of social activity (Dennis, 1995).

- Lack of social support (Bosworth et al., 2000)
- Lower levels of perceived social support and a lack of friends (Bosworth et al., 2000).

3.5.3.6 Historical dimension

Patients may show the following:

- Severe depression associated with previous psychiatric morbidity of various affective or psychological disorders, prior to surgery (Allan & Scheidt, 1998).
- Depression associated with recent loss or with life stressors in the year prior to CABS (Pirraglia et al., 1999).
- A history of previous heart surgery and the severity of CHD (Rumsfeld et al., 1999).

3.5.3.7 Symbolic dimension

Poor adjustment may be related to misconceptions about the implications of CABS. Factors that contribute to depression are found in societal beliefs that could be called cardiac myths. According to Hackett (1985), Broome and Llewellyn (1995) and Papadantonaki, Stotts, and Paul (1994), some common myths about CABS include the following:

- The feeling of weakness is a harbinger of cardiac decline.
- After CABS patients are over the hill; not only have they reached maturity, but they have entered physical and psychological senility.
- All excitement must be avoided, it is too risky to watch exciting movies, sporting events, thrilling stories and so on.
- Movement of the arms must be kept below the head.
- Isometric exercises are dangerous and contraindicated.
- Driving a car is apt to produce angina.
- Deep sleep is dangerous for CABS patients, hypnotics should be avoided. Angina and sudden cardiac death are more apt to occur in sound than in light sleep.
- CABS patients cannot do much of anything, including work.
- CABS patients have been discharged from the mainstream of predominantly masculine life.

- Not being able to perform as in the past may cause patients to feel as though they are only a partial person (an invalid).
- Patients may no longer have sex because intercourse means a rise in systolic blood pressure and pulse rate that could lead to death at the moment of orgasm.
- The risk of a recurrence of CABS stays high indefinitely.
- The main artery to the heart is blocking up.
- When the doctor says, “You will be all right if you are careful”, he really means: “If you are not careful, you will die.”

The current researcher is of the opinion that each of the above dimensions may reflect depressive patterns in CABS patients, despite the fact that they may not feel depressed and may not experience depression as a presenting complaint.

In summary, it is fair to conclude that depression has a pervasive impact on CABS patients' prognosis. The multiplicity of symptoms of depression means that CABS patients differ from one another in the manifestation, severity and form of depression. Whether the impact of depression is mediated through physical or psychological pathways or an interplay between the two, the net effect is certain: depression has a significant impact on morbidity and quality of life in CABS patients. Early recognition and appropriate treatment of depression are essential for optimising the psychological outcome of CABS. Tailored therapies for patients at risk may have clinical utility in that reduction may lead to a decreased risk of future cardiac events.

The psychological consequences of CABS experienced by spouses are discussed in the following section.

3.6 THE CORONARY ARTERY BYPASS SPOUSE

The threat associated with CABS in patients causes a variety of negative outcomes for the whole family, in particular spouses who tend to be most affected by it (Mahler & Kulik, 2002; Van der Poel & Greeff, 2003; Yates, Bensley, Lalonde, Lewis, & Woods, 1995). The psychosocial strain, negative mood and consequences imposed on the spouse may be equal to or greater than those experienced by the patient (Revenson, 1994). Spouses often feel vulnerable, unsupported and overprotective towards the patient. They may become

overwrought so that they themselves become anxious, depressed, have little life satisfaction and show a low self-concept (Thompson & Pitts, 1992). While considerable attention has been given to the psychosocial sequelae for the patient, the impact on the patient's spouse remains largely unexplained. Accordingly, the purpose of the following section is to highlight the major areas of concern and adjustment problems of the spouse.

3.6.1 Spousal fears and concerns

According to the current researcher, spouses are confronted with newfound fears and concerns emerging from their partners' CABS. The current researcher identified the following fears and concerns from the literature review and personal contact with spouses of CABS patients:

3.6.1.1 Uncertainty

All spouses encounter feelings of crushing uncertainty and shock. Immediate concerns centre on fears of losing their partners, death, disability, their partners' initial conditions and uncertain futures, and having to face the world alone (Theobald, 1997). Spouses frequently express fears related to the responsibility of looking after the patients and being unable to handle any problems the patient may encounter after returning home (Lenz & Perkins, 2000). Another frequent fear is of provoking another cardiac event by doing or saying anything that might cause the patient worry or annoyance (Lewin, 1995).

3.6.1.2 Hospital environment

Spouses feel uncomfortable in the unfamiliar hospital environment, which may influence their anxiety levels. Spouses must learn to navigate ICU environments. Fast-paced and highly technical, ICUs are subcultures with their own languages, hierarchies, rules and values which may increase the spouses' sense of powerlessness and leave them feeling like outsiders (Delon, 1998).

3.6.1.3 Financial circumstances

Some spouses fear a change in the family's financial circumstances and are anxious about the impact of medical care costs. Most spouses of CABS patients perceive themselves as being under financial strain or economically inadequate, fearing that they might become the sole breadwinner in the household (Ockene et al., 1995).

3.6.1.4 Lack of information

A lack of information heightens frustration and anxiety. Spouses need to be continually informed about procedures, equipment, management and patients' progress (Mahler & Kulik, 2002). They want information about patients' feelings and wish to talk to them about their own concerns (Theobald, 1997). Spouses continue to feel insecure when they assume responsibility for patients' care at home without the necessary information (Davies, 2000).

3.6.1.5 Need for support

Spouses feel isolated and cut off from emotional support and have less access to psychological support systems (Shanfield, 1990). Consequently, they have little, if any, opportunity to vent their emotions (Ockene et al., 1995).

3.6.1.6 Social concerns and leisure activities

An increase in caregiving demands results in restricted activity patterns, including social and recreational activities, and psychological morbidity may develop (Nieboer et al., 1998).

3.6.1.7 Relationships

Families are frequently thrown into disequilibrium and self-imposed, impaired communication and altered effective responses are a frequent occurrence (Shanfield, 1990). Friends can also be an annoyance during convalescence. They unconsciously put

great strain on the family and the patient by excessive visits and telephone enquiries. Instead of giving encouragement, they may do harm (Gordon & Gibbons, 1991).

3.6.1.8 Lifestyle changes

Spouses become anxious when confronted with lifestyle changes, including increases in responsibility for family maintenance, patients' care and management of household routines. This covers changes such as more active roles in disciplining the children, increases in housework, shopping activities and decision-making. Spouses now have to assume new guidance roles to keep patients from doing harm to themselves by overexertion and strain. Patients have to modify their lifestyles and spouses are asked to support their partners in these lifestyle changes and are strongly encouraged to make similar changes in light of their own risk factors (Delon, 1998).

The effect of distress experienced by patients is reflected in spouses' physiological, psychological and marital functioning. This aspect follows next.

3.6.2 Distress of CABS spouses

The distress experienced by CABS patients affects the overall functioning of their spouses as revealed in their psychological, physiological, marital, familial and occupational functioning. Such distress could have adverse effects on the recovery of CABS patients (Ebbesen, Guyatt, McCartney, & Oldridge, 1990; Von Dras, Siegler, Barefoot, Williams, & Mark, 2000). The impact of the distress of CABS spouses is discussed next.

3.6.2.1 Physiological functioning

Spouses may experience anxiety, depression, guilt and fear, frequently expressed as psychosomatic complaints, including non-specific chest pain, palpitations, increased blood pressure, headaches, sleep and appetite problems, fatigue, infections, gastrointestinal symptoms and a loss of sexual interest. These symptoms may last for several months after their spouses' surgery. Exacerbation of pre-existing illness or the emergence of new symptoms in spouses is common during CABS (Delon, 1998).

3.6.2.2 Psychological functioning

Spouses frequently suffer emotional distress, becoming anxious, tearful and frustrated, and may experience mood swings (Shanfield, 1990). Underlying feelings of anger, frustration or hostility directed at patients lead to feelings of guilt. Spouses think that they caused their mate's heart problem and are not able to express any of these negative emotions for fear of triggering another cardiac event (Gordon & Gibbons, 1991). These feelings are disguised, rarely expressed and are negatively associated with the capacity to endure emotional stress (Davies, 2000). Spouses commonly experience changes in their self-concepts and perceived roles as spouses and parents (Stern & Pascale, 1979). Some spouses contemplate suicide as they feel overwhelmed by circumstances, and feel alone, isolated and cut off from emotional support (Theobald, 1997). In severe cases psychotic symptoms, such as disturbed mood and thought processes, including paranoia and delusional thinking, may occur (Arefjord, Hallarakeri, Havik, & Maeland, 1998).

Dependent spouses are particularly prone to adjustment difficulties. Dependent or depressed spouses may not be able to provide adequate support for patients and this is likely to be reflected in prolonged convalescence (Shanfield, 1990). Faced with the impossible situation of wanting support from an unsupportive spouse, and not being able to obtain it as in the past, dependent spouses may crumble in a welter of anxiety, depression and confusion (Stern & Pascale, 1979).

Those with a diminished capacity to express their feelings may experience depression in the recovery period. They appear to be particularly at risk of developing psychological problems (Shanfield, 1990). Spouses are overwhelmed by the seriousness of CABS and present with high levels of denial and confusion (Ockene et al., 1995). Fearing that overt expression and resentment could injure the patient, they may become overprotective and afraid to make demands on their spouses for fear of upsetting them or producing a relapse. This may create stressful environments in which psychological effects may result in poorer postoperative recovery (Dracup, 1994).

3.6.2.3 Marital functioning

The aspects of the marital relationship that are influenced by CABS are intimacy, communication, boundaries, roles, the sexual relationship and marital coping (Bebbington & Delemos, 1996; Rolland, 1994). Marital adjustment becomes more difficult and spouses have more conflict and disagreements. Spouses and children may be embittered by the new demands placed on them and may become overtly angry and withholding. Spouses' emotions are likely to run to blaming the patient for disrupting family life (Gordon & Gibbons, 1991). Spouses' anxieties about many aspects of the patients' rehabilitation, informational needs and their personal responses to their partner, as well as differences between the couple's perceptions of medical instructions and responsibilities during the recovery process, are directly related to and may contribute to marital dysfunction after CABS (Miller et al., 1990).

Preoperatively, spouses feel they can share their problems with the patients, whereas postoperatively they feel more constrained and handle problems on their own. They feel that they cannot share their emotions and perceptions with their marital partners with the same degree of ease as previously. They also find that their marital partners misunderstand them (Van der Poel & Greeff, 2003). Many spouses feel trapped in double binds. Either their spouses accuse them of being overprotective if they show concern, or they are chastened for being uncaring if they are less involved (Lewin, 1995). The balance of power between patients and spouses is also altered, which can lead to emotional turmoil and marital dysfunction (Shanfield, 1990). This is particularly true in cases involving children, where spouses feel they cannot handle situations alone, yet hesitate to disturb the patients about them. Children often respond with a combination of guilt and misbehaviour (Gordon & Gibbons, 1991). Not wanting to disturb the patient and fearing that the wrong words might kill them results in marital estrangement (Stern & Pascale, 1979).

Depression in patients also results in declining sexual activity. Although spouses are instructed about sexual functioning, many still fear that sexual activity will be harmful to the patients. Early on after CABS, sex is usually not an issue for spouses as they are waiting for the patients' recovery (Shanfield, 1990). The quality of the marital relationship may be an important determinant in psychological recovery. Marriages high in intimacy appear to have a buffering effect, protecting the patients from anxiety and depression

(Lewin, 1995). Patients with high levels of marital conflict experience most residual disabilities (Shanfield, 1990).

The family's ability to provide support to the patient is, to a large extent, dependent on the family members' own psychological strength, the distress they experience and their assessment of the gravity of the patient's illness. Families and patients often have a sense of being cast adrift during the first few weeks after discharge as they make the adjustment from intense contact and supervision in the hospital to the far more infrequent caregiver contact once the patient is home (Ockene et al., 1995).

3.6.2.4 Familial and occupational functioning

CABS heralds sudden and often permanent alterations in patterns of daily living and activities in both patients and families. Early on after CABS, spouses face the practical problems of managing the household in the absence of the patient. Spouses are faced with the added burden of maintaining their families (e.g., arranging for childcare during visits to the hospital, paying bills and performing essential household chores) (Shanfield, 1990). They may be forced to assume new roles incompatible with those they routinely perform (Allan & Scheidt, 1998).

The balance of power is altered and spouses attempt to handle all the family problems without asking for support from the "invalids". This may cause the spouse to feel stressed and/or resentful (Lewin, 1995). Some spouses temporarily stop working to help their partners during the early recovery period. Some spouses who have not previously worked, start to do so to earn money or to deal with their depression (Shanfield, 1990).

3.6.3 Empirical findings concerning the impact of CABS on spouses

There is substantial evidence that spouses of CABS patients find the pre-, intra- and postoperative recovery periods very stressful (Mahler & Kulik, 2002). Studies confirm that spouses experience high levels of distress after their partners' CABS. Spouses of patients with cardiac disease report high levels of anxiety, depression and declining marital satisfaction (Thompson & Meddis, 1990). Without exception, all spouses reported significant anxiety levels (43%) preoperatively, and 45% of spouses felt that their health

had suffered because of CABS (Mulgan & Logan, 1990). Spouses who are helpful, supportive, worried and attentive reported poorer physical health at seventy-two months after their partners' CABS (Sullivan et al., 2001). Miller et al. (1990) report an increase in the family's disequilibrium because of spouses' anxieties six months after CABS.

In a pilot study by Goldschmidt, Brooks, Sethia, Wheatley, and Bond (1984), 68% of spouses reported current emotional problems attributed to difficulties stemming from their partners' CABS. According to Dracup et al. (1984), spouses described feeling severe emotional distress at the one-year follow-up and 20% reported a deterioration in their marriages. Similarly, they all admitted feeling miserable and depressed, although these feelings were generally not rated as severe as the anxiety (Mulgan & Logan, 1990).

Langeluddecke, Tennant, Fulcher, Barid, and Hughes (1989) found that the level of psychological distress in the spouses of CABS patients during the preoperative period was similar to that of patients themselves. They reported that 54% of spousal depression prior to surgery and higher levels of state anxiety (the mean of 39.9 falling within the 70 to 80th percentile) than those observed in the general population. Conway, Skelton, O'Rourke, Cay, and Pentland (1994) found that symptoms of anxiety are more prominent in the spouse (41%) than in the patient (25%). Spouses were significantly more likely to be anxious preoperatively than patients.

Research shows that spouses' psychological distress exceeds that of patients. Engelman et al. (1994) report higher depressive symptom levels in the spouses both preoperatively and throughout the recovery period than in the patients. Spouses with psychological problems that predate CABS have higher levels of severe psychological symptoms one year after CABS (Shanfield, 1990).

The current researcher found no references to therapeutic interventions with spouses in spite of the wide recognition of their raised levels of distress in the context of their partners' CABS, as well as the broad acknowledgement of their primary, critical support role after CABS. The dearth of interventions with spouses as well as of studies evaluating the impact of therapeutic interventions with spouses necessitates addressing the concerns of CABS spouses. Better preparation of spouses might benefit patients' emotional and physical recovery after hospital discharge. For the patients, the responsibility for health

shifts to their social network to a greater degree. The lack of research in this area suggests that further investigation is needed to assist spouses confronted with this type of major life crisis. It seems that their existential plight has been overlooked completely, perhaps as a result of an over-concern with their stricken partners. Thus, in the context of the new non-racist, non-sexist society in the new South Africa, the needs and stresses of CABS spouses have to be addressed as a matter of urgency, given the extremely high prevalence of heart disease in South Africa. This, then, is one of the aims of the current study.

3.7 SUMMARY

The occurrence of CABS is a serious life crisis that often dramatically alters the life of patients and their families. It may lead to major changes in life patterns, including those affecting work, family, financial circumstances and relationships. Values and priorities may be changed. The perception of life itself may be altered.

Comorbidity is the most common psychological disturbance in couples who experience a sense of loss, uncertainty and vulnerability. Increased feelings of anxiety and depression have been noted, both before and after surgery. Sources of anxiety include fear of death, threats of long-term disability, financial drain of hospitalisation, ability to return to work, resumption of activities and the necessity of making lifestyle changes. Although most couples adjust well after these periods of distress some experience longstanding emotional distress and family turmoil. Couples become depressed as a result of the persistent distress and a corresponding loss of strength. Clearly, many patients have difficulties in adjusting psychologically, while some report more problems than others.

Failure to recognise anxiety and depression is often complicated by an overlap in the vegetative symptoms such as fatigue and sleeping problems. It is assumed that these problems are associated with feelings of anxiety and depression rather than being a manifestation of the patients' actual somatic status. These negative mood states often remain undiagnosed and inadequately treated as couples deny symptoms or selectively complain of somatic symptoms. Preoccupation with these symptoms can often result in a cycle of heightened somatic concern and escalating symptoms of anxiety and depression may have a major impact on patients' long-term quality of life.

In considering the negative prognostic implications of anxiety and depression, those patients reporting escalations of problems should be identified at an early stage and offered psychological support. Although physicians are competent in the management of CABS and its technical complications, patients often remain poorly equipped psychologically to manage the psychological effects of CABS that significantly disrupt their recovery. It is hoped that the literature review may sensitise professionals involved to identify couples' emotional difficulties and develop effective psychological interventions to alleviate their distress. Improvement of assessment is required to understand the relationships between medical, somatic and psychological factors. Psychological interventions tailored at diagnosing and treating these negative mood states is therefore crucial in planning the best preparation and rehabilitation for couples to return to their normal physiological, emotional and family equilibrium.

In this regard, an understanding of ego strength is an important index in planning intervention strategies. Chapter 4 elucidates the concept of ego, ego strength and hypnotherapeutic ego strengthening.

CHAPTER 4

HYPNOTHERAPEUTIC EGO STRENGTHENING

4.1 INTRODUCTION

CABS remains a stressful experience for many patients and their spouses (Mahler & Kulik, 2002; Van der Poel & Greeff, 2003). When their fears and concerns are not dealt with, patients may face psychological disturbances and poor physical recovery (Linden, 2000; Moore & Dolansky, 2001). Hypnotherapy may be a potent source of assistance for couples experiencing CABS and its consequent psychological comorbidity (Fredericks, 2000, 2001; Sapp, 2000), as it is increasingly being recognised as a powerful vehicle to facilitate healing and recovery (Fredericks, 2000, 2001; Fricker & Butler, 2001; Olness & Kohen, 1996). It may be a powerful modality to help couples cope with hospitalisation and surgery and can be of great benefit because it can regulate inner states, and is also a valuable gateway to enhance communication between mind and body. It will also be explained that HES can increase the scope and functional capacity of CABS couples' ego and utilise their hidden powers to reduce the impact of surgery and facilitate their coping abilities after CABS.

This chapter focuses on HES as an intervention for the surgical preparation of CABS couples. Ego, ego strength and the effect of surgery on the ego's functional capacity as well as hypnosis, hypnotherapy and a research review of hypnosis and surgery are discussed. Finally, HES is examined and a model of HES for CABS couples is presented.

4.2 THE EGO AND EGO STRENGTH

A discussion of the ego and ego strength is warranted at this stage before hypnotherapy and HES can be explained.

4.2.1 Description of the ego

The ego is the most conscious part of the mind that deals with reality. This is a difficult concept because it is highly abstract and is not necessarily homogeneous. The literature includes many different perspectives, some of which are mentioned below.

