Psychological Model of Illness

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By

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SCHOLARS**

P U B L I S H I N G

To

My Divine Gurus

"Shri Ram Lal ji Maharaj & Shri Chandra Mohan Ji Maharaj"

Prof. Shikha Dixit: My Mentor

My Little Angel 'Vasu': Vigour of My Life

&

My Parents and Family: Source of My Vitality

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CHAPTER ONE

INTRODUCTION

In the course of the last century, medical science has succeeded tremendously in the cure of various chronic diseases. However, despite medical advancement, many chronic diseases have become leading causes of death. For example, coronary heart disease has been reported as a leading cause of death in western countries (Denollet, 1997). According to the world health organization's report (WHO, 2003), in developing countries, deaths from cardiovascular disease (CVD) are on the increase. The rate of CVD is a matter of serious concern as it is also rapidly increasing in India. Various risk factors have been identified in this regard, which are both biological and psychological in nature. However, medical professionals have mainly focused upon the biological causes of heart related disease, which is not wholly appropriate. Thus, a combination of biomedical and psycho-social framework is needed for the treatment and management of heart related diseases.

In the area of health psychology, scholars have proposed many theoretical models of health, such as the health behaviour model, reasoned action model, trans-theoretical model, social cognitive model etc. The aims of these health models are: Promotion of health, treatment of disease, and management of illness. In this context, the self-regulation model focuses on how people process and integrate information regarding their illness, and how it guides them towards coping with and managing their illness. The self-regulation model is also known as the illness cognition model, illness perception, or illness representation model.

In the present study illness cognition of myocardial infarction (MI) patients were studied under the framework of the self-regulation model of illness proposed by Leventhal, Meyer and Nerenz (1980). According to Leventhal et al., individuals develop, on the basis of their experiences, their own illness models or mental representations that give them lay understanding of their illness and also provide guidelines in regard to coping with and adapting to illness. Along with this, the role of personality types has also been explored

in terms of MI patients' illness cognition, coping, and Health-related Quality of Life (HRQoL). The present study used between-method triangulation. Survey method and open-ended interviews were used to study the illness cognition, coping patterns, and HRQoL of MI patients.

Overview of the Book

The present book comprises of eight chapters, including this introductory chapter. The content and organisation of the other seven chapters is summarized below.

Chapter two provides an overview of the available literature pertaining to variables studied in the present research work. Additionally, it gives a brief introduction in relation to cardiovascular disease (CVD) in the Indian setting, important risk factors related to heart disease in general, and an introduction to MI.

Chapter three deals with the statement of the problem in the context of the available literature relating to the independent and dependent variables in this study. It focuses upon controversies and gaps existing in the literature regarding the variables under study. It also deals with the major objectives, related hypotheses, and conceptual framework of the study.

Chapter four gives a brief description of the phases of study involved in the present research. It mainly focuses upon the first phase of the quantitative study, which broadly includes method, procedure, results, and interpretation.

Chapter five deals with the second phase of the study, where open-ended interviews were conducted to gauge the participants' perception regarding their illness, coping, and HRQoL. It includes rationale, aims, method, various themes generated from participants' transcribed verbatim reports, and discussion of the results.

Chapter six deals with the general discussion of the findings obtained from both phases of the study, i.e. quantitative and qualitative phases.

Chapter seven highlights the general conclusions, implications, and limitations of the present research work. Further to this, it discusses suggestions for future directions of research.

Chapter eight deals with the integration of the findings of the research work.

CHAPTER TWO

REVIEW OF LITERATURE

Health is a relatively broad concept and there is little consensus among scholars regarding the definition of health. Scholars belonging to different academic disciplines have conceptualized health differently. Broadly, three main approaches have been used by scholars to understand health:

Biomedical Approach

This is mainly concerned with the physiological aspects of health. The traditional narrow biomedical conceptualization of health considers it as a state of absence of illness; absence of disease or physiological malfunctioning (Bowling, 2001). The measurement of health is more or less the measurement of the manifestation of illness or disease state, and is dependent on objective measures and tests carried out in hospitals and clinics. Thus, the main focus of the biomedical approach is on various methods used for diagnosis and treatment of specific pathologies.