In pre-psychoanalytic theory, the ego was conceived primitively as representing the person, self or consciousness. **Freud's** (1897, in Gill, 1967) ego referred to a conscious and unconscious awareness of various aspects of an individual's primary body image and a subjective sense of self. During this phase the concept of defence evolved. A second contribution to the concept of the ego was the central role attributed to external reality. The conception of the secondary process, the reality principle and the analytic process of repression were introduced. The secondary process provided a conception of reality relations and the reality principle provided the analysis of the ego's means of functioning. The ego acquires its energy from the id and endeavours to serve the id by realistically meeting its demands. The interest in defences declined and was replaced by the global concept of repression.

Toward the end of his career, **Freud** (1938, in Kaplan & Sadock, 1998, p. 140) gave his most comprehensive description of the ego:

Here are the principal characteristics of the ego. In consequence of the pre-established connection between sense and perception and muscular action, the ego has voluntary movement at its command. It has the task of self-preservation. As regards external events, it performs that task by becoming aware of stimuli by storing up experiences about them (in the memory), by avoiding excessively strong stimuli (through adaptation), and finally by learning to bring about expedient changes in the external world to its own advantage (through activity). As regards internal events in relation to the id, it performs that task by gaining control over the demands of the instinct, by deciding whether they are to be allowed satisfaction, by postponing that satisfaction to times and circumstances favourable in the external world, or by suppressing their excitations entirely. It is guided in its activity by consideration of the tension produced by stimuli, whether these tensions are present in it or introduced into it.

Hartmann (1964) introduces a second important development in the concept of the ego with his emphasis on its autonomy. In contrast to Freud's view that the ego emerges out of the id; Hartmann proposes that both ego and id originate and develop independently. He elaborates on the concept of the ego and considers it both a system and an organiser. According to Hamilton (1992, p. 22), Hartmann views the ego as an agent, a balancer and central regulator. He describes the system ego "as the agent of centralised, functional control" which regulates "the functions of differentiation, synthesis, integration and balancing in the realms of perception, cognition, impulse control and motor function". Ego functions such as perception, memory, intelligence, thought processes, motility and reality testing have a "primary autonomy" and do not develop from the frustration of drives, which he called the conflict-free ego spheres. Other ego functions can arise or lose their autonomy by their connection to conflict. Once neutralised, they develop a secondary autonomy and serve adaptive purposes. For Hartmann (1964), the ego comprises a group of functions which include defences and adaptive, healthy mechanisms which perform its synthesising function.

Erickson (1975, in Engler, 1995) emphasises the importance of social interactions in the conceptualisation of the ego and believes that many aspects of ego functioning are unconscious. Erickson views the ego as the central organising agency of the personality and the master of the id, external world and superego. According to Erickson, the ego has an overall unifying purpose that leads to consistent behaviour. The ego learns skills and adaptive techniques, such as the ability to deal with stress, resolve vital conflict, recuperate and contribute to identity formation. The ego has the positive role of maintaining effective performance. Erickson also describes the ego as creative and able to find creative solutions to problems that beset the individual at each stage of life. When necessary, the ego reacts with renewed vigour and resilience, and thrives on conflict and crisis. For Erickson, the ego is positive and powerful, and is an adaptive force which gives coherence to experiences. The ego is the strong, vital, positive, organising capacity of the individual that provides the strength to reconcile discontinuities and ambiguities.

Frankel (1984) describes the ego as all that the individual is aware of and as the sense of self; for all practical purposes, the ego is what is conceived of as personality and the perception of reality. The ego is developed through the interrelationship of the individual's early childhood experiences and the primitive drives in the id. It is the ego that acts as the

executor of the conflicts and struggles in the id, the values and moral attitudes of the superego, and the demands of reality. The ego has a crucial and central role in dealing with internal and external conflicts. The ego is able to perceive reality and begin problem solving. As the ego gathers its resources to deal with conflict, the need to block id impulses becomes less. The ego separates present reality from past history, allowing for more accurate assessment of environmental demands and for problems to be confronted. It thus increases the likelihood that resolution will occur.

Hamilton (1992) defines the ego as an abstraction denoting a set of mental functions of differentiation, integration, balancing and organising in the realms of perception, memory, cognition, emotions, actions and the demands of conscience. The ego compares, contrasts and decides. The ego cannot be experienced subjectively, because it is the “observer within the observed” (p. 22). The ego is the organiser of experience, not the organisation, nor the self. The ego is central to the individual’s personality, yet unknowable. The ego’s functions can be measured and observed from outside, but it can never be known subjectively because it is not a person, place, thing, idea or fantasy.

Vaillant (1993) views the ego as an elusive metaphor. The ego remains an invisible abstraction which can be identified through its functions and results. It conveys the mind’s capacity to integrate inner and outer reality, blend past and present experience and synthesise ideas with feelings. The ego also encompasses all those complex behaviours in which the individual’s brain engages. The ego does not have experiences, it is an organising mental apparatus that is the sum of the integrated central nervous system. The ego works not only for adaptation and mental synthesis, its wisdom also encompasses defence and creativity. The ego’s tasks involve not only the mastery of intimate relationships and identification with mentors, but the capacity to compare and sustain paradox and ambivalence. The wisdom of the ego lies in creating an optimal balance between self-deception and accurate appreciation of inner and outer reality. In some ways, the ego and creativity are one and the same.

Celinski (2001) describes the ego as a psychophysiological structure representing a sense of identity; it is creative and, because of this, unique to the individual. It has a physiological basis as it has an ability to trigger energy to advance its interests and defend its stability. According to him, the ego serves as a gateway for information and experiences

that are either absorbed and integrated with the rest of the ego, or suppressed or ignored. The ego has the ability to ascertain its stability and to increase the chances for successful functioning of the whole individual based on what the ego recognises as promoting its own sustenance and interests. The immature ego is constantly threatened by experiences which may potentially cause its fragmentation; for example, perceived danger elicits anxiety and a need to defend its cohesiveness. In its major role, the ego organises an individual's experiences in the form of metaphors that conceptualise both life problems and solutions, and imposes its objectives on reality by implementing certain goal-oriented plans so that the individual's needs are satisfied. The ego can defend self-created images by expending great effort and by suppressing everything that is not identified as a part of itself. In cases of irreconcilable differences, it may even attempt to recreate reality on the level of imagery in order to maintain its internal coherence.

The ego was previously viewed as a single construct denoting a set of mental functions. The current researcher wishes to expand on this viewpoint by broadening the concept of the ego to encompass not only the adaptive and executive aspects of the mind, but to also include a spiritual aspect. It is the current researcher's contention that to understand the concept of the ego, it is necessary to recognise the holistic nature of the individual and the multidimensionality of the ego. The ego can be defined as a dynamic, evolutionary process which includes a duality of ego and can be divided into the lower and higher ego. The ego deals with the capacity of the integrated mind to accommodate and assimilate the physical as well as spiritual dimensions of existence, which are all interconnected.

The **lower ego** (psychophysiological) exists within the physical realm and represents the conscious part of the ego. The lower ego in its major role organises individuals' experiences that conceptualise both life problems and solutions, and imposes its objectives on reality by implementing certain goal-oriented plans so that the individual's emotional needs are satisfied.

The **higher ego** (spiritual) exists beyond the physical dimension, outside individuals' conscious awareness. It answers to individuals' spiritual needs. The higher ego is the individual's most inner, vital sense of meaning. The main function of the higher ego is to deepen meaning and experience during the individual's search for unity and wholeness which is experienced as a perfect state of love, harmony and peace.

Satisfactory functioning is related to individuals' ability to integrate various aspects of their psychophysiological and spiritual existence for the purpose of achieving a higher level of adjustment. Successfully achieving goals confirms accuracy of judgement, enhances confidence and empowers the individual, which is often viewed as a purpose in life and a measure of worthiness. If both the higher and lower egos' attempts to achieve objectives are thwarted, the frustration leads to fear, withdrawal, depression and destructive behaviour. According to the current researcher, the health of the body begins to deteriorate when physical, emotional and spiritual processes become disintegrated and fail to work in harmony. CHD may be a frequent result of this disturbed relationship.

The ego may best be understood and evaluated in terms of the complexity of its functions which contribute to its mediating role.

4.2.2 Functions of the ego

The most comprehensive and systematic effort to describe the numerous functions of the ego was made by the psychoanalysts **Bellak, Hurvich, and Gediman (1973)**. The current researcher has further systemised Bellak's views with reference to other contributors. This conceptualisation is summarised in table 4.1.

Table 4.1 The functions of the ego

i) Relation to reality	This refers to the ego's capacity for maintaining a relationship to the external world. It may be divided into the following three components:
a) Sense of reality	<p>This includes:</p> <ul style="list-style-type: none"> • the ability to experience external events as real and embedded in a familiar context • the extent to which the individual's body and its functioning and behaviour are experienced as familiar and belonging to the individual • the degree to which the individual has developed individuality, uniqueness, a sense of self and self-esteem

	<ul style="list-style-type: none"> • the degree to which the individuals' self-representations are separated from their object representations
b) Reality testing	<p>This includes:</p> <ul style="list-style-type: none"> • the capacity to distinguish between internal fantasy and external reality • accuracy of perception of external reality and internal fantasy
c) Adaptation to reality	<p>This includes the capacity to use the individual's resources to develop effective responses to changing circumstances on the basis of previous experiences of reality.</p>
ii) Judgement	<p>This includes:</p> <ul style="list-style-type: none"> • the ability to anticipate the appropriateness and consequences of intended behaviour • the extent to which manifest behaviour is a reflection of the awareness of these consequences
iii) Regulation and control of instinctual drives	<p>This includes:</p> <ul style="list-style-type: none"> • the capacity to direct impulse expression • the effectiveness of postponement, delay, control or discharge of urgent affects and impulses • the ability to tolerate anxiety, frustration and unpleasant emotions without becoming overwhelmed
iv) Object relationships	<p>This includes:</p> <ul style="list-style-type: none"> • the capacity to form and maintain mutually satisfying relationships, related to patterns of internalisation, stemming from early interactions with parents and other significant others • the development of an individual's internalised sense of self

<p>v) Thought processes</p>	<p>This includes:</p> <ul style="list-style-type: none"> • the adequacy of processes that adaptively guide and sustain thought (attention, concentration, anticipation, concept formation, memory and language) • the extent of relative primary-secondary process influences on thought (degree to which thinking is unrealistic)
<p>vi) Adaptive regression in the service of the ego</p>	<p>This includes:</p> <ul style="list-style-type: none"> • relaxation of perceptual and conceptual acuity and other ego controls with a concomitant increase in awareness of previously preconscious and unconscious contents • the induction of new configurations that increases adaptive potentials as a result of creative integration
<p>vii) Defensive functioning</p>	<p>This includes:</p> <ul style="list-style-type: none"> • the degree to which defensive components adaptively affect ideation and behaviour • the extent to which these defences have succeeded or failed to prevent anxiety, depression or other dysphoric affects
<p>viii) Stimulus barrier</p>	<p>This includes responsiveness to internal and external levels of sensory stimulation and development of a threshold for stimulation.</p>
<p>ix) Autonomous functioning</p>	<p>This includes:</p> <ul style="list-style-type: none"> • the degree of freedom from impairment of apparatuses of primary autonomy (sight, hearing, intention, memory, language, learning and motor functions)

	<ul style="list-style-type: none"> • the degree of freedom from impairment of secondary autonomy (habit patterns, complex skills, hobbies, work routines and interests)
x) Synthesising functioning	<p>This includes:</p> <ul style="list-style-type: none"> • reconciliation or integration of attitudes, values, affects, behaviour and self-representations into a coherent form • responsibility for personality integration
xi) Mastery competence	<p>This includes:</p> <ul style="list-style-type: none"> • individuals' capacity to interact with and master their environment • a sense of mastery or competence which becomes a part of identity or sense of self

Adapted from Bellak et al. (1973), Bjorklund (2000) and Kaplan and Sadock (1998).

Some individuals learn to exercise all the ego functions effectively. Within the same individual, certain ego functions may be better developed than others and may show more stability. In other words, they tend to fluctuate less from situation to situation or over time and are less prone to regression or disorganisation under stress. Furthermore, even in individuals who manifest ego strength, regression in selected areas of ego functioning may be normal in certain types of situations (e.g., illness and crises) and does not necessarily imply ego deficiencies. It is possible for the same individual to have highly variable ego functioning because the situational context may evoke better or worse functioning. It is therefore crucial to evaluate the stresses, conditions, resources and supports in the social environment in relation to the individual's needs and capacities (Goldstein, 1984).

The concept and characteristics of ego strength are identified and discussed next.

4.2.3 The concept of ego strength

4.2.3.1 Theoretical perspectives

Theorists have developed the concept of ego strength or close equivalent dimensions of the term in diverse ways. **Freud** (1954, in Burns, 1991) introduces a brief discussion on the dimension of ego strength and describes it as the adequacy of the ego's management of internal dangers from the id and superego and from external dangers. The ego works at all costs to retain its adaptability in relation to the external world. The greater the ego's capacity for perceiving and accepting reality and the more adaptive its defences against external and internal hazards, anxiety and unpleasure, the greater the ego's strength. Freud emphasises the ego's ability to reduce tensions, settle conflicts, mediate and reconcile contradictions and elements such as the capacity for self-control, some adeptness at reality testing and a degree of ego integration. Freud states that ego strength is observable as an individual's capacity for love and work.

Polansky (1982) assumes that each individual has a quantum of psychic energy, which derives from the instinctual drives. As the energy becomes neutralised and sublimated, it is channelled into adaptation and is available as part of ego functioning. The availability of free energy is seen as a major index of ego strength. The ego's strength is determined by how much energy is free and available for solving life problems, and by how well the personality is structured so that the energy available can be channelled where it is needed. This is done so that psychological effort can be organised and synthesised. Individuals with strong egos are able to pay attention to what is going on around them and probably derive a fair amount of pleasure from being involved in day-to-day happenings. They can concentrate without becoming distracted by internal preoccupations and therefore think more effectively and creatively. Individuals who have reserve supplies of psychic energy (ego strength) are able to deal with the situation when struck by a sudden crisis. Given events requiring extraordinary decisions, they can think logically for a long time until able to find the means to solutions.

Moore and Fine (1990) describe ego strength as being individuals' competence in tolerating anxiety. In addition, it refers to the ability to channel and mediate instinctual urges and superego demands. Ego strength includes adequate reality testing and judgement

as well as a sense of the reality of world and self. A strong ego can tolerate frustration and control impulses, can conceptualise and think abstractly, and can use relevant ego defences. The ego's ability to perform these functions depends on specific functions of the ego, such as perceptive, integrative, defensive and so on. Additional aspects of ego strength are being able to deal with stress, having an adequate work and social history, enjoying hobbies and interests and having a sense of humour. According to these authors, a strong ego is highly able to deal with internal impulses and the external world. Mastery over these forces develops over time.

Akhtar (1995) views a strong ego as being able to mediate between the demands of external reality, instinctual drives and the superego. Ego strength facilitates the control of inner impulses and allows for increases in anxiety without regression, symptom formation or action. Strong ego boundaries result in good reality testing, and allow individuals to easily identify the source of their emotions, ideas and impulses, whether originating from themselves or in external objects. Conceptual and perceptual, internal and external, and fantasised and real aspects of any given experience are clear. Ego strength may be seen in the ability to tolerate anxiety, control impulses, and utilise sublimation. This may be perceived in individuals' work record, enjoyment of hobbies and creativity. Individuals can also channel instinctual urges in morally acceptable and safe ways.

Bjorklund (2000) describes ego strength in terms of being able to function effectively and resourcefully. This may be seen in activities in which individuals derive meaning, purpose, creativity, fulfilment and life satisfaction. In addition, they are able to engage in reciprocal, mutually validating and satisfying interpersonal relationships. Adaptability, self-efficacy and self-esteem are also signs of a strong ego. According to Bjorklund, ego strength supports the individual, facilitates coping under stress, and provides a sense of identity. Ego strength increases with maturity.

According to the current researcher, ego strength refers to the efficiency or capacity for efficiency of the ego for carrying out its functions. It deals with internal impulses, external reality and integrates the conflicting demands of reality with those of the id and superego. It encompasses the dual functions of external adaption and internal adjustment which involves an ability to mediate and integrate, requiring insight, empathy, evidence of

integrity and dependability as well as efficiency in dealing with the environment and health.

4.2.3.2 Characteristics of ego strength

The current researcher has identified certain characteristics of ego strength in the literature study. These are summarised in table 4.2.

Table 4.2 Characteristics of ego strength

i) Reconciliation	This is the ability to reconcile conflicting demands between the id and the superego in such a way that individuals can function satisfactorily in their environment.
ii) Willpower	Willpower enables individuals to analyse their own behaviour, thus preventing themselves from unnecessary anxiety. It is thus the ability to handle anxiety provoking situations.
iii) Sense of identity	This refers to individuals' confidence that they can make a significant or meaningful contribution; in other words, that they can take their place in society.
iv) Coping mechanisms	Having coping mechanisms enables individuals to handle most situations. Unnecessary anxiety is thus avoided and individuals are able to adapt to most difficult and stressful situations.
v) Integration	This refers to individuals' ability to integrate the contradictions in life and discrepancies in themselves and others. It is also the ability to tolerate their own and others' shortcomings or differences.

vi) Emotional control	This characteristic is related to emotional stability and the ability to overcome emotional setbacks. It is thus the ability to recover emotionally and indicates emotional maturity.
vii) Adaptability	Individuals who are able to adapt well have the capacity to fit satisfactorily into their environment.
viii) Purposefulness	Purposefulness is the ability to set goals and visualise success. In addition, it is the ability to make plans and persevere for the purpose of achieving them.
ix) Balance	This enables individuals to maintain a balance between their own desires and the demands of the world (morally and socially).
x) Effectiveness	This is the ability to maximise efficiency and accuracy.
xi) Reality testing	This is the ability to observe the world as it is, and to anticipate behaviour and the implications or consequences of envisaged behaviour.
xii) Hope	Hope is confidence/optimism (about life/oneself/the future) and the ability to continue in the face of disappointment.
xiii) Competence	This entails an awareness and use of certain skills, knowledge, and so on, with the expectancy of succeeding.
xiv) Fidelity	Fidelity is a preoccupation with and commitment to being true, genuine, honest and faithful with oneself and others. It demonstrates commitment through disciplined devotion and loyalty to ideological sources.

xv) Love	Love is a chosen behaviour which entails mutual, reciprocal commitment to another person and to the relationship. Togetherness with one's own individuality is maintained.
xvi) Care	This includes concern for the needs of others, as well as nurturing and teaching others.
xvii) Wisdom	Wisdom allows individuals to accept the past and face an unknown future with courage.

Adapted from De Beer (1999) and Markstrom, Sabino, Turner, and Berman (1997).

Separate ego functions not only contribute to ego strength, but also to the interrelationships among the various functions. Individuals with strong egos are able to act to satisfy their needs in a way that conforms to personally and socially acceptable standards of behaviour. A reasonable degree of ego strength is considered essential for individuals to be able to observe their behaviour objectively to some extent, develop insight and, if necessary, make adjustments in order to maintain these standards of behaviour. Furthermore, ego strength reinforces individuals' coping mechanisms under stress and is an indicator of psychological health (De Beer, 1999).

Since CABS imposes an enormous strain on the ego's adaptive functioning, the ego and surgery will be discussed next.

4.2.4 The ego and surgery

Surgery is a stressful experience which puts psychological strain on the ego's functional capacity, firstly, through fears of the possibility of loss of life; secondly, through pain and thirdly, through concerns about actual or possible changes to the body and body image. Anxiety accompanies both the fear and pain. Hostile feelings may appear simultaneously. Anger, guilt and shame appear as patients feel neglectful of themselves and their families (Babcock, 1968).

When patients feel overwhelmed by anxiety, the ego's strength is weakened and individuals become passive or dependent. In a state of ego passivity, patients feel helpless, efforts to block fail and they are unable to master the situation or exert immediate, active ego control. The inhibitory and intellectual functions begin to disappear. In a moderate anxiety state, inhibition of the vegetative and motor signs of anxiety become impossible. Thus the appearance of tachycardia and restlessness cannot be prevented. The intellectual functions begin to yield, thoughts become confused and concentration becomes impossible (Frankel, 1984; Phillips, 2000).

The ego's defences cause a temporary clouding of reality through thoughts, feelings and behaviour. Denial is almost immediately visible (e.g., "It isn't so") and repression of feelings occurs. Projection is frequent (e.g., "This didn't happen to me, it must have happened to someone else") (Babcock, 1968, p. 49). Vaillant (1993) states that patients need to deny, repress or distort their reality until the anxiety can be endured. Regression of ego functioning may occur during surgery, possibly resulting in "problem patients" who may be demanding or dependent. They may even refuse to comply with their medical regimen. Such problem patients use childlike behaviour to cope with unfamiliar or frightening situations. Individuals may also be excessively cheerful, friendly or overly helpful. Such patients are seldom seen as difficult; however, they also use childish behaviour to cope. Patients who are confused, disoriented and enraged may become demanding, strike at others or withhold information out of fear of retaliation. This behaviour constitutes the natural expression of feelings that can then be handled, and so are actually helpful in healing. Patients may furthermore be critical of staff or suspicious of their intentions, and may nurture and protect other patients. Some are critical of themselves for being ill or unable to cope with the stress, and feel angry with themselves for bothering staff, family and friends (Wilson & Kneisl, 1996).

The ego's natural internal resources and recuperative powers, strengthened by experience and efforts at communication with outside resources, are immediately mobilised. In psychologically healthy patients who have a supportive environment, the patients' ego strength begins to assert itself. As patients go through surgery, the anxiety decreases and the willpower of the ego strength increases. The impact of the surgical experience on patients' ego depends on the capacity of the ego to integrate the experience (Babcock, 1968; Burns, 1991; Gahlaut et al., 1993).

Patients with a strong ego can tolerate increased anxiety without regression. They act assertively in promoting their own wellness. For example, they decide for themselves when to sleep or rest, whether to visit with friends or family and what steps to take to decrease stress. They are able to accept the temporary limitations imposed by surgery, care for themselves as far as possible, and consult the relevant parties about decisions regarding their health care. Patients who allow themselves to be taken care of by others and give themselves permission to be sick or to feel depressed, may return to a state of well-being more quickly than their less tolerant counterparts (Wilson & Kneisl, 1996). In general, the greater the degree of ego maturity, the greater the ability to assess the impact of surgery. Ego mechanisms, such as anticipation, humour and sublimation are mature, and promote healing. Denial, distortion and delusional projection handicap patients' ability to manage their emotions during surgery (Green, 1985).

The use of hypnosis, visualisation and imagination may be extremely powerful in supplementing and facilitating a surgical experience or other medical intervention. The following section discusses hypnosis in detail.

4.3 HYPNOSIS

Hypnosis is a well-recognised scientific phenomenon gaining credibility as a valuable therapeutic tool (Fricker & Butler, 2001). It has become accepted as a modality to enhance perceptions of control, participation and mastery of difficult circumstances (Fredericks, 2001; Ginandes, 2002; Olness & Kohen, 1996). However, the use of hypnotherapy has been underutilised in hospital and surgical settings (Sunnen, 2000). Hypnosis can be used to assist patients in normalising the physiological processes, enhancing healing and establish health producing mind-body equilibrium (Greenleaf et al., 1992).

4.3.1 Theories of hypnosis

Although there are a variety of theories of hypnosis, two major theoretical views exist. Generally, they can be divided into **state** and **non-state** theories. The **state** theorists believe that hypnosis is an altered state of consciousness that has many characteristics unique to it (Frederick & McNeal, 1999). From this perspective, the hypnotic state is considered a unique and separate state of consciousness relative to the "normal" state of

consciousness. It is created by the induction process and alters the patient's phenomenological experience through the narrowing of attention to the suggestions offered by the therapist (Yapko, 1995). The primary feature of the hypnotic trance is the loss or suspension of normal reality testing. Patients become so absorbed in the hypnotherapist's words that they subjectively create the reality of those suggestions and limit their awareness of the environment to a very narrow range of external stimuli. The hypnotic trance also includes other qualitative dimensions, such as a loss of volition, a diminished sense of identity and physical relaxation (Atkinson, 1996).

In contrast, **non-state** theorists view hypnotic experiences as the byproducts of psychosocial experiences and cognitive-behavioural strategies used by patients. In contrast to viewing patients as passive participants, patients are viewed as the generators of hypnotic behaviours (Atkinson, 1996; Sapp, 2000). Responsibility for the experience of hypnosis is shared between the therapist and patient. Therapists must be responsive to the needs of patients and tailor the approach to their needs; and patients must be responsive to the possibilities for change suggested by the therapist (Yapko, 1995). From this viewpoint, hypnotised patients are not in a trance or an altered state of consciousness, but enact the role of a hypnotic subject. They simulate hypnotic behaviour in response to their own preconceived notions and motivations, as well as those expectations conveyed by the therapist (Atkinson, 1996; Frederick & McNeal, 1999).

The dominant theories of hypnosis include Ericksonian, dissociation, cognitive-behavioural, sociophenomenological theories and hypnosis as a special case of adaptive regression. These theories are discussed in the following sections.

4.3.1.1 Ericksonian theories

Ericksonian theory is based on the work of **Erickson** (1957), who was a masterful therapist, as well as a founder member and president of the American Society of Clinical Hypnosis. Ericksonians emphasise a naturalistic approach. They focus on the interpersonal relationship between hypnotherapist and patient, which is characterised by interactive and influential communication (Zeig, 1994). They view the unconscious as a reservoir of internal resources that can aid the patient towards therapeutic change (Decker, 1999a). Ericksonians access and utilise patients' own inner and creative resources, unique to each

individual and accumulated from the patient's own lifetime of experiential learning and problem solving (Frederick & McNeal, 1999; Zeig, 1994).

4.3.1.2 Dissociation theories

The state theories include **Hilgard's** (1965) neo-dissociation theory. He states that cognitive subsystems or structures that are arranged in a hierarchy can become dissociated from the executive ego. As such, processing can occur outside an individual's level of awareness (unconscious) and information can become available on another level (conscious). According to the dissociation theory, the hypnotic experience may involve an ability to readily change states of awareness or levels of consciousness. These changes in consciousness may either be interpersonally- or self-induced. Hypnosis may involve a more general cognitive flexibility that allows the patient to change and control psychological, cognitive or physiological processes, or readily access different levels of consciousness.

4.3.1.3 Cognitive-behavioural theories

Cognitive-behavioural theorists take a non-state view of hypnosis that challenges the trance-like and altered state of consciousness theories. Five points substantiate the cognitive-behavioural perspectives of hypnosis. Firstly, there are no consistent physiological markers of hypnosis. Even though physiological data are beginning to show why certain individuals respond differently to suggestions, hypothesised hypnotic states have not been found (Kirsch & Lynn, 1998). Secondly, hypnotic phenomena can be produced without hypnotic inductions. Barber (1995) found that hypnotic inductions were not necessary to elicit hypnosis and that individuals' expectations and motivations could produce hypnotic phenomena. Thirdly, hypnotic inductions produce a small increase in suggestibility. In addition, other techniques such as guided imagery and meditation can duplicate or surpass the effects of a hypnotic induction (Sapp, Farrell, Johnson, Sartin-Kirby, & Pumphrey, 1997). Fourthly, McConkey (1984) found that individuals described their hypnotic experiences as a normal state of focused attention (absorption) and imaginative involvement. Moreover, McConkey found that the majority of individuals did not report their hypnotic experiences as altered states of consciousness. Lastly, the descriptions individuals give about progressive relaxation training do not markedly differ

from descriptions of standard hypnotic inductions (Kirsch, Mobayed, Council, & Kenny, 1992; Sapp, 1995). In addition, these theorists do not believe that hypnotised individuals are merely complying with suggestions; in contrast, they view individuals as using social influences and cognitive-behavioural strategies to produce hypnosis. Neither do these theorists question the domain of dissociation.

4.3.1.4 Sociophenomenological theories

Sociophenomenological theories emphasise the interactive nature of multiple variables during hypnosis and are therefore referred to as interactive-phenomenological theories. Adherents of this approach tend to examine the interrelationship among inborn, psychodynamic, interpersonal, cognitive and emotional factors that enrich both the therapist and the patient. This model attends to the demand characteristics of the therapist and the roles being enacted, as well as the patient's physiological makeup, temperament and personality traits. This approach attempts to capture the multidimensional nature of hypnosis (Frederick & McNeal, 1999).

4.3.1.5 Regression theories

Nash (1991) views hypnosis as a special case of adaptive psychological regression. Similar to the dissociation theory, this theoretical perspective conceptualises hypnosis as a trance and an altered state of consciousness. Nash states that hypnosis is a condition in which part of the ego experiences topographical regression and searches for derivatives of a regressed state, while another part maintains contact with external reality. Many of the ego's functions occur during hypnosis through the patient's transference relationship. The greater the degree of trance, the more the patient's functions are moderated through the therapist.

4.3.1.6 Relaxation theories

Edmonston (1991) presents a single-factor theory of hypnosis. He states that anesis or relaxation forms the fundamental basis of hypnosis. In fact, anesis is a two-step process. Firstly, therapists make suggestions which assist patients to relax. Secondly, Edmonston believes that relaxation can produce differences in cognition, primary process thinking,

dissociation, regression and other phenomena associated with hypnosis. He views these processes as byproducts of relaxation.

Having outlined the major theories of hypnosis, a description of this phenomenon and the ego in hypnosis follows.

4.3.2 Description of hypnosis

Hypnosis is an altered state of consciousness in which patients feel calm and relaxed. In this altered state the subject may experience changes in attention, memory and become more responsive to suggestions (Decker, 1999c; Frederick & McNeal, 1999; Fricker & Butler, 2001; Yapko, 1995). The hypnotic context is generally established by an induction procedure. A formal hypnotic induction involves the patient sitting in a comfortable, quiet environment. Trance is induced using an induction procedure such as progressive muscle relaxation, which can be followed by deepening techniques. The patient is then guided through a relaxing image, such as a beach or outdoor scene, to establish effective trance (Kirsch, 1994). Induction and deepening techniques differ according to situation, patient and therapist. Patients experiencing acute stress and pain are already in a frame of mind conducive to the use of trance (Manusov, 1990).

Patients differ in their ability to experience hypnosis or their degree of hypnotisability or susceptibility. The degree to which patients become hypnotised is commonly referred to as hypnotic depth or responsiveness. For some hypnotised patients, depth may manifest itself in a more behavioural way, for others in a more experiential way. Highly hypnotisable patients exhibit both strong behavioural and experiential responses. A small percentage of patients are unresponsive or resistant to suggestions (Sapp, 1997). The main sources of difficulty include: (a) over-anxiety during the hypnotic process, (b) fear of failure, (c) defiance of authority, and (d) fluctuatory attention and the need to prove superiority (Yapko, 1995).

Patients in a trance do not lose control over their behaviour. They typically remain aware of who they are and where they are, and unless amnesia has been specifically suggested, they usually remember what transpired during the hypnotic session (Liggett, 2000). The specific hypnotic techniques used with particular patients are derived from the nature of

the presenting problem, the patients' goals, other patients' characteristics, therapists' theoretical orientation and certain situational factors, like time and finances available (Hartman, 1995). During regression, patients re-experience events that occurred earlier in life and recall memories that are not available to consciousness in non-hypnotic states (Kaplan & Sadock, 1998). Such memories can be used in therapy to corroborate psychoanalytic hypotheses regarding patients' dynamics or to enable patients to use memories as catalysts for new associations. Hypnosis offers the therapist greater flexibility in achieving treatment goals by its ability to potentiate suggestions, create or undo dissociation, initiate fantasies, stimulate memories and induce relivings (Watkins, 1994). Hypnosis is an adjunctive procedure that can be used to treat many psychological disorders, such as mood, anxiety, somatoform, dissociative, sexual, eating, attention-deficit and obsessive compulsive disorder (Liggett, 2000; Sapp, 2000).

The current researcher views hypnosis as a natural and universal phenomenon. It involves the ability to absorb or focus attention on a particular created sight, sound or image and then communicate ideas and change perceptions. Hypnosis is an interactive process between patient and hypnotherapist which acts as a bridge between mind, body and spirit. The trance state is a powerful gift which allows greater accessibility to unconscious feelings and memories and helps patients to harness inner resources which can be used to facilitate healing and recovery.

4.3.3 The ego in hypnosis

The ego is conceptualised as a complex set of functions, including perception, cognition, memory attention, imagery, sensations and affect (Fromm, 1998). The function of the ego changes during hypnosis. Hypnosis enables the boundaries created by the ego to be bypassed and allows for direct access to experiential aspects of an individual's life (Celinski, 2001). The ego organises its functions in conscious and unconscious states. Many of these ego functions are manifested during hypnosis and form the essential characteristics of the hypnotic experience.

An understanding of primary and secondary process thinking is useful in understanding how hypnosis operates.

4.3.3.1 Primary and secondary process imagery

Primary and secondary process thinking and imagery play an important role in hypnosis. These can be seen as ego products since the ego perceives, thinks and produces imagery. **Primary process thinking** involves preverbal imagery, which is fluid and undifferentiated. A single image or an ambiguous word (a word which contains a double entendre) may encapsulate several ideas. Primary process functioning usually occurs in early childhood, and is illogical and non-sequential. **Secondary process thinking** is verbal. That is, it occurs in words and sentences (language) and not imagery (pictures and symbols). It is reality-oriented and goal-directed. Secondary process thinking operates according to sequential, logical, practical or abstract concepts, and represents the dominant mode of thought in alert adults. Primary and secondary thinking exist along a continuum, with the primary process pole being drive-dominated, and characterised by imagery or hallucinations. The secondary process pole is reality-oriented, logical and characterised by reason (Fromm, 1998).

Hypnosis operates in the drive-dominated primary process axis of the continuum. The primary process mechanisms of condensation, symbolisation and displacement are responsible for fantasy and imagery, which hypnosis utilises extensively. These mechanisms enhance the hypnotherapeutic imagery and fantasy to heighten its vividness and emotional impact (Fromm, 1992).

4.3.3.2 Ego activity, passivity and receptivity

Ego activity during hypnosis may be defined as mental activity deliberately directed by the patient. It may include decisions, thoughts or suggestions patients make to themselves. Choice, free will, defensive mechanisms and mastery are therefore implicated. **Ego passivity** refers to situations in which patients feel overwhelmed by the experienced imagery. The result is helplessness and an inability to cope with their conflicting thoughts (Fromm, 1998). In this state, patients temporarily give up control of internal experience, critical judgement, strict reality testing and goal-directed thinking in favour of allowing unconscious and preconscious material to emerge freely. It is therefore a nodal aspect of hypnosis (Frederick & McNeal, 1999). **Ego receptiveness** relaxes individuals' defences to permit free-floating thoughts, memories, associations, fantasies, affects and images to enter

consciousness. In short, ego receptiveness encourages awareness of phenomena that in the waking state are usually unconscious (Fromm, 1998).

Patients in hypnosis have greater ego receptivity than patients in the waking state; that is, patients relax some of their defences and allow stimuli from the inside (unconscious thoughts and feelings) to drift into awareness. Hypnosis allows for increased access to imagery, fantasy, emotion and memories (Fromm, 1992). Patients become more receptive to the hypnotherapist's suggestions and to internal images and thoughts (Eisen, 1994). Greater ego receptivity to the experiencing of both external and internal stimuli has highly beneficial consequences for hypnotherapy (Fromm, 1992).

4.3.3.3 Dissociation of the observing ego from the experiencing ego

Patients in hypnosis often report a temporary dissociation between the experiencing and the observing ego. This split in the ego during hypnosis involves a receptive ego subsystem and an active, observing ego subsystem. The former participates in various hypnotic activities and responds to suggestion, while the latter monitors and mediates the experience. The function of the observing ego is to maintain overall ego integrity both intrapsychically and in relation to the external environment (Phillips, 2000). The experiencing ego participates in the primary process reorganisation of cognitive structures, accepts them and makes them available for use by the observing ego. In this process, ego orientation enters the receptive mode, allowing imagery and fantasy to function fully (Burrows & Dennerstein, 1980). Imagery and fantasy spontaneously enter awareness through the operation of the primary process mechanisms (Fromm, 1992). Some effects of this dissociative split between the observing self and the experiencing self are the ability to review traumatic experiences and encourage the capacities of the observing ego to self-monitor, self-soothe and self-modulate (Phillips, 2000).

While the participating ego relegates reality testing to the control of the hypnotherapist, the observing ego maintains and monitors the level of involvement and critical function of the participating ego. In so doing, the hypnotic experience becomes safe enough to allow the ego to regress. The observing ego fulfils the additional important function of interpreting the symbolic representations of imagery. It may do this as it has access to information dissociated from conscious experience (Eisen, 1994).

4.3.3.4 Regression in the service of the ego

Regression in the service of the ego involves partially lowering the level of psychic functioning temporarily. In so doing, the ego permits relatively free access to primary process thinking. This is done in order to accomplish the ego's adaptive tasks (Fromm, 1992). Hypnosis can therefore be characterised as adaptive regression or regression in service of the ego. The relaxation of defensive barriers permitted by the ego during hypnosis allows individuals to retreat into the inner world of imagery, fantasy, memory and thinking, and return to earlier, less realistic primary process thinking. After this, patients may return to the external world with improved functioning (Fromm, 1998). According to Frederick and McNeal (1999), hypnotised patients allow reality to take second place and enter into the inner world of imagery. Here they can gain insight and then return to reality, often with an ability to act with improved mastery. Regression in service of the ego allows patients to function more at the level of the unconscious ego and explore their inner world. It can help them to become aware of previously unrecognised inner resources. This capacity prevents the excessive domination of the ego and allows for increased access to unconscious processes. Consequently, therapeutic results are obtained more rapidly than in the waking state (Phillips, 2000).

4.3.3.5 Attention, absorption and reality orientation

Important aspects of hypnosis are the ego functions of attention, absorption and reality orientation. **Attention** is a cognitive function and cognition is a function of the ego. Hypnotised patients exhibit more concentrated attention than in the waking state. In a receptive ego state, this attention is expansive and free-floating. Expansive attention refers to the patient's ability to "let go" and experience a wide variety of thoughts, feelings, memories and images. **Absorption** occurs with concentrated attention and a receptive ego state. It refers to the extent to which a patient is focussed on an outside event or an inner experience (Fromm, 1998). Imagery is usually the content of hypnotic experiences which involves absorption. Absorption, as well as the surrender of the generalised **reality orientation** is recognised as important characteristics of hypnosis. The major advantage of hypnosis over waking state therapy is this state-dependent ability of the ego to move between the abovementioned bipolar parameters, as well as the increase in ego functions

such as imagery. These abilities further facilitate problem-solving and coping mechanisms (Fromm, 1992).