Sociological Approach

From the sociological perspective, health related issues can be grouped into four major categories (Weiss & Lonnquist, 1996):

a) Social environment, health, and illness: This category studies the relationship between the social environment and health and illness. It aims to gauge the patterns and trends of different diseases or illness in the population, and to explore the social factors responsible for it.

b) Health and illness behaviour: This emphasizes the promotion of health by altering or adopting certain health-promoting behaviours. Along with this, it also studies the reactions of people to their illness or condition.

c) Health professionals and their relationship with the patients: This focuses on physicians or professional groups in society in relation

          to patients. It takes into account both medical professionals and other healers in the society.

    d)   Health care system: This deals with the organizations, regulation, finance and problems pertaining to health care systems.

According to Cockerham (2001), in the field of sociology, medical sociology employs the sociological perspective to study health and medical practices. It mainly deals with social aspects of health and disease, the behaviour of health professionals and patients, social functioning of health organizations, patterns of health services, and their relationship with other systems from the social perspective. It assumes that society and its members tend to respond to health-related problems by conforming to their cultural norms and values.

Psychological Approach

According to Taylor (1999), a number of factors were responsible for the emergence of health psychology. One of the important factors was the change in the pattern of diseases. In the 20th century there were significant changes in illness patterns in most technologically advanced countries. Chronic disorders such as heart disease, cancer, and diabetes were becoming the main causes of disability and death. The main characteristic of chronic diseases is that they cannot be cured fully, but can be managed by patients and health professionals together. Several psychological factors were identified as causes of chronic diseases, along with biomedical ones. For example, in the case of heart disease, stress, type-A behaviour patterns, some specific negative emotions such as anger, hostility, depression etc., have all been identified as causes. These factors attracted the attention of psychologists, and basic psychological principles were applied to the study of health related behaviours.

The psychological approach to health aims to identify those factors that are associated with maintaining good health and improving the quality of life of the patients. It employs various methods such as experimental, field work, observation etc., to study health related behaviour (Kaptein & Weinman, 2004; Nicolson, 2001).

Health psychology is a relatively new area of applied psychology. According to Schmidt, Schwenkmezger and Dlugosch (1990), health psychology is a relatively vague term that emphasizes health more than illness, and secondary prevention more than primary prevention or health

awareness. It also emphasizes the generation of new approaches to health rather than the biomedical perspective. According to Weinman and Petrie (2000),

> Health psychology is concerned with understanding human behaviour in the context of health, illness, and health care. It is the study of the psychological factors which determine how people stay healthy, why they become ill, and how they respond to illness and health care (p.1).

According to Kaptein and Weinman (2004), "health psychology is concerned with the study of psychological processes in health, illness and health care" (p.3). It is not confined to research and the construction of new health models, but is concerned with the application of psychological models in the domain of health as well. It emphasizes preventive programmes, counselling, and treatment of diseases through psychological means. It is not limited to individual level analysis, but also includes the individual's social context (Schmidt, Schwenkmezger & Dlugosch, 1990).

In the area of health, scholars have proposed various health models with different aims and goals. Both quantitative and qualitative techniques have been employed for the derivation of these models. The focus of these models ranges from lay understanding of health and prediction of individual's health behaviour, to health preventions and health interventions. In the following section some health models are discussed.

Models of Health

The key issue in the area of health psychology is to understand factors that determine health behaviour, and evolving and improving methods that may bring appropriate behaviour change (Steptoe & Wardle, 2004). In the biomedical model of illness, very little attention has been paid to psychological factors in disease progression (Crossley, 2001). Therefore, the approach of treatment has been shifted from a purely disease-oriented medical model to a non-medical model. Engel (1977) advocated a bio-psycho-social approach that also takes into account non-medical factors, such as environmental factors, people's beliefs about health and illness, and medical factors.