The next section explores the connection between mind, body and the phenomenon of hypnosis.

4.3.4 Hypnosis and mind-body

In Western culture, mind, body and soul are viewed as separate dimensions (Holder, 1998). The study of psychoneuroimmunology (PNI) has gathered evidence that mental attitudes and psychological states form a whole (McCarthy, 2001). Patients' physical conditions are directly reflected in their minds and lead them either towards health and wellness, or towards pain and illness (Bloch, 1995; McCarthy, 2001).

Borysenko (1988) found that the mind and the immune system communicate by means of hormonal messages, called neuropeptides, produced by the brain. Pert (1999) found that neuropeptides and their specific receptors not only exist in the brain, but are distributed throughout the body. Neuropeptides are messengers carrying information to link all systems of the mind-body into a unit, which cannot be separated and which have a reciprocal relationship. Receptor sites for these substances exist not only in the brain, but in the nerve cells of various other organs. Every emotion a patient experiences causes secretion of neuropeptides and therefore, every cell in the body is affected by emotions and images originating in the mind. When a body is stressed, the flow of neuropeptides is restricted due to information overload. The brain's limbic system sends chemical messengers or neurotransmitters to the rest of the body. These messengers bring about the physiological changes of increased heart rate, blood pressure, oxygen consumption, cardiac output, blood coagulation and body metabolism (Deisch, Soukop, Adams, & Wild, 2000). Patients under high stress experience more pain, need more sedation, are prone to infections because their immune system is compromised, and show delayed healing and prolonged recovery (Fredericks, 2000). Negative and positive feelings originating in the brain translate into chemical events in the body, which exert a direct influence on various physiological functions (Bloch, 1995). Patients who are depressed or negative in their outlook have a greater incidence of physical illness (Holder, 1998). Hypnosis can reverse this response and return the body to its normal state (Deisch et al., 2000).

Hypnosis or guided imagery is a communication skill which has direct access to mental information on a subconscious level of thought. In an altered state, images can be quite potent and real to the body (Naparstek, 1995). If the left hemisphere of the brain (which usually governs analytical thought) wants to tell the body to relax, it must convert its intention into an image. The right brain conveys this message through neuromuscular circuits which can influence other circuits of the body. Opening up the communication channels through hypnosis, and reframing subconscious beliefs, attitudes and emotions, can exert a direct influence on various physiological processes, which can facilitate healing and recovery (Naude, 1995). Hypnosis uses subcortical communication, which is largely nonverbal, and imagery serves as a language that the body understands. Thus, resulting neural commands can further affect the voluntary muscles, smooth muscles and hormonal secretions, thereby enhancing the immune system (Fredericks, 2000).

Hypnosis has the ability to evoke an integrated hypothalamic relaxation response and can affect physiological processes usually considered inaccessible to conscious influence, such as heart rate, blood pressure and respiratory rate, as well as induce a feeling of relaxation (Fredericks, 2001). When surgical patients participate in hypnosis or guided imagery, their mind can quickly paint a positive image to bypass a destructive, negative attitude towards surgery and patients may open themselves to the possibility of healing (Fredericks, 2001; Siegel, 1990).

According to the current researcher, mind and body are part of a multidirectional communication network linked by information carriers known as neuropeptides. Thoughts and emotions are continually involved in exciting and inhibiting neurochemical secretions. Hypnosis has the potential to facilitate alterations in neurological potentials and biochemical gradients to effect changes in the body. The healing process can be facilitated by working on the psyche through the utilisation of hypnosis.

The concept of hypnotherapy and different approaches to hypnotherapy will now be clarified.

4.4 HYPNOTHERAPY

The terms “hypnotherapy” and “hypnosis” are often confused in the literature and it is therefore important to distinguish between them.

4.4.1 Hypnotherapy and hypnosis

Olness and Kohen (1996, p. 87) contend that hypnotherapy and hypnosis are two different entities. According to them, **hypnosis** is a psychological phenomenon, not a therapy. It is an altered state of consciousness and awareness, different from the normal waking state and any stages of sleep. In some ways it resembles various kinds of meditative states and their characteristic alterations in cognition. Hypnosis is sometimes indistinguishable from physical and mental relaxation, and individuals may enter a hypnotic state spontaneously in the course of daily activities. It may have certain temporary beneficial effects, such as tension reduction, but is not itself designed for that purpose. During the trance state, heightened concentration occurs for the specific purpose of maximising potential or changing cognition. Relaxation and imagery are used to obtain a fixed, narrowed attention with a high degree of concentration. According to Hartman (1995), **hypnotherapy** can be defined as a treatment modality or procedure by means of which therapy is delivered and follows a specific psychotherapeutic approach, with specific therapeutic goals and specific techniques, utilised while the patient is in a state of trance. It consists of any number of psychotherapeutic methods, ranging from suggestion to psychoanalysis practised in conjunction with the hypnotic modality within an altered state of consciousness that can be used to facilitate therapy. When hypnosis is combined with various forms of psychological treatment, it becomes hypnotherapy. Hypnotherapy also includes analytic techniques not normally practised when patients are fully conscious (Manusov, 1990).

4.4.2 Hypnotherapeutic approaches

According to Olness and Kohen (1996), hypnotherapy can be divided broadly into three different categories, namely symptom-oriented, supportive ego strengthening and dynamic hypnotherapy. Each has a different treatment goal, a unique set of hypnotherapeutic procedures, and is based on a specific theoretical orientation.

4.4.2.1 Symptom-oriented hypnotherapy

Symptom-oriented hypnotherapy is directed at removing, altering, transferring, substituting or alleviating specific physical or emotional symptoms. Problems associated with phobias, pain control and habit control, amongst others, often respond to symptom-oriented approaches, especially if patients are highly motivated to get rid of the symptom (Olness & Kohen, 1996). Symptom-oriented hypnotherapy comprises different techniques, including direct and indirect suggestions, relaxation training, behavioural desensitisation and post-hypnotic suggestion (Hartman, 1995). Symptom-oriented methods are contraindicated if symptoms serve defensive purposes, like protecting patients from severe underlying depression or psychosis (Olness & Kohen, 1996).

4.4.2.2 Supportive ego strengthening hypnotherapy

HES helps patients feel more worthy, more capable of dealing effectively with problems and challenges, and enables them to contribute to their own well-being as well as take control of internal and external circumstances. Anxious, depressed, borderline or psychotic patients often derive special benefit from supportive techniques (Olness & Kohen, 1996). This kind of hypnotherapy can be either short-term or long-term. The goal is to alleviate anxiety, reinforce self-efficacy and confidence, support and increase patients' strengths and abilities to cope and to contribute to their well-being. The method usually involves direct or indirect suggestions to facilitate relaxation and increase confidence, inner strength or well-being (Hartman, 1995).

4.4.2.3 Dynamic hypnotherapy or hypnoanalysis

Dynamic hypnotherapy employs uncovering techniques to gain insight into and work through underlying conflicts and achieve a more extensive shift towards personality maturation in broad cognitive, affective and social spheres (Olness & Kohen, 1996). Dynamic hypnotherapy may be brief but more often takes longer than symptomatic hypnotherapy. The goals are symptom relief and ego strengthening. It utilises a variety of hypnotherapeutic techniques, such as imagery and fantasy, hypnotic dreaming, age regression, ego strengthening and posthypnotic suggestions. Hypnotherapy usually

includes a combination of symptomatic, supportive as well as dynamic interventions (Hartman, 1995).

The application of hypnotherapy to surgery is highly relevant to this study, and will be examined in the following section.

4.5 HYPNOTHERAPY AND SURGERY

Hypnotherapy and surgery have been linked since the 1800s. Today, there is a resurgence and increased acceptance of hypnotherapy as a treatment modality for surgery (Fredericks, 2001; Olness & Kohen, 1996; Sunnen, 2000; Wood & Hirschberg, 1994). Evidence for this is the recent appearance of several studies in the literature about the effectiveness and beneficial use of hypnotherapy in the recovery of a wide variety of surgical procedures (Blankfield, 1991; Evans & Stanley, 1990, 1991). Hypnotherapeutic interventions have been used with hospitalised patients undergoing orthopaedic, plastic, paediatric, obstetrics, gynaecological, cancer, cardiac and general surgery (Blankfield, 1991; Fredericks, 2000, 2001; Manusov, 1990; Olness & Kohen, 1996; Pinnell & Covino, 2000; Sunnen, 2000).

A short historical overview of hypnotherapy and surgery follows, after which empirical considerations will be discussed.

4.5.1 Historical perspective

According to Decker, (1999b), Evans (2001), Fricker and Butler (2001), Kirsch, Lynn, and Rhue (1994) and Sapp (2000), modern hypnotherapy dates back to the late 18th century to the work of **Mesmer** (1734-1815). He believed that psychological disorders resulted from imbalances in the body's magnetic forces and that these conditions could be cured by transferring magnetism from his own body to restore the patients' equilibrium. In so doing, the patient would then sink into a mesmeric "trance" or "coma". Theoretically, his goal was to redistribute the animal magnetism which produced an abreaction within the patient. He found that patients' abreactions led to catharsis and a subsiding of psychophysiological symptoms. Mesmer generated an impetus for theorists to further the elucidation of trance, and the medical community continued sporadically to use mesmeric treatment. This approach was resurrected by **Braid** (1795-1860), a British physician, who discarded

Mesmer's theory of animal magnetism. He described the hypnotic state as a nervous sleep and hypothesised that it was produced by fatigue of the eye muscles, brought about by staring fixedly. He recognised the power of mind over body and the independence of trance phenomena, as well as the importance of the patient's imagination and belief system in producing hypnosis. Braid gave the phenomena a new name, **hypnotism**, which was derived from **hypnos**, the Greek word meaning sleep. His theories were subsequently adopted by Charcot, Liébault, and Bernheim.

The most famous 19th century advocate of hypnosis was **Charcot** (1825-1893), a neurologist at the Salpêtrière Hospital in Paris. He explained hypnosis as a neuropathological state that could only be produced in hysterics and was buttressed by his production and removal of conversion symptoms through posthypnotic suggestion. His notion that certain thoughts could be dissociated from conscious awareness led to Freud's adoption of the unconscious and to Janet's theory of dissociation. **Liébault** (1823-1903), a medical doctor, and **Bernheim** (1837-1919), a professor of psychology, were the first to regard hypnosis as a normal phenomenon. They asserted that expectation is a most important factor in the induction of hypnosis that increased suggestibility is its essential symptom, and that the hypnotist works on the patient by mental influences.

Freud (1961) became interested in hypnosis at the same time. He began to recognise the existence of the unconscious as a major source of psychopathology. However, he rejected hypnosis as a tool to unlock repressed memories, favouring instead his techniques of free association and dream interpretation. With the rise of psychoanalysis, hypnosis declined in popularity. During the 1950s hypnosis experienced a rebirth as researchers found new uses.

Erickson (1952) developed many creative therapeutic techniques that advanced the use and acceptability of hypnosis in clinical practice. By 1955 the British Medical Association approved hypnotherapy as a valid medical treatment, and the American Medical Association followed suit in 1958 (Wood & Hirschberg, 1994). The period from 1960 onwards has come to be considered the golden age of hypnosis. Hypnotherapy was now considered beneficial in treating various psychological problems and was used for many non-medical purposes, such as motivation and releasing creativity (Fricker & Butler, 2001).

4.5.2 Empirical findings concerning hypnotherapy and surgery

The available literature suggests that hypnotherapy is underutilised to help patients deal with surgical procedures and their aftermath. The recent appearance of several case studies in the literature is anecdotal and although lacking the impact of controlled studies, they are useful reminders of the potential of hypnotherapy with surgical patients.

More recently, well-controlled studies have documented the effective use of hypnotherapeutic suggestions during surgery. The literature demonstrates that hypnotherapy can be powerful in helping patients deal with surgical procedures and as an adjunct in the care of surgical patients (Blankfield, 1991; Evans & Stanley, 1990, 1991; Olness & Kohen, 1996; Sunnen, 2000). The use of hypnotherapy to replace or supplement chemical anaesthesia in surgery patients has been reviewed recently and there are numerous case reports on the successful use of hypno-anaesthesia for major and minor surgical procedures (Evans & Stanley, 1991). Levitan (1992) cites twenty-seven surgical procedures with hypnotherapy as sole anaesthetic. There are several reports of patients using self-hypnosis for major surgery; for example, for angioplasty (Kostka, 1992), for liposuction (Botta, 1999) and liver biopsy (Adams & Stenn, 1992). Hypnotherapy can serve as a means of surgical anaesthesia, at least in some of the general population. One specific indication for the use of hypnotherapy is for neurosurgery, when it is imperative that the patient is awake and can respond to verbal commands. Migaly, Karovitz, Jahab, and Gaal (1994) found that a combination of hypnotherapy before surgery, anxiolytic music during surgery and suggestions after surgery decreased the side effects of ketamine anaesthesia. Hypnotherapy as sole anaesthetic is useful in emergencies and general anaesthesia. However, the use of hypno-anaesthesia will remain limited. Conventional chemical anaesthesia continues to predominate because it is uniformly effective, relatively safe and has become generally accepted (Fredericks, 2001).

Most minor surgical procedures are performed with regional or local anaesthesia, although patients are searching for alternative approaches because of the side effects of pharmacological anaesthesia (e.g., nausea, vomiting, drowsiness). Hypnotherapy is the only alternative that carries no danger or side effects. Patients can endure surgical procedures without being aware of discomfort (Fredericks, 2001). Schultz-Stübner (1996) reports using hypnotherapy instead of cerebral sedatives for high risk patients because it

has no side effects. Lang, Joyce, Spiegel, Hamilton, and Lee (1996) describe self-hypnosis relaxation during interventional, radiological procedures.

Clinical and experimental research indicates that hypnotherapy has been shown to be effective in controlling pain of various origins and in a number of settings. A review of the literature found studies that exemplify the effectiveness of hypnotherapy in the reduction of pain (Ashton et al., 1997; Chaves, 1994; Rogers, 1992). Weinstein and Au (1991) examined thirty-two patients (sixteen subjects and sixteen controls) with severe coronary artery disease, as demonstrated by prior angiography, who were candidates for angioplasty of one or more coronary arteries. Of the control patients, 44% required additional pain medication during the procedure compared to only 13% of the hypnotised patients. In a second study, thirty burn patients undergoing debridement was randomly assigned to three groups: hypnotherapy, attention/pseudo-hypnotherapy (placebo), and no intervention. The hypnotherapy included suggestions for relaxation, analgesia, amnesia and comfort. Only the group receiving true hypnotherapy reported a significant reduction in self-rated pain: 54% of baseline compared to 84% and 86% of baseline for the attention/pseudo-hypnotherapy and no-intervention groups respectively (Patterson, Everett, Burns, & Marvin, 1992). Syrjala, Cummings, and Donaldson (1992) found that hypnotherapy was more effective than cognitive behavioural therapy in reducing pain with bone marrow transplants. Hypnotherapy may lead to substantial pain control in highly hypnotisable patients, although even those with limited hypnotic capacity can benefit by relieving their pain (Fredericks, 2001; Holroyd, 1996; Markham, 1994).

The literature review reveals that although patients in ICU seem unresponsive to verbal commands, communication with them on hypnotherapeutic levels remain possible. Heightened suggestibility should be used to their advantage as it may contribute to their well-being (Fredericks, 2001). Patients perceive and encode meaningful sensory and perceptual information under surgical anaesthesia (Weitzenhoffer, 1996). Johnson (1987) used hypnotherapeutic techniques with comatose patients and found these techniques valuable in reaching, comforting and stimulating patients and facilitating healing. Cheek (1994) also found that comatose patients can be reached verbally and that hypnotherapeutic techniques are helpful in many ways. Clinical reports document that hypnotherapy has been used to help patients cope with frightening situations in emergency rooms

(Fredericks, 2001). Patterson et al. (1992) report that hypnotised burn patients showed superior pain relief, compared to a no-treatment control group.

The literature review reveals growing evidence that hypnotherapeutic techniques or suggestion can aid the emotional response of patients, both pre- and postoperatively (Blankfield, 1991). A number of researchers have examined the effectiveness of hypnotherapeutic imagery relaxation techniques in assisting patients to experience profoundly relaxed states. These hypnotherapeutic interventions have been shown to be of considerable benefit to patients by reducing anxiety, altering moods, and reducing perceived pain and the distress of symptoms. Relaxation also appears to make it possible for healing to take place (Schutz, 1998). Imagery as a preoperative intervention has been found to decrease state anxiety, pain and surgical wound erythema and to lower cortisol levels in surgical patients (Lambert, 1996). Ashton et al. (1997) evaluated the effects of self-hypnosis and its role in surgery and found that self-hypnosis relaxation techniques can provide CABS patients with a coping mechanism for the stress of CABS. In this study, patients who received self-hypnosis training experienced a significant reduction in postoperative tension compared to patients in the control group. Decreasing tension and anxiety led to short-term and long-term psychological benefits. Both standardised and individualised audiotaped hypnotherapeutic inductions and suggestions have also been shown to be beneficial for anxious surgical patients (Blankfield et al., 1995; Lynch, 1999; Rogers, 1992).

Hypnotherapeutic suggestions are credited with having a positive effect on surgical patients, either in terms of pre- or postoperative recovery (Blankfield, 1991). Even more encouraging have been multiple findings of reduced length and cost of post-surgical hospitalisation and surgical convalescence (Bennett, 1993; Manusov, 1990; Rapkin, Straubing, & Holroyd, 1991). A great deal of the literature on the use of hypnotherapy to facilitate recovery indicates that patients who underwent hypnotherapy did better than expected in terms of psychological and physical recovery from surgery (Blankfield, 1991). Greenleaf et al. (1992) studied thirty-two CABS patients to examine the effect of hypnosis on recovery from surgery. Patients in group one were taught self-hypnosis with imagery. Group two was taught self-hypnosis with specific suggestions related to optimal surgical outcome and patients in group three received no interventions. The results showed that self-hypnosis was positively associated with recovery from surgery. The group which

received no intervention spent more days in the hospital compared to the other two groups. In an analysis of almost two hundred studies of psychological preparation for surgery, Sobel and Ornstein (1996) reported that 80% showed significant benefits, quicker recovery, fewer complications, less post-surgical pain, less need for pain medication, less anxiety and depression and an average of 1.5 days less in hospital.

According to the current researcher, hypnotherapy can provide the resources needed to facilitate physical and psychological recovery, lessen the pain and discomfort and maximise internal resources needed to enhance post-surgical adjustment.

4.6 HYPNOTHERAPEUTIC EGO STRENGTHENING (HES)

According to Frederick and McNeal (1999), Hartland (1965, 1971) and Stanton (1993), ego strengthening is the cornerstone of psychotherapy. Although HES is often mentioned in the literature, very little is known about the nature and effectiveness of these techniques. The use of HES has been shown to increase therapeutic alliance and self-confidence, and to facilitate recovery, enhance internal control and produce a sense of mastery on the part of the patient (Fredericks, 2001; Hammond, 1990; Olness & Kohen, 1996).

The next section introduces the reader to a theoretical overview of HES.