Various theoretical models have been proposed by scholars that give better understanding of the nature of the relationship between health and behaviour (H. Leventhal, E.A. Leventhal & Cameron, 2001). According to Schmidt, Schwenkmezer and Dlugosch (1990), various health models can

be grouped into three categories: Health models, health behaviour models, and health promotion and education models. These categories are not completely distinct and they overlap with each other. However, the focus of each model greatly differs from the others. The three types of model are explored below:

Health Models

The use of the term 'health model' is restricted to those models that aim to predict the health status of an individual or an environment. Another problem with this approach is the measurement of health. This is because the term 'health' comprises both subjective and objective states, and includes physiological, psychological, social, and ecological factors (Schmidt, Schwenkmezger & Dlugosch, 1990).

The major health models under this category are Antonovsky's model of health, subjective or lay models of health, the ecological model of health, and the social ecological model of health.

Antonovsky (1979) argued that the concept of health cannot be understood from a pathological perspective. Health is more a process rather than a state or condition. He proposed a 'salutogenic' model of health. He conceptualized health in a holistic manner that included physical, psychological, and social perspectives. According to Antonovsky, sense of coherence is the major determining factor in an individual's health profile. According to Misra and Verma (1999), the concept of coherence seems to be connected to other health related concepts in psychology, such as hardiness, learned helplessness, type A behaviour, etc.

According to Schmidt, Schwenkmezger and Dlugosch (1990), subjective or lay models of health have tried to study how people conceptualize the concept of health and their notion regarding the maintenance of health. It gives insight to the researcher to evolve and implement such health promotion interventions that aim to restructure people's distorted notions about health related behaviour. In a classic qualitative study on French people, Herzlich (1973) found that people perceived the concept of health as 'given', which included biological, personal, and social aspects. On the hand, people viewed 'disease' as being caused by the environment and moving away from nature.

The ecological models of health emphasize the interaction between determinants of health and its dimensions, whereas a social ecological model of health stresses that health is dynamic and is a part of personal and social development (Schmidt, Schwenkmezger & Dlugosch, 1990).

The social ecological perspective represents a comprehensive approach to health with high explanatory value that needs to be tested in the area of health promotion and health education.

Health Behaviour Models

It is important to understand factors that underlie people's health behaviour. These factors can give some insight to the researcher to develop strategies regarding health promotion and disease prevention (Wit & Stroebe, 2004).

The majority of work done in the area of health psychology is concerned with predicting an individual's health behaviour rather than health per se (Schmidt, Schwenkmezger & Dlugosch, 1990). Health behaviour models are broadly social cognitive in emphasis. Following are some prominent health behaviour models:

a) Health belief model: Rosenstock (1974) developed this model to address why many people do not follow preventive health behaviours. This model assumes that an individual's involvement in any health behaviour will depend upon perceived susceptibility and severity of condition, and an individual's subjective evaluation of the recommended course of action. Further, this model assumes that likelihood of any action will be triggered by internal cues (perceived symptoms) as well as external cues (health education campaigns). According to Wit and Stroebe (2004), many scholars have criticized the original formulation of the health belief model. This lead to the inclusion of additional variables in the model, such as health motivation, self-efficacy, etc.

b) Locus of control model: The locus of control construct has also been applied in the area of health. In the context of health related behaviour it is conceptualized that people will exercise pro-health behaviour when they perceive that they have control over life events and they are not being controlled by external agencies (Seeman & Seeman, 1983). The health locus of control scale has

been developed based on this model. However, there is a need to study the multidimensionality of health behaviour, such as the difference between control beliefs and the desire for control within this framework (Schmidt, Schwenkmezger & Dlugosch, 1990).

c) Behavioural intention model: This includes those models that deal with notions like an individual's attitude towards an action, their moral beliefs related to actions, and perceived social norms that determine an individual's intention to exercise health related actions (Schmidt, Schwenkmezger & Dlugosch, 1990). Ajzen and Fishbein's reasoned action model falls under this category.

According to Ajzen and Fishbein's reasoned action model, an individual's behavioural intention leads to positive health behaviour. Behavioural intention is determined by two factors: An individual's attitude towards specific health behaviour, and perceived social norms related to it (Wit & Stroebe, 2004). However, this model failed to find consistent support and became trapped in the 'attitude-behaviour' controversy (Schmidt, Schwenkmezger & Dlugosch, 1990).