4.6.1 Theoretical overview

HES is well represented in the literature. According to Lynn, Neufeld, and Maré (1993), even Mesmer (1734-1815) and other early luminaries were cognisant of the power of direct ego strengthening suggestions to treat a variety of psychological and physical complaints. Most theoretical views of hypnotic ego strengthening are derived from cognitive behavioural theory. Hartland (1965) popularised HES as a valuable therapeutic modality, and now many theoretical frameworks embrace HES (Phillips & Frederick, 1995). From a **Freudian** viewpoint, the resolution of unconscious early life conflicts expands the ability of the ego to direct an individual towards mastery, survival and creativity (Phillips, 2001). From a **Jungian** point of view, HES involves facilitating the ego to be stronger than the pressure of the unconscious, so as not to be overwhelmed and taken over by unconscious processes. In so doing, the patient can arrive at individuation or self-realisation (Frederick

& McNeal, 1999). **Hartmann** (1964) emphasises conflict-free spheres of the ego that embrace healthy adaptive ego functions. He maintains that many ego functions are adaptive in nature and can be viewed from a positive perspective in which elements of conflicts have been excluded.

Ego psychology considers the ego to have a central role in personality organisation. The degree and strength of the ego depends on the ability of the ego and its strength to handle conflicting demands of id, superego and reality (Summers, 1994).

Federn (1952) visualises a dynamic concept of the ego, involving the assumption that various ego states exist. Ego state therapy, as developed by **Watkins and Watkins** (1979), views the ego as being strengthened by increased interaction between positive, mature healthy ego states of personality, which extend their influence over the less constructive states, thereby helping the stronger ego states to take the executive position more of the time. Ego strengthening comes from the maturation of ego states and the activation of helpful ego states.

Erickson and Rossi (1976) embraces the notion that the unconscious mind contains all the resources individuals need for the resolution of their conflicts. From the Ericksonian point of view, ego strengthening involves evoking naturalistic unconscious resources, the essence of his utilisation principle.

Self-psychologists believe that the process of ego strengthening may facilitate internalisation and development of individuals' inner structures (Baker & Baker, 1987). **Object relations** theory views the goal of HES as higher functioning object relations structures, which result in a stronger ego and more healthy sense of self (Summers, 1994). **McNeal and Frederick** (1993) hold that a positive value must be placed on the continuous strengthening of the "I", ego or self, and that inner strength is a conflict-free ego state that is often dormant. This state is suggestively connected by the hypnotherapist with the patient's deepest unconscious resources.

Before discussing the techniques used in HES, this concept will be defined and discussed in greater detail.

4.6.2 Definition and description

Although the term hypnotherapeutic ego strengthening (HES) appears frequently in the literature, it is not clearly defined. HES involves the utilisation of suggestions of encouragement at conscious and unconscious levels of awareness. According to Carich (1990), HES can be summarised as the reinforcement of positive attributes of behaviour and emotions through repetition which eventually helps patients change their perception of self, and enables them to succeed and have confidence in themselves. The process of HES involves expanding the scope of the ego and increasing effective ego functioning. In so doing, the organisation of ego functions becomes stronger and more capable. Stronger ego functioning results in a stronger, more adequate and more effective self, which is better able to cope with an individual's internal and external realities (Frederick & McNeal, 1999). HES may include general suggestions for well-being or more specific techniques to increase self-confidence and esteem, enhance perception of internal and external control and stimulate a sense of mastery (Phillips, 2000).

HES techniques are tailored to the needs and characteristics of individual patients. Possible interventions include increasing alertness, calmness, and confidence; decreasing apprehension, depression and self-conscious preoccupation; improving concentration and memory, and increasing absorption in activities. Ego strengthening suggestions need to be reinforced by frequent and regular repetition (Meyer, 1992). HES techniques given to patients during hypnotherapy are integrated into concomitant therapeutic procedures. The choice and timing of ego strengthening procedures are based on hypnotherapists' understanding of patients' histories, therapists' communication styles and treatment stages (McNeal & Frederick, 1993).

In the current researcher's view, HES involves a procedure whereby patients are given a series of suggestions in the hypnotic trance to reinforce their feelings of self-worth and confidence. It allows patients to experience positive attributes, which are attainable goals, and permits patients to feel glimpses of hope in positive directions. Furthermore, patients are enabled to change their perception of self, leading to positive feelings. Positive reinforcement of patients' attributes eventually becomes part of their self-perception.

4.6.3 Ego strengthening continuum

According to Phillips and Frederick (1995), there are three major approaches to HES which can be thought of as existing on a continuum. At one end of the continuum are the direct, structured HES interventions, which offer a sense of mastery and internal control, desensitise patients against fearful situations, give them greater sense of familiarity about future tasks and offer structure which can be utilised when moving into new experiences. The addition of imagery and mastery techniques is in the centre of the continuum. At the other end of the continuum are the projective/evocative techniques which activate powerful HES internal resources and provide valuable information about what is going on with patients (Frederick & McNeal, 1999).

4.6.4 Direct versus indirect ego strengthening

Direct ego strengthening is characterised by suggestions that are specific, directive, command-like and prescribe a specific, well-delineated response. It involves positive, supportive suggestions or requests for encouragement, couched in authoritative language, which convey expectations that suggested effects will occur involuntarily, for example: *"You are deeply relaxed"* (Lynn et al., 1993; Yapko, 1995). Direct ego strengthening suggestions can be combined with imagery to decrease thoughts and feelings of anxiety, gather resources and strengths and accentuate positive feelings through accessing successes and mastery experiences. Many direct ego strengthening techniques can be adapted to activate inner resources and increase mastery. Patients who feel emotionally overwhelmed can benefit from direct HES suggestions during sessions. These suggestions are useful with patients who need structure and thrive on instructions. They have the ability to strengthen, stabilise and achieve safety for patients (Phillips & Frederick, 1995).

Indirect ego strengthening is characterised by permissive language that allows patients to set the pace in responding and to select what is useful to their experience, for example: *"In a moment, your unconscious mind is going to take you to a very special place, associated with feelings of peacefulness, tranquillity, safety and happiness ..."* (Hammond, 1990, p. 130). Indirect ego strengthening offers an apparent choice of responses and covers a wide variety of suggestions. Indirect suggestions constitute the basis for the use of a wide variety of therapeutic interventions including metaphors, stories, paradox and binds (Lynn

et al., 1993). It approaches the inner healing powers of patients that exist within, and activates these powers (Frederick & McNeal, 1999).

The current researcher values the indirect approach to ego strengthening as it undercuts conscious resistance, increases rapport and facilitates access to unconscious resources and potentials. A blend of direct and indirect ego strengthening maximises treatment gains.

HES includes a variety of techniques which will be discussed next.

4.6.5 Classical ego strengthening

4.6.5.1 Hartland's ego strengthening

Hartland (1965, 1971) introduced ego strengthening as a hypnotherapeutic technique. His suggestions are authoritarian, directive, future-oriented and intended to strengthen ego functions, such as increased concentration, memory, energy and self-confidence. They are further designed to enhance coping and reinforce a positive self-image (Phillips & Frederick, 1992). Hartland's suggestions are a repetition of important ideas which are expressed differently. Key words are stressed and through the insertion of pauses a general rhythm is developed to increase receptiveness. Hartland uses generalised ego enhancing suggestions which make no attempt to deal with specific symptoms to help patients feel better about themselves. These suggestions are designed to eliminate tension, anxiety and fear as well as to gradually restore patients' self-confidence in their ability to handle their problems. Hartland maintains that the suggestions strengthen the ego and ego defences. According to him, the routine use of ego strengthening suggestions helps patients to improve and constitutes a learning process in which material is assimilated by the unconscious (Frederick & McNeal, 1999; Stanton, 1993).

4.6.5.2 Stanton's addition of imagery

Stanton (1975) added a new dimension to further enhance ego strengthening, namely visualisation and imagery, thereby toning down the authoritarian approach and allowing patients to generate specific imagery related to their problems. Imagery deepens the trance and expands its possible meanings. Some of Stanton's imagery is archetypal, some

involves getting rid of the negative, while some is symbolic of the patients having been successful in enduring the worst of life. He encourages patients to develop specific imagery related to their problems, and emphasises the importance of self-hypnosis at home for ongoing ego strengthening. Stanton managed simultaneously to broaden ego strengthening and place more control in patients' hands, allowing a therapeutic interplay between patient and hypnotherapist. The imagery acts as a guide that encourages patients to add their own images to those supplied by the hypnotherapist, which make the process more interactive (Frederick & McNeal, 1999).

According to Frederick and McNeal (1999), there are many advantages to adding imagery to ego strengthening procedures. Patients respond well to developmental or archetypal and other symbolic input that bypasses the critical faculty. Dynamic visual imagery is often a display of active imagination in which the conscious and subconscious mind interacts often with profound problem solving. Positive associations can be expanded through imagery. During the trance experience concern over performance anxiety is lessened. Imagery is also a rich source of information about the patients' internal processes and can be more easily accepted and expanded upon when it occurs within their inner world.

Gardner (1976) specifically explores imagery techniques of ego strengthening designed to allow patients to involve themselves in mastery experiences, thus emphasising a sense of internal control. **Erickson** (1980) contributed a wide range of HES techniques, including metaphors and storytelling, paradox, naturalistic and conversational suggestions, to help individuals access and utilise internal resources. **Barber** (1984) created ego strengthening suggestions for raising self-esteem. **Brown and Fromm** (1986) used HES techniques such as dreams, the inner screen and ideal-self approaches to facilitate the discovery and enhancement of inner coping strategies. **Watkins and Watkins** (1990) developed an ego strengthening procedure for the loving, healing self. **Newey** (1986) works with the strong part of a patient engaged in therapy. **Hammond** (1990) published scripts for ego strengthening from many contributors. **Frederick and McNeal** (1999) use projective techniques such as age progressions to promote positive views of the future, age regressions to past experiences of mastery and renurturing, the activation of positive internal energies such as inner strength and the use of HES suggestions to increase ego functioning with specific ego states.

The next section provides a brief discussion of projective/evocative ego strengthening techniques.

4.6.6 Projective/evocative ego strengthening

Projective/evocative HES techniques evoke unconscious material relevant to the status of the patient's ego, activate the patient's internal resources and endeavour to activate inner healing powers (Frederick & McNeal, 1999). These techniques include projective age regression, present resources and projective age progressions.

4.6.6.1 Projective age regression

Hypnotherapeutic age regression can be defined as intense experiential utilisation of memories, involving taking patients back in time to a greater or lesser degree into some experience in their past, re-experiencing it (revivification) as if it were happening in the here-and-now, or having patients remember experiences as vividly as possible with varying degrees of intensity (Yapko, 1995, p. 107). Age regression can be described as partial (i.e., where the patient responds with attitudes and judgements of present-day ego and chronological age), or complete (i.e., characterised by age-appropriate childlike perceptions and judgements) (Edgette & Edgette, 1995). The current researcher presents the following script as an example of this: *“Allow yourself to drift back in time to when your heart was healthy ... Visualise the strength of the heart muscle as it continues to beat ... Feel the rhythm of your heart beating regularly and perfectly, calm and relaxed ... See the arteries with smooth walls free from any obstruction ... Allow these positive images to become clearer to you, ... knowing that you can bring these feelings of inner strength back into the present ... Visualise strong waves of healing energy ... strengthening your heart ... Feel your heart becoming strong and vibrant.”*

Projective age regression for ego strengthening ranges from structured to unstructured age regression.

Structured age regressions, particularly positive experiences, can guide patients into ego strengthening. In structured age regression, hypnotherapists direct patients to specific times in their life when patients were engaged in positive experiences of success, productivity or

creativity (Frederick & McNeal, 1999), for example: “*When you’re back in time as a 7-year old, you’ll be interested to see things that you can remember ...*” (Edgette & Edgette, 1995, p. 115).

Unstructured age regressions are projective, because they do not result from an agenda imposed by the hypnotherapist. Unstructured age regressions are powerful, evocative experiences. They call on resources in such a way that the decision about what kind of positive memories will appear is left up to deeper levels of the patient’s mind (Frederick & McNeal, 1999). An example is: “*As soon as you become aware of the sensation of drifting back ...*” (Edgette & Edgette, 1995, p. 115).

Age regression provides numerous possibilities for helping patients to go back in time, whether to the recent or distant past, to discover unconscious resources currently used. Patients have many positive memories and resources that can be accessed and utilised for ego strengthening (Frederick & McNeal, 1999). They often possess abilities they do not realise they have. Individuals often have a built-in resistance to speaking of pleasant experiences or they are dissociated from their resources. Because they do not have awareness of or access to them, these abilities lie dormant (Yapko, 1995). Hypnotherapeutic age regression can be used to help patients get in touch with past mastery experiences, memories of safety, unknown resources and positive nurturing events or figures, buried in the unconscious mind, which can nonetheless be a rich source of ego strengthening (Phillips & Frederick, 1995). Age regression can be revitalising and ego strengthening because it can help patients to rediscover their own unknown resources, success or achievements that will allow them to manage current difficulties in a more adaptive way (Yapko, 1995).

4.6.6.2 Present resources

Projective HES techniques that focus on patients’ present unconscious reservoir of resources can be used effectively to strengthen ego functions. These techniques can be highly structured, more flexible or even spontaneously initiated by the patient.

Inner strength is a helpful aspect of each patient’s personality, which is often dormant and functions in times of severe conflict and trauma. Patients are encouraged to visit their

deepest centres of survival through techniques that focus on the here and now. Inner strength hypnotherapeutic techniques and modifications thereof are powerful ego strengthening manoeuvres to access internal survival mechanisms, emphasise the power of patients' inner resources and mobilise their inner resources in ego strengthening ways (Phillips & Frederick, 1995) (see Appendix E).

Internal self-soothing techniques, known as internal self-helpers, are well-recognised sources of ego strengthening and are able to soothe the self. Several hypnotherapeutic experiences lend themselves to the production of internal soothing, including imaginary places where peacefulness and serenity can be experienced (Phillips & Frederick, 1995). Frederick and McNeal (1999) advocate the use of a "safe place" of the patient's own choosing for soothing the self. Present resources can be of great assistance in strengthening the patient and providing a sense of mastery (see Appendix D).

The third dimension of ego strengthening includes the use of age progression.

4.6.6.3 Projective age progression

Age progression involves the patients' ability to fantasise or mentally rehearse situations and experiences from future projections (Sapp, 2000). Patients are given the opportunity to experience themselves in a situation and imagine the consequences of current changes of experience, integrate meanings at deeper levels and obtain an overview of their life (Yapko, 1995). The current researcher provides the following example: "*Allow your subconscious mind to take you ahead into the future ... to the time after surgery ... Sitting up in bed, smiling and receiving visitors ... See yourself walking out of hospital ... Feel a sense of relief.*"

According to Frederick and McNeal (1999), suggestions for age progressions exist on a continuum from structured, to moderately structured, to unstructured (i.e., indirect or spontaneous progression).

Structured age progressions exist at one end of this continuum. They can be seen as mental processes in which patients picture or imagine themselves in the future, after the goal has been achieved (Frederick & McNeal, 1999). These progressions include mental

rehearsals, process imagery, goal-directed imagery and end result imagery, as well as other sensory experiences, such as feeling a sense of hope in the future or hearing an inner voice that speaks of future possibilities. They can be structured and directed by the hypnotherapist, and the patient may act as a passive receiver who has the option of embellishing the directions of the hypnotherapist. The latter helps the patient to mentally enact the steps required for the accomplishment of a future activity (Phillips & Frederick, 1992). Hartland's (1965) ego strengthening approach is an example of this.

Moderately structured age progressions are in the middle of the continuum. These progressions are suggested by the hypnotherapist, but left open for patients to complete (Phillips & Frederick, 1992). Erickson's (1954) **crystal ball** technique is an example where patients are asked to orient to the future and visualise achievements that have occurred since the termination of hypnotherapy. In addition, the experiences are enhanced by Torem's (1992, p. 83) '**back-from-the-future**' technique, which enhances these future experiences for patients with sensory components and amplifies them with ego strengthening suggestions. The purpose is to internalise future images into patients' subconscious as "gifts" that they take with them on a conscious and subconscious level on their journey of healing and recovery.

Unstructured, indirect or spontaneous age progression is at the other end of the continuum. Patients may spontaneously initiate an age progression experience by simply beginning to orient themselves to future possibilities (Phillips & Frederick, 1992). The material of the progression comes from within the patients' own plenum of internal resources, rather than from the therapist (Frederick & McNeal, 1999). Hypnotherapeutic age progressions are ego strengthening because they bring about stabilisation and safety, and allow patients' deepest beliefs about themselves to surface as resources, thus allowing them to use their problem-solving and other ego faculties to better advantage (Phillips & Frederick, 1995).

Hypnotherapeutic age progressions help to put patients in touch with the strong, vital inner resources of their deepest, positive inner beliefs. The resultant ego strengthening and integrative effects help to stabilise patients.

4.6.7 Ericksonian ego strengthening

Erickson, Rossi, and Ryan (1986) embraces the principle that the unconscious mind is positive and generative in nature and contains a plenum of ego strengthening resources which can be accessed in many ways. These resources are learned from past experiences, and present and future situations. The hypnotherapist's task is to evoke these inner resources since unconscious communication and learning are more effective and reactive in an altered state of consciousness. Ericksonian HES, therefore, aims to activate internal resources at an unconscious level of awareness (Frederick & McNeal, 1999; Zeig, 1994). The Ericksonian approach includes a variety of methods for HES. Some of these are discussed below.

4.6.7.1 The cooperation principle

The Ericksonian principle of cooperation includes the hypnotherapist's acceptance of the validity of the patient's reality. Ericksonian hypnotherapists emphasise cooperative principles of appreciating and utilising patients' realities as the basis for therapeutic development. Hypnotherapists accomplish their part of the cooperation by pacing and leading patients' internal and external awareness, enhancing their understanding and empathy for patients. The therapeutic alliance promotes patients' self-acceptance, self-confidence and self-esteem (Frederick & McNeal, 1999). Patients become more relaxed and better at problem solving, which becomes an element of HES. For example, when patients complain that they have no positive resources inside them, and are terrified of exploring internally because of what they may find, the hypnotherapist may "cooperate" with this view. The hypnotherapist may comment, for example: *"I am really glad you are being honest with me about your fears. Your honesty about your beliefs and what you need will make sure that we don't go too soon or too deeply into your inner experiences, until you feel safer or more ready to do so"* (Phillips & Frederick, 1995, p. 96).

4.6.7.2 Interspersal

Interspersal involves the frequent repetition of key words or phrases that is ego strengthening or carry therapeutic suggestions, interlaced with other verbal productions. In this technique, HES suggestions are hidden within other, more general suggestions

(Frederick & McNeal, 1999; Yapko, 1995). Repetition adds to the power of the interspersed suggestions (Phillips & Frederick, 1995, p. 96), for example: *“Last year after a snowstorm had passed through, you could see how calm the lake had become. Up here we’ve learned how natural it is for those changes to take place. And even the snow can be an opportunity to calmly take care of things that you haven’t had time for, or you can just become calmly absorbed in feeling so comfortable inside, while you watch the snow fall. There’s something wonderful about being able to see the lake clearly again”*. The efficacy of this technique is its ability to communicate HES suggestions and stimulate new positive associations within the unconscious mind (Phillips & Frederick, 1995). Interspersals can be used to deepen the hypnosis, facilitate experiences of a specific hypnotic phenomenon, seed ideas for HES and future reference, and reiterate important points. Because they are being presented within another context, they have a greater chance of bypassing resistance (Yapko, 1995).

4.6.7.3 Embedding

Embedding involves nonverbal markings of suggestions through changes in voice tonality or emphasis, postural changes, and so on (Phillips & Frederick, 1995). For example, if hypnotherapists use their voice to accentuate the italicised words in the following question, they are embedding a suggestion for a specific response: *“Isn’t it nice to ... close your eyes ... at the end of the day?”* They get the eye closure response, an indicator of suggestibility (Yapko, 1995, p. 92).