Health Promotion/ Health Education Models

According to Kaptein and Weinman (2004), keeping Matarazzo's definition in mind, the first element of health psychology is to provide guidelines regarding promotion and maintenance of health. It aims to study healthy people and deals with various issues such as understanding and promoting health behaviours, modifying health behaviours, spreading health related knowledge through mass media, making people aware of risky health behaviours, etc.

As discussed by Schmidt, Schwenkmezger & Dlugosch (1990), Erben distinguished among four types of health education models: the biomedical model, social-psychological model, sociological model, and the social-ecological model. All of these models are application based health models. Among them the social-ecological model is the most promising as it aims to provide health promotion and health education to all people. It also meets the criteria of WHO.

Another set of models that fall under this category are health promotion/ health education planning models. These models deal with specific tasks such as health education as a part of the curriculum for school children, community based programme planning, etc. (Schmidt, Schwenkmezger & Dlugosch, 1990).

On the basis of the above discussion, it can be concluded that people belonging to different disciplines have conceptualized health in different ways. For some hardcore medical scientists health is nothing but the absence of disease. On the other hand, sociologists, psychologists, and anthropologists have tried to study health as a function of various factors such as societal norms, role functioning, social relationships, physical functioning, emotional functioning, environmental factors, etc. Health psychologists are mainly concerned with those factors that shape an individual's health related behaviours, as well as developing new methods to bring appropriate changes in health related behaviour.

The present research is concerned with the investigation of psychological factors associated with cardiovascular disease (CVD), especially the disease of myocardial infarction. Therefore at this juncture it is important to discuss cardiovascular disease, its status in the Indian setting, what exactly is meant by myocardial infarction, and what important risk factors for myocardial infarction are.

Cardiovascular Disease (CVD)

"Heart disease has no geographic, gender or socio-economic boundaries."
—WHO Report (2003)

The rate of cardiovascular diseases (CVD) is increasing in developing countries. In 2003, deaths from CVD were around 29.3% or 16.7 million of all global deaths. In this sense, it is labelled as the world's 'leading killer' disease. It is also a leading cause of death in India. Although in most industrialized countries deaths from heart attack have declined by around 50%, the scenario is very different in developing countries. Eighty percent of global cardiovascular disease related deaths occur in developing countries, which especially cover most Asian countries (Pande, 2004).

CVD in the Indian Context

In the Indian setting, occurrence of coronary heart disease is common and on the increase (Stein et al. 1996). According to Bahl, Prabhakaran and Karthikeyan (2001), occurrence of coronary artery disease (CAD) among Indians comes at a relatively early age. The growth in coronary diseases has risen from 4% to 11% in urban India in the last five decades (Pande, 2004). According to Seth (2003), Indians are six times more predisposed to coronary artery disease than Western people, and twenty times more than Chinese people. Specific risk factors that have been identified in the case of Indians are abdominal obesity, uncontrolled diabetes, insulin resistance, high triglycerides, low HDL (high density lipoprotein) cholesterol, high blood pressure, and smoking.

Various risk factors have been identified for the rise in CVD related diseases in Asian countries. The most salient factor relates to changes in people's lifestyle. Significant changes have been seen in dietary habits, physical activity level, tobacco consumption, and smoking. Unhealthy dietary habits have increased the high consumption of saturated fats, salt, and refined carbohydrates, and low consumption of fruit and vegetables. High blood pressure, being overweight, obesity, and type-2 diabetes serve as biological causes for CVD. Biological and lifestyle related factors tend to come together and contribute to a fatal combination as far as cardiovascular disease is concerned (WHO, 2003).

According to Reddy, Shah, Varghese and Ramadoss (2005), the occurrence of coronary heart disease in rural settings is about 3-4%, as compared to 8-10% in urban Indian settings among adults over 20 years of age. This figure represents around a two-fold rise in rural areas, and roughly a six-fold rise in urban areas regarding the occurrence of coronary artery disease in the past four decades. According to Rastogi et al. (2004), dietary habits may contribute to a high ischemic heart disease risk in India.

The category of cardiovascular disease ranges from relatively less complicated diseases such as hypertension or high blood pressure, to relatively more complicated chronic diseases such as myocardial infarction (MI) or heart attack. For ease of reference, myocardial infarction will be referred as MI throughout this book. The management of CVD related diseases requires care and precaution, and it becomes even more important in the case of chronic disease of MI.

Myocardial Infarction (MI)

In medical terminology a 'heart attack' is known as myocardial infarction (MI). Biologically, a heart attack occurs when there is an infarct in the myocardium, or heart muscle, which causes a significant decrease in the supply of oxygen to that particular area. In most cases, the reduced blood supply is due to a clotting of blood in an artery narrowed by atherosclerosis (Zaret, Moser & Cohen, 1992). MI can be dangerous as it may cause irreparable damage to the heart within a short period of time after the myocardium or heart muscle is deprived of oxygen (Deckelbaum, 1992).

The severity of a MI ranges from slight to acute damage to the heart. The severity of MI depends upon several factors (Deckelbaum, 1992), among which the three main factors are: the site of the blocked coronary artery, arrhythmias, and collateral circulation. MI, or heart attack, is more life threatening if the blockages are in the left main and the left anterior descending arteries than blockages in the right coronary arteries. Arrhythmia refers to a serious irregularity in heartbeats and a blockage may lead to malfunctioning of the heart's electrical impulse system, which may lead to a state of tachycardia (inefficiently rapid beat) or ventricular fibrillation (an ineffective fluttering of heart muscle). If a gradual blockage occurs in the key coronary vessel over a period of time then the demand of oxygen supply to heart muscles prompts other vessels to widen in order to provide an alternative blood source. This results in a natural coronary bypass, which provides a saving grace to blocked or occluded vessels. Blockage of a vessel may be more serious if it occurs in a vessel serving an area for which collaterals have not developed.

According to Deckelbaum (1992), the severity of a heart attack varies, as well as its symptoms. The warning symtoms of MI include uncomfortable pressure, fullness, squeezing, or pain in the centre of the chest lasting two minutes or longer; pain spreading to the shoulders, neck, or arms; severe pain; light-headedness; fainting; sweating; nausea; or shortness of breath. However, not all of these warning signs occur in every heart attack.

Several important risk factors have been identified in the case of MI. According to Black (1992), risks factors for heart disease can be classified into two categories: Risk factors that cannot be changed (unmodifiable risk factors) and risk factors that can be changed, or at least can be controlled, (modifiable risk factors). Another way of categorizing risk factors is:

physical/physiological factors, behavioural factors, and psychological factors. Some of the physical/physiological risk factors cannot be changed or controlled, however other physical/physiological factors, behavioural factors, and psychological factors are modifiable or controllable. The important unmodifiable or uncontrollable physical/physiological risk factors are age, gender, and heredity. Some important modifiable or controllable physical/physiological and behavioural risk factors include high blood pressure, high level of blood cholesterol, smoking, obesity, and diabetes.

Psychological Risk Factors

Researchers have identified the role played by psychological factors that can be linked to the occurrence of heart disease (Wong & Reading, 1989). Earlier, it was thought that heart disease was purely a physical problem, with special emphasis on hereditary factors and dietary habits as its main causes. However, the importance of psychological factors is being increasingly recognized. Scholars have advocated the inclusion of psychological factors, along with other factors, in longitudinal studies of cardiovascular disease (Fisher, 1963).

The important psychological factors that have been linked to heart disease are stress, negative emotions, and personality type. In the following section the role of stress and specific emotions in heart disease is discussed briefly. The role of personality types in relation to heart disease is discussed in the later section of this chapter in the context of personality.

a) Stress and heart disease: Stress plays an important role in formation, progression and triggering of the onset of any cardiac event (Dougall & Baum, 2001). An optimum level of stress is important for personality growth. However, when it exceeds the optimal level, it leads to many health problems along with other negative outcomes (Palsane & Ram, 1999; Dalal & Misra, 1999). Scholars have outlined the role of emotional strain and acute excitement, which may precede an acute MI or congestive failure in a significant number of cases (Fisher, 1963, Burg, 1996). In the decade of 50s, Russek and Zohman (1952, as cited in Fisher 1963), observed in a study of 100 coronary patients that occupational emotional stress plays a more significant role in the etiological picture of coronary disease than heredity, high fat diet, obesity, tobacco consumption, or exercise. Many other studies

have also supported this finding (Landsbergis et al., 1993; Bunker et al., 2003).