4.6.7.4 Seeding

Seeding can be defined as activating an intended target by presenting earlier hints or cues, priming a patient to respond to the main intervention later (Zeig, 1990, p. 222). Seeding has been described as “the subtle introduction of HES ideas in a minor key before they are faced in a major way” (Phillips & Frederick, 1995, p. 97). In seeding, the hypnotherapist presents a HES idea (hint or cue) to the patient’s unconscious mind by making statements that point to the idea. These HES statements are usually interjected unwittingly and unconsciously into the therapeutic conversation (Frederick & McNeal, 1999). For example, *“Allow your body to remember what it is like to settle way down, slow down your pulse rate and really relax in the muscle joints – how quickly can your body remember these*

things from the last time? It can remember so many things, new and old ..." (Edgette & Edgette, 1995, p. 58).

The purpose of seeding is to activate associational processes within the patient, enhance responsiveness to suggestions, heighten the effectiveness of interventions and activate the presentation of therapeutic injunctions (Zeig, 1994). It also creates feelings of safety and mastery in ways that are ego strengthening. Although seeding is done suggestively by the hypnotherapist on a continuous basis, patients can be helped to become active participants in this process by focusing on a future identity in which they resume ownership. When patients express their awareness of what recovery will look like and imagine a healthier sense of self, HES has taken place (Phillips & Frederick, 1995).

4.6.7.5 Metaphors

Alman and Lambrou (1992, p. 276) define metaphors as suggestions that use one familiar subject or idea to create an association with a desired idea, for example: "*See the blood moving through the arteries steadily ... easily like a river ... providing the cells with fresh energy ... the nectar of life ...*" (Dahlke, 1996, p. 83). A metaphor is generally accepted as a verbal expression (story) involving pictorial or verbal imagery (De Klerk, 1995). Psychologically, a metaphor can be viewed as a means of communication and another way of conveying suggestions, and also provides a link to unconscious learning (Atwood & Levine, 1990).

External metaphors originate with the hypnotherapists, including metaphoric stories from their previous and personal experiences or truisms about nature or universal types of life experiences. Patients are not cast in any role in the story. Some hypnotherapists make up stories or anecdotes that are parallel to patients' problems or tailored to patients' particular needs to help achieve a change in perspective (Hammond, 1990).

Internal metaphors originate from patients' lives and are derived from their own inner resources, memories, dreams, goals, fears, hopes and unconscious learnings. Patients are cast directly in the central role in the metaphor. These metaphors fit the patients' needs (De Klerk, 1995). Hypnotherapists use these patient-generated metaphors to understand important issues and conflicts (Kingsbury, 1994).

Naturalistic metaphors may emerge spontaneously when hypnotherapists and patients are in mutual trance and patients are in the central role (Frederick & McNeal, 1999).

The main advantages of metaphors and storytelling are that they can be offered to patients in a non-threatening manner that facilitates rapport, deepens internal communication and allows individuals to respond comfortably, privately and at their own pace. Metaphors are most effective if they are perceived by patients as emerging from particular situations and are generally congruent with the context of personal history and experience (Brown, 1994). They are learning messages which often contain embedded suggestions, seeding and messages, disguised by the overt content of the story, which bypass critical objections of the conscious mind (Phillips & Frederick, 1995). Metaphors have tremendous ego strengthening possibilities and enable patients to develop new skills, conclusions and solutions (Stanton, 1993). They may create interest and thereby disarm resistance, convey messages of strength, endurance, and mastery as well as promote a sense of autonomy (Phillips & Frederick, 1995).

According to the current researcher, CABS patients have inadequate inner resources because of their physical illness and the accompanying emotional distress. The hypnotherapist's task is to evoke or strengthen internal resources to facilitate adjustment and promote patients' healing and recovery. A model for helping couples to develop and strengthen their inner resources is presented in the next section.

4.7 A HYPNOTHERAPEUTIC EGO STRENGTHENING MODEL FOR CABS

Recovery from CABS is associated with adverse psychological functioning. Patients report anxiety, depression, anger and mood swings (Duits et al., 2002). It is not uncommon after discharge for patients to experience extreme fatigue, sleep disturbances, constipation, loss of appetite, severe pain at the surgical incisions sites, shortness of breath and heart rhythm disturbances (Moore, 1994). Many of these potential difficulties may also affect the patients' spouses (Ell & Dunkel-Schetter, 1994).

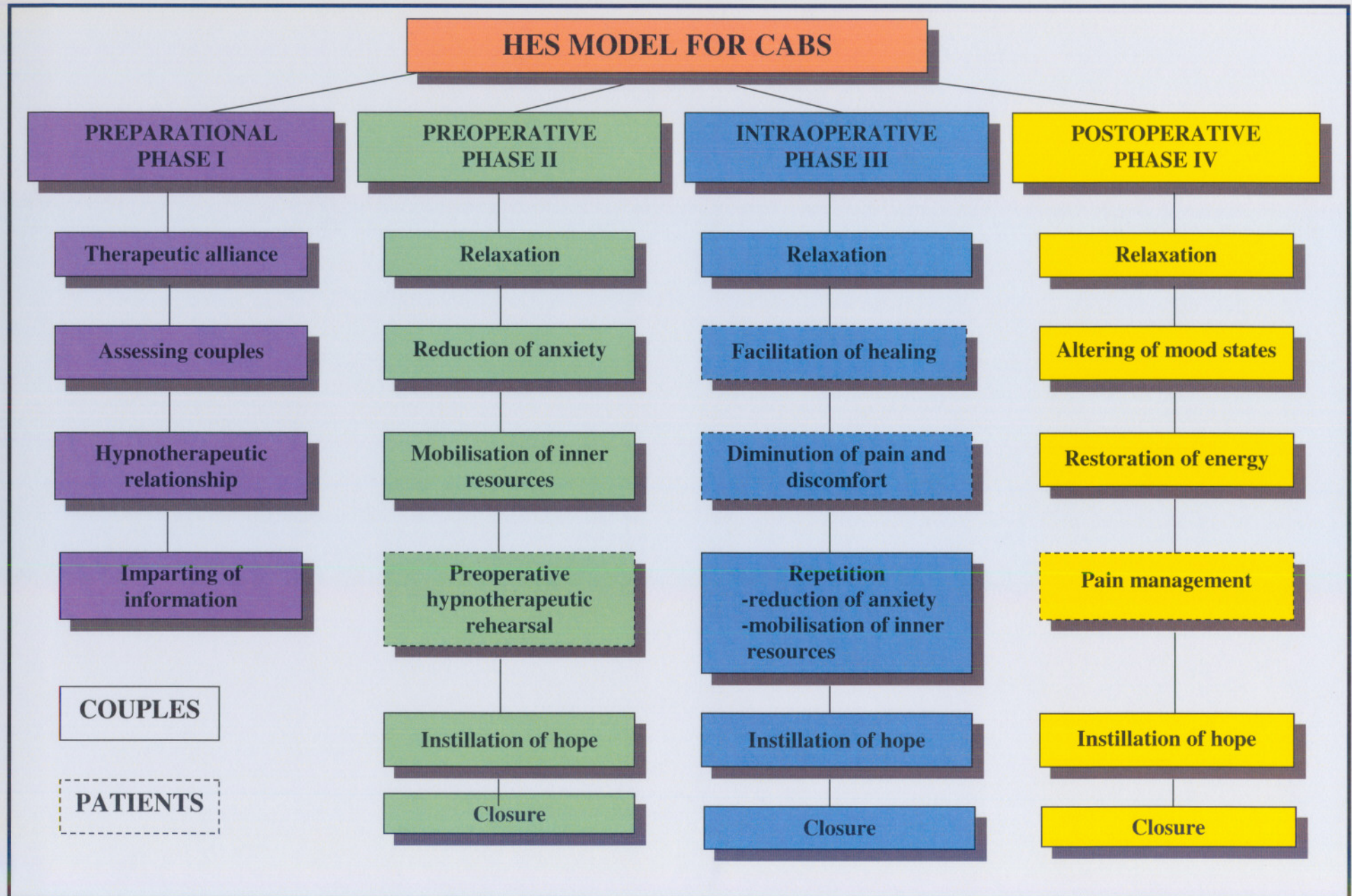
The acceptance and use of hypnotherapy as a psychological treatment modality have increased over the past few years. Hypnotherapy has been used more frequently to treat

various lifestyle habits and illnesses (Fricker & Butler, 2001). It can make a special contribution in a multidisciplinary hospital team during CABS, since CABS causes major physical and emotional disruption. Although CABS patients and spouses approach surgery with unique mind sets, they experience tremendous apprehension, fear and anxiety, which create psychological strain on the ego's adaptive capacity. Ego strengthening is therefore crucial in the psychosocial recovery of couples and can promote a better quality of life, both pre- and postoperatively.

Hypnotherapy offers abundant ego strengthening interventions to support couples during CABS. To the knowledge of the current researcher, such applications have not yet been made. HES may add valuable dimensions to the preparation and rehabilitation of couples while they are in a vulnerable and receptive state. It is directed towards the treatment of psychological aspects and physiological reactions concomitant to CABS, and the promotion of quality of life in both patient and spouse. These interventions can begin in the preoperative period and be maintained throughout the postoperative stage.

The current researcher designed an HES intervention model which has been conceptualised from her experience as a consulting clinical psychologist and different applications discovered in the literature. This model was applied in the current investigation. Phases I and II were developed and implemented during this study. The current researcher's experience with the implementation of the above phases and subsequent findings have subsequently led her to develop phases III and IV. The HES model (see Table 4.3) is based on four phases during the process of hospitalisation and can be modified as required.

TABLE 4.3 Hypnotherapeutic ego strengthening (HES) model for CABS



4.7.1 The preparational phase (phase I)

The initial phase of the HES intervention includes the therapeutic alliance, the hypnotherapeutic relationship, the assessment interview and imparting of information.

4.7.1.1 Therapeutic alliance

The establishment of a relationship of trust and safety between the hypnotherapist and couples is of paramount importance before they will feel able to divulge personal issues and trust the hypnotherapist's suggestions (Cobb & Robshaw, 1998). Relating to them in a warm, understanding, caring and respectful manner reduces defensiveness and creates a trusting and safe climate for hypnotherapy to be effective (Hammond, 1990). The hypnotherapist introduces himself or herself by shaking both the patient's and spouse's hands and sitting down leisurely, making appropriate eye contact, head nodding and demonstrating concern and interest with facial and body gestures. These actions are helpful ways to engage the couple and establish rapport. The use of empathic statements also complements the nonverbal expression of empathy (Kleespies, Deleppo, Mori, & Niles, 1998). The temperature of the patient's hands, dryness or moisture, muscle tension or relaxation of hands, quality of their handshake, their posture, look in the eyes, tone of voice and overall energy flow all convey important information (Fredericks, 2000, 2001; Sinatra, 1999). The colour of their faces, their expressions and the presence of perspiration are all significant, and help in ascertaining the couples' coping style, such as denial (Fredericks, 2000, 2001). The hypnotherapist's awareness of the couples' unique individuality and empathy with their current experience and forthcoming surgery, can greatly assist the reduction of emotional distress (Wood & Hirschberg, 1994). By giving a message that they are valued as human beings, couples may feel that they are no longer alone, which affects their self-concepts and strengthens their egos (Frederick & McNeal, 1999; Olness & Kohen, 1996).

4.7.1.2 Assessment interview

The hypnotherapist explores the couple's history, current lifestyle and personal interests (Phillips & Frederick, 1995). The assessment of both patient and spouse centres on exploring their destructive imagined scenarios, misconceptions, anxieties and irrational

ideas about the surgery, previous unpleasant surgical experiences and specific aspects of surgery which worry them most. The hypnotherapist explores what they know about the operative procedure and elicits their concerns (Sunnen, 2000). Couples should also be given an opportunity to discuss any religious problems and needs, as they may blame their predicament on God (Schutz, 1998). Some couples have a fear of death and the loss of a loved one. The hypnotherapist dispels these fears by talking about what should be expected after surgery, which will indirectly suggest to patients that they will survive the surgical procedure (Fredericks, 2000). Couples are reassured that they are undergoing a common and routine experience. The hypnotherapist explains to them that their apprehension and fears are due to the unknown and are perfectly normal and understandable. Ventilation of fears and concerns leads to more realistic appraisal of their situation (Evans & Stanley, 1991).

4.7.1.3 Preparation for hypnotherapy

The hypnotherapist's task is to create a favourable context for hypnotherapy, which includes positive expectancies of the hypnotic process. Information and education about hypnosis is given to correct misconceptions and deal with fears (Phillips & Frederick, 1995). Misconceptions are addressed, such as a loss of consciousness, the weakening of willpower and the giving away of secrets. It is stressed that nothing can occur through hypnosis that they do not want to happen. The hypnotherapist explains that hypnosis is a natural phenomenon, a God-given ability individuals experience many times a day, such as when one drives a car without being aware of how many kilometres have been driven, or becoming absorbed in a movie. Furthermore, all hypnosis is self-hypnosis and involves complete mental and physical relaxation, brought about by the cooperation between hypnotherapists, with their knowledge and techniques, and patients' own mind and imagination (Modlin, 1999; Sapp, 2000).

The two hemispheres of the brain and the main differences are subsequently explained. The left side of the brain is usually associated with the conscious mind and is concerned with logic, reasoning and analysis. The right side of the brain is usually associated with the subconscious mind and is concerned with fantasies and imagery (Fricker & Butler, 2001). Hypnosis is a state of mind where the body is relaxed and the mind is super-concentrated and more open to receiving and accepting suggestions. The added advantage is that the

hypnotherapist can communicate with the inner subconscious and emotional mind because hypnosis opens the door to the subconscious. The subconscious mind controls and monitors virtually everything that goes on in an individual's mind, body and life. The subconscious mind probably makes up at least 80% or more of an individual's mind power, and is the source of all emotions and emotional responses to everything that individuals experience in life. Since the subconscious does not have the ability to think, reason or understand, it can accept information and act accordingly. It is explained that couples will receive specific relaxation suggestions as well as pleasant images to help them cope with the distress of the CABS experience. It is also emphasised that the individual is at all times completely aware of what is happening and will always remain in control (Matez, 1992).

4.7.1.4 Imparting of information

A major contributing factor to the distress experienced by couples appears to be a lack of preparatory information (Artinian, 1991). After discharge spouses can become distraught when they feel uninformed about what to expect. Spouses spend a great deal of time worrying about whether patients are progressing normally (Mahler & Kulik, 2002).

Both pre- and postoperatively, all couples require routine surgical information and education. Information should include the procedures involved and physiological, emotional and cognitive reactions to CABS which they might experience. The provision of information will equip couples to alleviate feelings of fear, anxiety, helplessness and overindulgence in either emotional expression and ventilation or in mental and behavioural disengagement (Ben-Zur, Rappaport, Ammar, & Uretzky, 2000). It assists spousal psychological adjustment by reducing uncertainty, by allowing them to anticipate recovery problems and by giving them realistic expectations about long-term complications (Tooth, McKenna, Maas, & McEniery, 1997). If spouses are fully informed, they can act as assertive gatekeepers to regulate the flow of visitors. The information should emphasise the couple's active role in recovery and rehabilitation and create feelings of control and mastery (Ben-Zur et al., 2000). Information transfer also functions as the initial binding force between CABS couples and hypnotherapists, setting the scene for the therapeutic alliance (Tooth et al., 1997).

The preparatory phase establishes a solid hypnotherapeutic relationship and an atmosphere of cooperation, which sets the stage for ego strengthening.

4.7.2 The preoperative phase (phase II)

The preoperative phase includes the period prior to CABS and takes precedence over the others. The dimensions of ego strengthening within this phase include relaxation, reduction of anxiety, mobilisation of inner resources, age progression, hypnotherapeutic rehearsal and closure.

4.7.2.1 Relaxation

A surgical experience such as CABS and associated hospitalisation can lead to responses of distress for both patient and spouse and influence the outcome of CABS (Sinatra, 1999). Hypnotherapy is a potent tool for the promotion of relaxation in receptive couples (Fredericks, 2001). Hypnotherapeutic relaxation techniques may have a positive effect on couples' mental and physical condition following CABS and provide them with skills to increase feelings of control and empowerment (Ashton et al., 1997; Konstam et al., 1999). Hypnotherapeutic induction and deepening techniques emphasise relaxation and return the body to its normal state (Evans & Stanley, 1991).

4.7.2.1.1 Induction

Couples are under high stress and spontaneously enter into an altered state of consciousness. This altered state of awareness is a naturally occurring coping mechanism which appears when couples are in severe stress, awaiting CABS. They are highly suggestible and the hypnotherapist proceeds as though trance has been induced (Fredericks, 2000).

The hypnotherapist might for example suggest to both patient and spouse: "*Would you like me to show you a way to go through the surgical experience with comfort and safety?*" (Fredericks, 2000, p. 4). "*I would like to talk to you about what I have learned about the healing process, so that you can prepare yourself in the best possible way for your surgery*" (Evans & Stanley, 1991, p. 33).

The hypnotherapist then suggests that couples close their eyes and proceeds with an appropriate method of induction. The hypnotherapist may elect to use a formal or less structured method of induction with subsequent evaluation of their readiness for formal trance experiences (Phillips & Frederick, 1995). Permissive inductions are preferable because they minimise resistance and do not attempt to control the patient's and spouse's responses and encourage active participation in the process of experiencing and utilising the hypnotic state (Olness & Kohen, 1996) (see Appendix C). Relaxation can be increased by further suggesting that they move up or down a staircase, or count backwards from a hundred, feeling more and more relaxed with each step or number (Wood & Hirschberg, 1994).

4.7.2.1.2 Deepening

Dissociation techniques are utilised to deepen trance, transfer couples' attention away from painful stimuli to something pleasant and alter their distressed mood to one of peace and calm (Fredericks, 2001). Couples can transport their feelings and emotions by visualising a place where they can feel comfortable and safe and relaxed (e.g., a beach, forest, lake or spring garden) (Gevertz, 1996). It might consist of a special place in the couples' past or can be created in fantasy. They are asked to look closely at all the beautiful and interesting surroundings, noting the richness of colours, pleasantness of the view and good feelings accompanying the site. Both patient and spouse are then asked to notice the familiar sounds they can hear, smell what is typical of the place and touch some of the objects. Requests for them to note their surroundings are accompanied by suggestions that everything they experience in their special place will generate feelings of relaxation and security (Naparstek, 1995) (see Appendix D). In addition, communication with the unconscious mind can be established, for example: "*In this special place you can receive what you need right now. I don't know how you will receive it ... but before awakening you will receive from your unconscious mind ... a special gift ... of an experience or a memory that gives you the understanding or the perspective or the feelings that you most need right now ...*" (Hammond, 1990, p. 131).

The hypnotherapist also emphasises that their special place belongs exclusively to them and that they can visit it in future, if needed or wanted. Couples are encouraged to visualise

their favourite place frequently (Fredericks, 2000). These ego strengthening metaphors seem capable of use with virtually any patient.