The physiology of humans functions differently in stressful situations. For example, there is evidence that environmental stress facilitates the increased circulation of catecholamines, which may lead to a variety of cardio-vascular related diseases through various intervening mechanisms (Elliott, 1995). As noted by Dougall and Baum (2001), conditions of stress activate the function of the sympathetic nervous system, which results in elevated levels of two hormones in the blood: epinephrine and norepinephrine. The elevated levels of these two hormones lead to increased activity levels of beta and alpha receptors.

Many scholars have suggested that stress can also cause atherosclerosis by increasing heart rate. Stress may cause reduction in the supply of oxygen to the heart and lower the threshold of myocardial ischemia. It may also trigger function of autonomic nervous system (ANS), which may trigger acute arrhythmic events and in some cases it may trigger myocardial infarction (Dougall & Baum, 2001).

b)   Specific emotions and heart disease: It has been observed that some specific negative emotions are related to heart disease. The link between negative emotions and heart disease falls under personality risk factors (Contrada & Guyll, 2001). Generally, it is agreed upon that the specific emotions linked to heart disease are: anger, hostility, aggressiveness, anxiety, and depression.

Anger and hostility are understood as possible risk factors for many physical diseases. Scholars have shown an association between anger/hostility and the event of coronary artery disease (Smith & Ruiz, 2002). According to Niaura et al. (2002), high levels of hostility are linked to increased risk of coronary heart disease, but little is known about the process through which it facilitates such risk. As noted by Contrada and Guyll (2001), self reports of trait hostility are found to be predictors of coronary events among a previously healthy population. Self reports of hostility are also found to be associated with atherosclerosis.

There is evidence suggesting that clinical depression increases the likelihood of cardiac morbidity and mortality (Blumenthal et al., 2003; Frasure-Smith & Lespérance, 2005; Miller, Stetler, Carney, Freedland & Banks, 2002; Rugulies, 2002). Kubzansky, Kawachi, Weiss, and Sparrow (1998), on the basis of a study on anxiety and coronary heart disease, concluded that "chronic anxiety may increase the risk of CHD by: (a) influencing health behaviours (e.g. smoking); (b) promoting athergenesis (e.g. via increased risk of hypertension); and (c) triggering fatal coronary events, either through arrhythmia, plaque rupture, coronary vasospasm, or thrombosis" (p. 47).

Depression has also been found to be a significant health risk factor for coronary heart disease (Sirois & Burg, 2003). In a study Friedman and Booth-Kewely (1987) concluded that depression and anxiety may contribute to CHD independently.

As evident from the above discussion, the experience of negative emotions may be linked to heart disease. It can thus be assumed that a positive state or emotion might weaken the emotion-heart disease link. In a study Kubzansky, Sparrow, Vokonas and Kawachi (2001) reported that an optimistic explanatory style may protect against CHD related risks in older men. This protective effect was independent of other risky health behaviours, such as smoking, alcohol consumption, etc.

The discussion so far has focused upon important health models and heart disease, and related risk factors. However, in the following section of this chapter those variables that are directly linked to the study will be discussed. In the present study, illness cognition and personality type have been taken as independent variables, and coping and health related quality of life as dependent variables. In order to develop an effective health intervention for heart patients, it is necessary to study the subjective perception of disease and how it influences coping processes and quality of life.

Illness Cognition

One of the important aims of health research is to identify and understand those factors that seem to influence an individual's adherence to prescribed treatment, as well as management of illness. Broadly, all health models can be divided into two categories. As noted by H. Leventhal, E.A.

Leventhal and Cameron (2001), the first category of health models mainly focus on five types of variables:

a) The cognitive processes involved in the perceptions of vulnerability to disease.
b) The availability of actions to manage threat and/or emotional reactions to it.
c) Intentions to act based on the perceptions of the barriers and benefits of particular actions for threat avoidance.
d) The views held by valued others regarding specific healthy and risky behaviours.
e) Perceptions of self-competence or self-efficacy to perform health related actions.

There is another set of health models that focus on the constructs generated by individuals regarding their health/illness status. In other words, this approach aims to understand the phenomenology of the subjects. As noted by H. Leventhal, E.A. Leventhal and Cameron (2001), this set of health models is known by various names such as, 'self-regulation and adaptation', 'illness cognition', 'mental representation in health and illness', and 'common-sense representation of illness danger.' Broadly, the models mentioned here are also known as self-regulatory models of health or illness. In the present study, illness cognition has been studied under the framework of a self-regulation model.

Self -Regulation Model vs. Other Health Models

According to Cameron and Leventhal (2003), a health model cannot be called a self-regulation model unless it has three essential components: feedback, motivation, and goals. Only having elements of cognitive, affective and behavioural components will not make any health model a self-regulation model. Cameron and Leventhal have contrasted self-regulation models with other health models, such as the health belief model, reasoned action model, and transactional model. In the health belief model and reasoned action model, the individual is conceived as a 'rational decision maker' who calculates the cost and benefit of adopting the health behaviour in question. Up to this point, both the models fulfil the initial phase of self-regulation, i.e. setting goals. However, they fail to take into account other aspects, such as emotional processes. Emotional processes include behavioural decisions. Such decisions are dynamic processes, where feedback processes appraise individuals' health

behaviour and suggest to them whether to engage in a specific health behaviour or not.

The transactional model of health behaviour proposes the phases of selection, adaptation and maintenance of a change in health behaviour. This model recognizes that behaviour is dynamic in nature. However, it is less successful in explaining the role of emotional processes, the nature of psychological processes at each stage, and the influence of socio-environmental factors on health behaviour. The self-regulation model on the other hand emphasizes that health behaviour is dynamic in nature and successfully explains both cognitive and emotional representation when an individual faces an illness threat.

Meaning of Self-Regulation

As noted by Cameron and Leventhal (2003), self-regulation can be construed as a "systematic process involving conscious efforts to modulate thoughts, emotions and behaviours" (p.1). It is a 'dynamic motivational' construct that comprises of setting goals, planning appropriate strategies to achieve these goals, appraisal of goals and strategies, and revision of selected goals and strategies. It follows the principle of TOTE (test, operate, test, exit).

Basic Assumptions of Common Sense Model of Self-regulation

According to H. Leventhal, E.A. Leventhal and Cameron (2001), there are three basic assumptions of the common sense-model of self-regulation. The common sense model is also referred to as illness cognition, illness representation etc.:

a)   Individual as an active problem solver: This model assumes that human beings are bestowed with an active problem solving capacity. Here the term 'problem solving' suggests that most of the human actions are purposeful and goal directed. In the context of health and illness, individuals are thought of as active problem solvers, who try to make sense of their somatic state and of changes in that state. Individuals, by their self-regulating systems, try to avoid or control changes that are perceived as signs of illness. Here the process of adaptation with illness is similar to problem solving.

b) Process of adaptation: This is based on individual's 'common sense belief.' Thus, the individual's understanding of disease influences representation, coping, and outcome.

c) Representation of disease: In the self-regulation model, representation of disease may be distinct from objective biomedical representation. Here the representation of disease threat is influenced by individuals' perceptions, attitudes and beliefs regarding their environment. Beliefs of environment include family, friends, doctors, mass media, and other cultural factors.

Two Levels of Representation

According to Diefenbach and Leventhal (1996) and H. Leventhal, Diefenbach and E. A. Leventhal (1992), individuals deal with any health threat on the basis of two types of representations.

a) Perception of health threat or cognitive representation/illness cognition of health threat.

b) Emotional reaction to health threat or emotional representation of health threat.