4.7.2.2 Reduction of anxiety

The majority of patients and spouses experience varying degrees of fear and anxiety while hospitalised before CABS (Edell-Gustaffson & Hetta, 1999). When anxiety is excessive or overwhelming, it has been shown to adversely affect the pre-, intra- and postoperative course of surgery. The negative consequences include decreased well-being, slower recovery, sleep disturbances, post-surgical fatigue and depression (Stengrevics, Sirois, Schwartz, Friedman, & Domar, 1996). Couples should be given techniques to facilitate deep physical and mental relaxation. There are many hypnotherapeutic techniques which can provide both patients and spouses with coping mechanisms for their distress. Induction and deepening techniques generally relieve anxiety. **Inner advisors** and **inner guides** also serve as a source of comfort and support, of which many different variations are available in the literature. An example of this is the following: “ *When you are ready, invite your inner advisor to join you in this special place ... just allow an image to form that represents your inner advisor ... it may come in many forms – a wise man or woman, a light, a religious figure ... Accept your inner advisor as it appears ... when you are ready, tell it about your problem ... ask any questions you have concerning this situation ... Now listen carefully to your advisors’ response ... allow it to communicate with you in whatever way seems natural ... if you need ... some help ... ask your advisor ... realize that you can call a meeting with your advisor whenever you feel the need ...*” (Frederick & McNeal, 1999, pp. 235–236).

Metaphors can facilitate relaxation; for example, the **pool of mind relaxation** technique where a pool of water is imagined with stones surrounding it. The stones have positive words written on them, such as health, control or calmness. Accordingly, couples have the power to “drop into” the pond of their mind anything they desire. This may be formulated in terms of imagining a beautiful stone representing mental calmness sinking down and down, deeper and deeper, until it comes to rest at the bottom of the pond. It is then suggested that the patient’s or spouse’s mind lock around this calmness, a calmness which is to become a permanent part of his or her life. The same procedure may be followed with other stones, each one representing a specific suggestion relevant to the particular couple

and each one assisting the deepening of the trance as the stone sinks down, deeper and deeper (Gevertz, 1996; Hammond, 1990; Stanton, 1989).

4.7.2.3 Mobilisation of inner resources

CABS patients and their spouses require every bit of available strength to confront the psychological and physiological demands posed by the surgical experience. For some couples, the outcome of CABS falls short of expectation and drains their inner resources (Lukkarinen, 1999). The mobilisation of inner resources is therefore of the utmost importance. HES interventions can help couples to become aware of previously unrecognised resources and enhance their ability to feel and access these resources (Frederick & McNeal, 1999). The **inner strength** experience can be an appropriate hypnotherapeutic intervention for helping both patients and spouses to feel and access spiritual resources within themselves, for example: *“This is a part of yourself that has always been there since the moment of birth ... even though at times it may have been difficult for you to feel ... and it is with you now ... It’s that part of yourself that has allowed you to survive ... and to overcome many, many obstacles in the past ... Just as it helps you now to overcome obstacles ... Maybe you’d like to take a few moments to get in touch with that part of yourself ... And you can notice what images ... or feelings ... what thoughts ... what bodily sensations are associated with being in touch with your Inner Strength ...”* (Frederick & McNeal, 1999, p. 141).

See also a revised script for spiritual inner strength in Appendix E of this study.

4.7.2.4 Instillation of hope

Couples awaiting CABS, in general, have pessimistic views of the future, which can negatively sensitise them to the procedure and its sequelae. Instillation of hope is therefore an essential ingredient in surgical preparation. Hypnotherapists are in a special position to help patients by increasing their hope (Cortis, 1995). Age progression techniques transport couples to a future where surgical distress has been overcome and emotions stabilised. The fact of believing that their distress can pass induces a positive demeanour through a self-fulfilling prophecy (Timmermans & Pelc, 1995). When patients’ hope are enhanced, it acts as a shield against fear and they become more self-confident. Patients are then able to face

the difficulties that lie ahead. Enlisting the healing force of hope, channels patients' strength and encourage them to work toward their own recovery (Cortis, 1995). Age progressions are valuable HES interventions to dissolve negative future scripts and can reveal their hope for survival. These techniques have value in replacing a sense of no future, helplessness and hopelessness with a sense of hope, strength, inner resourcefulness, self-mastery and a belief in the patient's ability to recover (Toem, 1992).

Age progression techniques can be used for ego strengthening purposes, for example: **the road of life** (Zelling, 1992) technique where time is imagined as a road or path, and the past is behind and the future stretches out in front; and **the mirror** (Gevertz, 1996) technique where couples are asked to imagine themselves standing between two full-length mirrors. The mirror behind represents a preoperative image and the mirror in front emphasise healthy, postoperative images.

Experiencing a positive view of the future appears to be ego strengthening and integrating in and of itself. When couples achieve a positive view of the future under hypnosis, they already view egos that have become positively enhanced in the mirror of the mind, which approximates an *in vivo* mastery experience and sets the stage for behavioural change (Phillips & Frederick, 1992).

4.7.2.5 Preoperative hypnotherapeutic rehearsal

Preoperative hypnotherapeutic rehearsal techniques are standard interventions in the preparation of couples. Couples are taken through the surgical procedure in advance, from preoperative through postoperative care. **Guided imagery** details the surgical steps involved, for example: *"You will feel relaxed and comfortable in every way for the surgery tomorrow. During the surgery you will feel secure and perfectly safe. The anaesthetic will be administered carefully and the operation will be performed skillfully. When you awaken after surgery, you will awaken quietly and comfortably as though awakening from a long, peaceful, health-restoring sleep ... You will have a dry wound, heal rapidly and be up and about very soon. You will first awaken in the Intensive Care Unit, the safest place for you to be ... You will concentrate on being wide awake, full of life, pep and vitality and be relaxed and rested at all times ... You will know God is constantly watching over you ..."* (Zelling, 1997) (see Appendix G).

Preoperative rehearsals of the surgical procedure correct couples' misapprehensions and enhance their feelings of control (Evans & Stanley, 1991).

4.7.2.6 Closure

The preoperative phase ends with a closure. At the end of a formal hypnotherapeutic session, posthypnotic suggestions are given so that couples develop peace of mind, self-control and self-confidence (Timmermans & Pelc, 1995). Among other things, the hypnotherapist suggests that they will sleep soundly throughout the night and wake up feeling refreshed and alert. The hypnotherapist terminates the trance and comments on the marvellous state of relaxation they were able to achieve and suggests they will benefit from this type of relaxation (Fredericks, 2001).

4.7.3 Intraoperative phase (phase III)

The intraoperative phase represents the time spent in ICU. The hypnotherapist resumes the prior hypnotherapeutic relationship and the following ego strengthening dimensions are included: relaxation, facilitation of healing, diminishing of pain, reducing anxiety, mobilising inner resources, repetition of age progression and closure.

4.7.3.1 Relaxation

The dimension of relaxation (induction and deepening) is already outlined in phase II and repeated during this and each successive phase.

4.7.3.2 Facilitation of healing (patients)

In CABS, patients' healing needs to take place after surgery. Although patients have the power to heal, it is the role of the hypnotherapist to help stimulate and nurture their healing powers and mobilise inner resources (Sinatra, 1999). Through hypnotherapy, the patients' healing force can be contacted, amplified and directed to specific parts of the body (Frederick & McNeal, 1999). HES interventions are specifically designed to restore confidence in patients' ability to heal. **Metaphors** may facilitate the healing process, for example: *"Imagine that hovering over your body there is a globe of bright light, a sphere*

of warm energy that sends out rays of warmth and healing that penetrate every fibre of your being, body, mind and spirit ... This sphere of light and warmth and healing has been sent to you by that which has created and maintains the universe ... These rays are warming you, healing you, penetrating and joining with all that is you. Now imagine that these deeply warmly relaxing rays are tapping the powers of the universe and are healing and soothing your mind, body and spirit ..." Stein (1980, in Hammond, 1990, p. 252).

4.7.3.3 Diminution of pain and discomfort (patients)

All CABS patients experience postoperative discomfort and pain due to the incisions made through the chest bone, legs and arms (Koivula et al., 2002). Some patients develop persistent pulling, pinching or a burning chest pain from injury to the intercostal nerves (Eisenberg, Pultorak, Pud, & Bar-El, 2001; Moore & Dolanski, 2001). The more the patient resists the pain, the worse it gets (Naparstek, 1995). Pain and discomfort are demoralising and exhausting for the patient. Persistent pain can turn into feelings of anger, helplessness and depression. HES is a valuable intervention in alleviating pain and provides patients with feelings of control and mastery (Evans, 2001). **Induction** and **relaxation** techniques stimulate the production of serotonin, nature's own tranquilliser. **Metaphors** are used to strengthen, soften and transform the pain. They bypass patients' natural resistance, and in a sense "befriend" the pain (Naparstek, 1995). The following metaphor and suggestions can be used to alleviate pain: "*Focus your attention on your discomfort, now imagine your discomfort to be a large, red ball of energy, like the sun. Now imagine and watch this bright red ball of energy become smaller and smaller, imagine the colour of the ball beginning to lighten, beginning to change to a soft pink and reduce in size. As you watch the ball become smaller and smaller you will feel less and less discomfort ... just watch it disappear and when it disappears you feel ... more comfortable*" (Hadley & Staudacher, 1989, pp. 145-146).

The specific applications of HES techniques in pain management depend on the nature of the CABS patient's pain. The hypnotherapist does not suggest that all the patient's pain will be removed, as this will cause loss of confidence and disappointment (Evans, 2001). By providing the patient with a sense of control, anxiety may be relieved, thus reducing physiological tension that exacerbates the pain (Meyer, 1992).

4.7.3.4 Repetition phase II (reduction of anxiety and mobilising inner resources)

Couples may have strong emotional reactions to CABS and spend all their energy worrying over procedural success and survival. The repetition of the HES interventions of phase II (reduction of anxiety and mobilising of inner resources) is therefore essential to couples during this phase and serves the best interest of the couples, since HES reduces their distress and positively influences the patients' condition.

4.7.3.5 Instillation of hope

The technique of age progression outlined in phase II (preoperative) is repeated during this and each successive phase.

4.7.3.6 Closure

The most important positive suggestions are repeated and trance is terminated. It is imperative that each phase has closure.

4.7.4 The postoperative phase (phase IV)

The postoperative phase consists of the patients' stay in the general nursing ward and the recovery period following discharge from hospital. This is the time when couples are highly stressed, when they are confronted with unforeseen uncertainties and decisions that have to be made. The ego strengthening dimensions during the postoperative phase include relaxation, altering mood states, restoring energy, diminishing pain, age progression (repetition) and closure.

4.7.4.1 Relaxation

As mentioned previously, relaxation (induction and deepening) is an important component of the ego strengthening procedure and has to be repeated.

4.7.4.2 Altering of mood states

Anxiety, anger and guilt after CABS are naturally occurring emotional responses in couples due to an overload of emotional distress. Some are anxious and feel “blue”, others experience hopelessness and despair. They may feel angry at their predicament. Couples’ psychological assimilation of CABS can also increase the likelihood of negative mood states. It is important that they avoid the tendency to suppress and deny these negative mood states, as recognition of these symptoms promotes physical and psychological well-being and benefits subsequent rehabilitation (Cohan et al., 1998). HES techniques can assist in altering couples’ mood states.

Metaphors have been shown to decrease anxiety, stress, and depression and promote anger release. The **cloud** (Clement, 1979, pp. 122-124) technique may be used for coping with depression: *“I want you to think of a cloud as symbolising or representing all the negative thoughts, the feelings and the discomfort of surgery ... Now, over and beyond that cloud, there is a sun ... that sun represents your will to live, your desire to lead a healthier life ... You will presently see the sun shine through the cloud, first pushing a shaft of light and gradually making that cloud lift and evaporate ... the sun begins to work on the cloud and as it does so, you start feeling as if a load were taken off your shoulders ... You feel that you are free of illness that thus far has prevented you from healing.”*

The **clenched fist** (Stein, 1963, p. 25) technique may be used for coping with anger and emotional tension. Patients are trained to transfer and concentrate their anger and body tensions into the non-dominant closed fist and are also taught to concentrate on pleasant memories when closing their dominant fist. They are taught that they can release their anger and emotional tensions from the tightly clenched fist by opening and relaxing that hand. In addition, it is explained that they can neutralise and replace their tension and anger with pleasant feelings by clenching their newly trained dominant fist. It is then suggested that the tighter the dominant fist closes, the stronger the sensation of happiness, confidence, determination, calmness and strength.

4.7.4.3 Restoration of energy

Fatigue and exhaustion are a common complaint of couples prior to CABS and during the postoperative phase, due to physical weakness, sleep disturbances and anxiety (Edell-Gustaffson, 2002). Reduced sleep quality activates the stress system. Over time a more persistent emotionality develops with reduced resilience to stress and increasing vulnerability to psychophysiological symptoms, and this diminishes coping ability. When fatigue sets in, everything hurts more and emotions are more difficult to manage. Fatigue is commonly associated with unpleasant mood, irritation, dysphoria, concentration problems and lack of energy (Cohan et al., 1998). It also influences health and quality of life (Edell-Gustaffson & Hetta, 2001). The HES interventions are designed to catalyse the release and flow of blocked energy. **Metaphors** can be used for CABS patients and their spouses to release blocked energy and to restore energy levels, for example: *“Imagine a cone of powerful white light ... moving down ... forming a tent of vibrant tingling energy all around you ... Imagine that you are inhaling a magical supply of healing energy ... perhaps seeing it in sparkling microdots of colours ... or maybe hearing a subtle hum as it dances into your body ... or perhaps just feeling on the inside the subtle energy moving into you ... And when you exhale, sense this energy dispersing all through your body”* (Naparstek, 1995, p. 87).

4.7.4.4 Diminution of pain and discomfort (patients)

Only if a patient still has postoperative pain is it necessary to give further attention to this aspect.

4.7.4.5 Instillation of hope

Here again, age progression is essential and therefore repeated.

4.7.4.6 Closure

Once again, closure is essential and therefore repeated.

4.7.5 Additional aids

Self-hypnosis and audiotapes are excellent aids to supplement this model. **Self-hypnosis** training forms an integral part of couple's preparation and rehabilitation for the surgical experience to enable them to surmount periods of private distress, regain autonomy and participate in their own emotional and physical recovery (Ashton et al., 1997; Evans & Stanley, 1991). Hypnotherapeutic suggestions are frequently more effective when couples can be taught to use self-hypnosis. In self-hypnosis, they are able to reinforce suggestions and images. This can be done at whatever times are most advantageous for them. Self-hypnosis allows couples to feel a greater sense of mastery and control and offers them a sense of having acquired new knowledge (Frederick & McNeal, 1999).

Audiotapes can play an important role when couples have become comfortable with the hypnotherapeutic experience. It is important that the content of the audiotapes meets the needs of couples (Van Elderen, 1994). Audiotapes are used effectively at home as well as in hospital (ICU), when patients are at their most vulnerable because they are physically too sick or too weak. The tapes help to reinforce ego strengthening suggestions and to maintain a sense of calm and control as part of the ego strengthening process (Lynch, 1999; Olness & Kohen, 1996).

The current researcher is of the opinion that an HES intervention places considerable emphasis upon the power of couples to effect change within themselves. The ego strengthening techniques enhance ego strength by providing emotional support, establish hope and give couples a sense of control. HES can increase autonomy and cooperation, mobilise the general coping abilities of couples and empower them to overcome feelings of vulnerability. Mastery of the particular HES interventions being used may vary according to the patient's and spouse's personality, responsiveness to hypnosis, availability of the hypnotherapist, time constraints and hospital routine.

4.8 SUMMARY

CABS may bring about a new consciousness of self. Patients may come to see themselves as mortal beings and have to integrate illness as part of the new self. This transition imposes great strain on the ego's adaptive functioning. The strength of the ego determines

the ability of couples to handle the demands of surgery. By extending the scope of the ego and increasing its effectiveness, couples can change their expectations and attitudes towards CABS. Mobilising ego strength may contribute to feelings of hope, calmness and optimism, which is the essence of surgical preparation.

Hypnosis is a natural self-healing gift to humanity and is a potent therapeutic modality to alter couples' psychological states and unlock the mind's great abilities within a brief period of time. HES offers a rich diversity of techniques to stabilise couple's egos, help them to develop new ego-related coping skills and put them in touch with their deepest positive inner resources. Hypnotherapeutic metaphors are sufficiently specific to provide conscious guidance messages, yet they are also directed towards the unconscious mind.

Hypnotherapeutic ego strengthening provides stimulus towards developing new perspectives and coping skills and places considerable emphasis upon patients' own initiative and inner resources to effect change within mind and body. Reinforcing patients' ego strength may supplement the functions of the immune system, thereby enhancing healing and reducing the possibility of postoperative complications. It may also reduce the likelihood of recurrent cardiac events. HES might benefit the emotional well-being of patients who may appear less distressed and are easier to get along. In addition, as hypnotherapy benefits spouses, patients are spared additional worries about distressed spouses. If the emotional well-being of spouses is enhanced, their positive expectations may be transmitted to the patients to promote recovery.

It is hoped that the HES model presented by the current researcher will widen the therapeutic window and open up the possibilities of psychological interventions during hospitalisation and surgery. Furthermore, it is hoped that this model may offer a pathway so that hypnotherapy becomes more accepted as a valuable gateway to enhance communication between mind, body and spirit and solidify its role as a holistic agent capable of assisting patients towards global health. Lastly, it is hoped that CABS couples may be helped to accomplish a better quality of life.

Chapter 5 focuses on the empirical investigation.

CHAPTER 5

EMPIRICAL INVESTIGATION

5.1 INTRODUCTION

CHD is a well-documented contributor to total mortality in South Africa (Van der Poel & Greeff, 2003). CABS has revolutionised the treatment of CHD and continues to be a workhorse in decreasing symptoms and prolonging the quality of life in patients with CHD (HeartPoint, 1997).

The literature overview shows that CABS is a potentially devastating physical and psychological event and a major source of stress for couples involved. CABS manifests with high levels of anxiety and depression in both patients and their spouses (Burg et al., 2003; Duits et al., 2000; Mahler & Kuhlik, 2002). Although these reactions may be considered a normal way of coping with CABS, they can be disruptive to the natural recuperative processes (Timmermans & Pelc, 1995).

According to the literature, reduced anxiety and an optimistic mood state are desirable for optimal adaptation and recovery from CABS (Ashton et al., 1997; Kubzansky, Sparrow, Vokonas, & Kawachi, 2001). It therefore seems necessary to help both CABS patients and their spouses to cope with the psychological aspects concomitant to CABS in order to facilitate recovery and improve quality of life. The literature reveals that hypnotherapy can provide patients with coping mechanisms to reduce the stress of CABS.

As stated in chapter 1, the basic question in this research is concerned with the effectiveness of the HES intervention in reducing anxiety and depression related to impending surgery in CABS couples. The study also aims to enhance and maintain the ego strength, quality of life and dispositional optimism of CABS patients and their spouses postoperatively. This chapter describes the methodology used to determine the contribution of HES to CABS.

5.2 METHOD OF INVESTIGATION

5.2.1 Research design

The study made use of a two-group, pre-post-follow-up evaluation design with two groups of CABS patients and their spouses. The groups consisted of twenty-five experimental couples and twenty-five control couples, of whom the fifty male participants were awaiting their first CABS.

The experimental group underwent an HES intervention, while the control group received no interventions. All groups were retested on the day of discharge and at six-week follow-up.

5.2.2 Participants

Fifty patients and their spouses undergoing CABS at Unitas Hospital were recruited for the present study and randomly assigned to an experimental ($n = 25$) and a control ($n = 25$) group. Patients represented successive admissions who came for treatment between January and December 2001. All fifty patients who participated in this research were undergoing their first CABS. Patients and spouses were all white and Afrikaans-speaking, aged between forty and sixty-five. All the patients were married and living with their spouses.

5.2.3 Research instruments

Except for a self-designed biographical questionnaire, measuring instruments were selected on the basis of relevance and psychometric properties. Instruments chosen had empirically validated constructs to be researched in the present study, namely, depression, anxiety, quality of life, ego strength and dispositional optimism. For administrative purposes, the measuring instruments were self-report inventories which could be completed by patients and spouses in a short time. The measures were presented as one test, divided into various sections, each with its own instructions. The instruments for this study included:

- Biographical Questionnaire
- Beck Depression Inventory (BDI-II)
- Profile of Mood States (POMS)
- Quality of Life Inventory (QOLI)
- Epstein and O'Brien Ego Strength Scale
- Life Orientation Test (LOT)

Finally, a qualitative question was asked during discharge.

5.2.3.1 Biographical questionnaire

The current researcher developed a biographical questionnaire as a framework for the initial interview with couples which tapped the following variables: age, education, marital status, cardiac history, family health, symptoms of masked depression, life stressors and social support (see Appendix A).

5.2.3.2 Beck Depression Inventory (BDI-II)

5.2.3.2.1 Objective

The BDI-II (Beck, Steer, & Brown, 1996) is utilised to measure the presence and intensity of depression, and rate its severity in adults and adolescents aged thirteen years and older. The BDI-II was developed for the assessment of symptoms corresponding to the DSM-IV (APA, 1994) criteria for diagnosing depressive disorders. The BDI-II is one of the most widely used instruments for assessing and detecting the intensity of depression or distress in psychiatrically diagnosed and non-diagnosed populations.

5.2.3.2.2 Description

The BDI-II is a mood measuring device and multiple-choice questionnaire composed of twenty-one categories of symptoms and attitudes that relate to the overt manifestations of depression. The twenty-one categories are as follows:

<ul style="list-style-type: none"> • Sadness • Indecisiveness • Worthlessness • Loss of energy • Changes in sleeping pattern • Irritability • Changes in appetite • Concentration difficulty • Tiredness or fatigue • Loss of interest in sex • Pessimism 	<ul style="list-style-type: none"> • Loss of interest • Past failure • Loss of pleasure • Guilt feelings • Punishment feelings • Self-dislike • Self-criticalness • Suicidal thoughts or wishes • Crying • Agitation
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For each of the twenty-one categories of symptoms there is a graded series of four to five self-evaluative statements. Each category is rated on a four-point scale ranging from 0 (mildest) to 3 (most severe) in terms of severity. Patients are requested to select and indicate each symptom or attitude in every category that best describes their current mood at the time of evaluation (Beck et al., 1996).

The BDI-II takes five to ten minutes to administer. The scores of each statement are summed to obtain a total BDI score ranging from 0 to 63. The items are structured in such a way that the higher the score, the more severe the depression is considered to be. According to Beck et al. (1996, p. 11), the BDI scores indicate the following levels of depression:

Total Score	Range
0 – 13	Minimal
14 – 19	Mild
20 – 28	Moderate
29 – 63	Severe

5.2.3.2.3 Reliability

The BDI-II has a split-half reliability coefficient that ranges from 0.92 (outpatients) to 0.93 (college students). A test-retest correlation of 0.93 is significant ($p < 0.001$) (Beck et al., 1996).

5.2.3.2.4 Validity

The BDI-II has excellent concurrent and construct validity. According to Beck et al. (1996), several different types of analysis were conducted to estimate the convergent validity of the BDI-II. The correlation between the BDI-IA and BDI-II was 0.93 ($p < 0.001$) and thus the BDI-II shows good construct validity when compared with other psychological tests. The BDI-II correlated positively with the Beck Hopelessness Scale (BHS) (0.68), Scale for Suicide Ideation (SSI) (0.37) and Hamilton Psychiatric Rating (HRSD) (0.71).

5.2.3.3 Profile of Mood States (POMS)

5.2.3.3.1 Objective

The POMS (McNair, Lorr, & Droppleman, 1992) is used to measure identifiable mood or affective states. It was developed to identify and assess transient fluctuating affective states. The POMS is useful for assessing psychiatric outpatients and is a very sensitive indicator of patients' responses to therapeutic approaches.

5.2.3.3.2 Description

The POMS is a 65-item self-rating adjective checklist that provides ratings of six mood states experienced over the preceding week, including:

Category	Characteristics
Tension	Tense, shaky, on edge, panicky, relaxed, uneasy, restless, anxious, etc.
Depression	Unhappy, sad, blue, hopeless, unworthy, lonely, gloomy, helpless, etc.
Anger	Angry, peeved, grouchy, bitter, furious, spiteful, annoyed, deceived, etc.
Vigour	Lively, active, cheerful, alert, full of pep, vigorous, energetic, etc.
Fatigue	Worn out, listless, fatigued, exhausted, sluggish, weary, bushed, etc.
Confusion	Confused, muddled, bewildered, efficient, forgetful, uncertain, etc.

Each questionnaire consists of 65 adjectives. Each adjective is rated on a 5-point intensity scale ranging from 0 (not at all) to 4 (extremely). Patients are asked to rate themselves on each adjective which best describes how they have been feeling during the past week including that day (McNair et al., 1992).

The POMS takes 5 to 10 minutes to administer. To obtain a score for each mood factor, responses are summed and the higher the score the greater the psychological distress. All items defined in each factor are scored in the same direction except for two items: “relaxed” in the Tension-Anxiety Scale and “efficient” in the Confusion Scale. These items receive negative weights in calculating the factor scores. A total POMS score may be obtained by summing the scores (with “vigour” weighted negatively) on the six primary mood factors. The five scale scores of tension, depression, anger, fatigue and confusion are added together and vigour is subtracted from these scores (McNair et al., 1992).

5.2.3.3.3 Reliability

The POMS demonstrates acceptable levels of internal consistency (alphas from 0.90 or above). A test-retest reliability of 0.61 to 0.69 is significant (McNair et al., 1992).

5.2.3.3.4 Validity

The POMS correlates significantly with the Manifest Anxiety Scale (0.80) and Beck Depression Scale (0.61). All the correlations between the POMS and the MMPI-2 are significant at the 0.01 level (McNair et al., 1992).

5.2.3.4 Quality of Life Inventory (QOLI)

5.2.3.4.1 Objective

The QOLI (Frisch, 1994) focuses on a patient's sources of fulfilment, including real-life concerns of work, money and physical surroundings. The QOLI was developed to provide measures of life satisfaction, subjective well-being and positive mental health. The construct has practical appeal in the fields of psychology and can provide supplementary measures of negative affect and psychiatric symptoms in assessment and treatment planning.

5.2.3.4.2 Description

The QOLI is a self-measure instrument of life satisfaction. It assesses satisfaction and dissatisfaction in 16 areas of life, namely:

• Health	• Helping
• Self-esteem	• Love
• Goals and values	• Friends
• Money	• Children
• Work	• Relatives
• Play	• Home
• Learning	• Neighbourhood
• Creativity	• Community

The QOLI consists of 32 items. Each of these 16 areas of life is rated by patients in terms of its importance to their overall happiness and satisfaction with the area. The QOLI takes about 5 to 10 minutes to administer. The weighted satisfaction ratings range in value from -6 to 6 and are the products of Satisfaction ratings, on a scale of -3 to 3, multiplied by Importance ratings, on a scale of 0 to 2. The raw score is the average of the weighted satisfaction ratings. That is, the sum of the weighted satisfaction ratings is divided by the number of areas of life that were rated Important or Extremely Important (a non-zero rating on Importance) (Frisch, 1994).

The patients' raw score and *t*-score are used for classifying an overall quality of life. According to Frisch (1994, p. 73), there are four overall quality of life classifications:

Score	Classification
3.6 – 6.0	High
1.6 – 3.5	Average
0.9 - 1.5	Low
6.0 – 0.8	Very low

5.2.3.4.3 Reliability

Analysis has indicated that the internal consistency reliability (coefficient-alpha) of the weighted satisfaction ratings is 0.79. A test-retest reliability coefficient of 0.73 was significant at $p < 0.001$ over an interval of about two weeks (Frisch, 1994).

5.2.3.4.4 Validity

According to Frisch (1994), data from two other measures of life satisfaction were collected in order to assess the convergent validity of the QOLI. The QOLI was significantly and positively correlated with both measures with the Satisfaction With Life Scale at $r = 0.56$, $p < 0.001$ and with the Quality of Life Index measuring $r = 0.75$, $p < 0.001$.

5.2.3.5 Epstein and O'Brien Ego Strength Scale

5.2.3.5.1 Objective

The Ego Strength Scale (Epstein & O'Brien, 1982) is used to determine a patient's ego strength and defensiveness or tendency to minimise or dismiss stress.

5.2.3.5.2 Description

The Ego Strength Scale is a 42-item self-rating questionnaire divided into ego strength and defensiveness sub-scales. Each item uses a 5-point Likert scale ranging from 1 (completely false) to 5 (completely true). The patients are asked to decide whether the specific statement is true or false at that specific moment (Epstein & O'Brien, 1982).

The Ego Strength Scale takes 15 to 20 minutes to complete. The scores of each statement are summed to obtain a total ego strength score (ranging from 26 to 130) and a total defensive score (ranging from 16 to 80). The score consists of the sum of the ratings by the patient, reversing the order of the weights for those items that are preceded by a minus sign. Reversals are assigned as follows: 1 = 5, 2 = 4, 3 = 3, 4 = 2 and 5 = 1. The raw score is interpreted in terms of norms (Epstein & O'Brien, 1982).

According to Epstein and O'Brien (1982), ego strength and defensiveness are indicated by the following levels:

Ego strength		
Total score		Range
Female	Male	
64 – 80	67 – 82	Low ego strength
81 – 97	83 – 97	Moderate ego strength
98 – 115	98 – 113	High ego strength

Defensiveness		
Total score		Range
Female	Male	
26 – 37	26 – 39	Low defensiveness
38 – 48	40 – 51	Moderate defensiveness
49 – 60	52 – 64	High defensiveness

For the purpose of this study only the Ego Strength sub-scale has been used. The additional sub-scale was not used because of administration time needed as well as constraints of patients' physical condition.

5.2.3.5.3 Reliability

Internal consistencies of these subscales are 0.83 (ego strength) and 0.77 (defensiveness), respectively (Epstein & O'Brien, 1982).

5.2.3.5.4 Validity

According to Epstein and O'Brien (1982), the scale demonstrates both convergent and discriminant validity. The Ego Strength Scale correlates positively with Eysenck's neuroticism/extroversion scale (0.45 to 0.48) and the mother-father-peer inventory (0.22 to 0.50).

5.2.3.6 Life Orientation Test (LOT)

5.2.3.6.1 Objective

The LOT (Scheier & Carver, 1985) measures a fundamental disposition toward either generally positive or generally negative future outcomes, which constitutes an individual's life orientation. The LOT was developed as a measure of optimism that focuses exclusively on the assessment of generalised outcome expectancies. The LOT provides a psychometrically sound measure of optimism defined in terms of the favourability of an individual's generalised outcome expectancy.

5.2.3.6.2 Description

The LOT consists of 12 items, four of which are scored positively. These include statements such as (e.g., "I always look on the bright side of things"). Four are scored negatively and reversed prior to scoring (e.g., "If something can go wrong for me, it will"). Four of the items are filler questions, which are included to obscure the central theme of the LOT but are not included in the scoring (Scheier & Carver, 1985).

The LOT takes 5 minutes to administer. Respondents answer each item by indicating the extent of their agreement along a 5-point Likert scale that ranges from 4 (“strongly agree”) to 0 (“strongly disagree”). The scores of each statement are summed to obtain a total LOT score. After the four negative items are reversed, the total scores range from 0 to 32, with higher scores being consistent with stronger dispositional optimism (Scheier & Carver, 1985).

5.2.3.6.3 Reliability

The internal reliability of the scale (Cronbach’s alpha = 0.76) and test-retest reliability ($r = 0.79$ over a four-week interval, 0.72 over a thirteen-week interval) are adequate (Scheier & Carver, 1985).

5.2.3.6.4 Validity

According to Scheier et al. (1989), the LOT has adequate convergent and discriminant validity. Correlations between the LOT and measures of locus of control tend to be moderate; correlations with Rotter’s internal locus of control scale fall around 0.35 and the internality dimension of the Attributional Style Questionnaire is 0.07. These findings support the construct validity of the LOT.

According to the current researcher, the abovementioned measuring instruments are sensitive enough to measure the psychological phenomena involved in this study and are also capable of reflecting the effect of the intervention programme. They have also been included because of their practical advantages. They are relatively short tests, easily administered and scored.

5.2.3.7 Qualitative question

A qualitative question was formulated by the current researcher to determine each experimental participant’s experience of the HES intervention, and to compile and analyse qualitative comments on the benefits of HES and its future use during surgical preparation (see Section 6.6).

5.3 RESEARCH PROCEDURE

Prior to approaching the participants, permission for the study was granted by a cardiothoracic surgeon at Unitas Hospital (see Appendix I). Couples who matched the criteria for inclusion were approached two days before their scheduled CABS and assured that participation was entirely voluntary. Consenting married, Afrikaans-speaking patients aged forty to sixty-five years of age and their spouses, scheduled for a first and uncomplicated CABS were included. The research group was limited to a group comprising fifty patients and their spouses, selected on the basis of their willingness to participate and to be exposed to an HES intervention within the framework of the current study. An experimental and control group of twenty-five patients and their spouses were compiled by using a table of random sampling numbers from one to fifty, allocating uneven and even numbers to the two different groups. The two groups were regarded as two independent samples from the bigger population of CABS couples. The day before surgery each patient and spouse was individually interviewed and assessed by the current researcher. The purpose of the study was then explained to the couples who matched the inclusion criteria. They were informed that the hospital was interested in gaining a better understanding of how couples react to CABS and how they could be supported in future, and that they hoped to help patients to make a more rapid recovery.

Once informed consent was obtained for the control and experimental patients and spouses who agreed to participate, the couples were interviewed and given an envelope containing the biographical questionnaire, BDI-II, POMS, QOLI, Epstein and O'Brien Ego Strength Scale and LOT. Couples were assured of the utmost confidentiality of their responses. They were informed that they could answer the questionnaires anonymously if they chose to do so. All patients and spouses were given the same package. The current researcher sat with the couples, gave instructions and assisted them in completing the questionnaires. This phase constituted the baseline-testing phase.

The experimental group (patients and spouses) was given all the appropriate information on hypnotherapy and the advantages thereof were discussed. They received one *in vivo* sixty-minute preoperative HES session in a private room individually, the evening prior to surgery and one during the morning of surgery, respectively. The couples were introduced to Phase I and Phase II of the self-designed HES model developed by the current

researcher. The intervention included a progressive relaxation induction and special place imagery deepening technique (see Appendixes C & D). A revised metaphor with the focus on spiritual inner strength, age progression technique and preoperative rehearsal was included (see Appendixes E, F & G). The revised spiritual inner strength technique and age progression was repeated in three follow-up postoperative HES sessions before discharge. The postoperative interventions were presented on audiocassette tapes. The voice on the recording was that of the current researcher against a background of classical music. The tape recordings were presented as part of the usual ward routine and were played under the observation of the current researcher. Participants were interviewed again and an open-ended qualitative question was asked about their reactions to the HES intervention and benefits from it. Postoperative re-tests were scheduled separately for patients and spouses on the day of discharge and on their six-week follow-up visit. Couples were given the same package of questionnaires and were assisted in the completion thereof since many found it too tiring to work through on their own.

The **control group** (patients and spouses) assessments were scheduled similarly to those of the experimental group. They received no HES interventions, but were offered the opportunity for professional services after their six-week follow-up. They were thanked for their participation.

5.4 ETHICAL CONSIDERATIONS

Official consent by a cardiothoracic surgeon at Unitas Hospital and patients' informed consent were obtained for all experimental and control participants and spouses. All personal details of participating patients and spouses in both the control and experimental groups remained completely confidential. Participation was completely voluntary.

Questionnaires were completed confidentially. Biographical data as well as personal information obtained through the questionnaires and hypnotherapeutic sessions remained completely confidential. The control group was offered professional services after their dismissal.

5.5 SPECIFIC HYPOTHESES

The following hypotheses were formulated for the study:

- | | |
|-------------------|--|
| H0 ₁ : | Hypnotherapeutic ego strengthening will not reduce postoperative anxiety levels of CABS patients significantly. |
| H ₁ : | Hypnotherapeutic ego strengthening will reduce and maintain postoperative anxiety levels of CABS patients significantly. |
| H0 ₂ : | Hypnotherapeutic ego strengthening will not reduce postoperative depression levels of CABS patients significantly. |
| H ₂ : | Hypnotherapeutic ego strengthening will reduce and maintain postoperative depression levels of CABS patients significantly. |
| H0 ₃ : | Hypnotherapeutic ego strengthening will not increase ego strength in CABS patients significantly. |
| H ₃ : | Hypnotherapeutic ego strengthening will increase and maintain ego strength in CABS patients significantly. |
| H0 ₄ : | Hypnotherapeutic ego strengthening will not increase quality of life in CABS patients significantly. |
| H ₄ : | Hypnotherapeutic ego strengthening will increase and maintain quality of life in CABS patients significantly. |
| H0 ₅ : | Hypnotherapeutic ego strengthening will not increase dispositional optimism in CABS patients significantly. |
| H ₅ : | Hypnotherapeutic ego strengthening will increase and maintain dispositional optimism in CABS patients significantly. |

H0 ₆ :	Hypnotherapeutic ego strengthening will not reduce postoperative anxiety levels of spouses of CABS patients significantly.
H ₆ :	Hypnotherapeutic ego strengthening will reduce and maintain postoperative anxiety levels of spouses of CABS patients significantly.
H0 ₇ :	Hypnotherapeutic ego strengthening will not reduce postoperative depression levels of spouses of CABS patients significantly.
H ₇ :	Hypnotherapeutic ego strengthening will reduce and maintain postoperative depression levels of spouses of CABS patients significantly.
H0 ₈ :	Hypnotherapeutic ego strengthening will not increase ego strength of the spouses of CABS patients significantly.
H ₈ :	Hypnotherapeutic ego strengthening will increase and maintain ego strength of the spouses of CABS patients significantly.
H0 ₉ :	Hypnotherapeutic ego strengthening will not increase quality of life in the spouses of CABS patients significantly.
H ₉ :	Hypnotherapeutic ego strengthening will increase and maintain quality of life in the spouses of CABS patients significantly.
H0 ₁₀ :	Hypnotherapeutic ego strengthening will not increase dispositional optimism of the spouses of CABS patients significantly.
H ₁₀ :	Hypnotherapeutic ego strengthening will increase and maintain dispositional optimism of the spouses of CABS patients significantly.

In this study, all the hypotheses were directive. Thus, for example, according to hypotheses 1, the HES intervention would lead to a decrease and not merely a change in anxiety. The hypotheses were generally specific in respect of the direction of change. The advantage of such directive hypotheses is that the statistical tests have greater validity; that is to say, significant results can be traced more easily. It was only feasible to compile a small experimental and control group ($N = 50$) based on aspects such as the intensive nature of the HES intervention and sensitivity of the subjects and medical professionals towards hypnotherapy. This implies that statistical significance cannot be proven by means of large numbers of respondents (Hays, 1994).

For this reason it was important for the current researcher to formulate directive hypotheses on the basis of theoretical considerations.