Cognitive Representation

According to the illness cognition model, external and internal stimuli trigger illness representations when an individual encounters any health threat. At this point of time pre-stored existing schematic structures of health/illness serve as a basis for the interpretation of new illness related cues or information. In other words, individuals, on the basis of their prior experiences with illness, give meaning and interpretation to incoming illness related experiences (Diefenbach & Leventhal, 1996). The illness related threat or illness related stimulus can come from either external and/or internal sources.

According to Diefenbach and Leventhal (1996), when a stimulus comes from an internal source, such as any somatic cue, then its representation depends on its similarity with already available illness schema in the mind. The existing illness schemata may be an individual's past experience with diseases or it may be rooted in an imagined one. In this case the matching process between current somatic cue and existing schemata will generally revolve around five dimensions of illness cognition: Identity, timeline,

cure control, consequence, and causes of the illness. These five components are described later in this section.

According to Cameron, E.A. Leventhal and H. Leventhal (1993), the illness cognition model of the individual will influence his/her preference for coping strategies as well as their outcome. It is important to mention here that the flow between illness cognition, coping, and outcome is not unidirectional but bi-directional. It may follow both bottom-up and top-down processes.

Emotional Representation

Any somatic cue will evoke emotional response when it is interpreted as threatening or a signal of a coming health threat. For example, for a girl, a lump in the breast will not be threatening unless it is labelled as a possible cancerous lump. In this case it may invoke anxiety and fear of body image. Similarly, a pain in the chest will not invoke an emotional response, such as depression, fear etc., unless it is labelled as a sign of heart attack. Emotional representation is important for understanding reactions to health threats.

Dimensions of Illness Cognition

As noted by Croyle and Barger (1993), Jenkins was the first scholar who empirically examined the structure of illness representation. He used a semantic differential scale consisting of 16 questions related to illness, and employed a factor analysis method. He found three dimensions of illness representation: personal involvement, human mastery, and social desirability.

On the basis of the findings of studies, Leventhal, Meyer and Nerenz (1980) and Leventhal, Nerenz and Steele (1984) proposed a structural model of illness representation by considering an individual as an active problem solver. Initially, Leventhal, on the basis of his studies, proposed four dimensions of illness cognition: identity, timeline, cause, and consequence. Further, Lau and Hartman (1983) provided support for Leventhal's work. Based on their findings, Lau and Hartman reported that their study provided strong support for the identity and cause components, but weak support for the timeline component.

Turk, Rudy and Salovy (1986) studied the common sense illness model and their aim was to explore the dimensional structure underlying an

individual's illness cognition with the help of a factor analysis method. They found four dimensions of the illness model: Seriousness, personal responsibility, controllability, and changeability. They advocate that this four dimensional structure reflects an individual's 'implicit model of illness.'

Five components or dimensions of illness cognition have been discussed extensively by researchers (Cherrington, Moser, Lennie & Kennedy; Lobban, Barrowclough & Jones, 2003; Difenbach & Leventhal, 1996; H. Leventhal, Diefenbach & E.A. Leventhal, 1992; Moss-Morris & Wrapson, 2003). The details of all these components are as follows:

a) Identity: This refers to the label an individual uses to describe his/her illness. It also includes signs and symptoms associated with the disease.
b) Timeline: This refers to an individual's perception regarding whether the disease is acute, chronic, or cyclic. It reflects a patient's beliefs regarding duration of disease.
c) Consequence: This dimension assesses a patient's belief regarding what would be the outcome of the disease.
d) Cure-control: This assesses whether a patient perceives his/her disease as controllable or uncontrollable.
e) Cause: This assesses a patient's beliefs regarding what would have caused his/her disease.

Dynamics of Illness Cognition

In general, chronic illness episodes are dynamic in nature. Changes in disease process, feedback from significant others, such as medical professionals, friends, spouse etc., also influence individuals' illness representations (H. Leventhal, Halm, Horowitz, E.A. Leventhal & Ozakinci, 2004).

According to H. Leventhal, E.A. Leventhal and Cameron (2001), individuals use their problem solving capacity while going through different episodes of illness. At this level, interaction occurs between concrete and abstract features of illness cognition and concrete and abstract features of self. The concrete features of illness cognition, such as labelling of disease, anticipated symptoms, experiential part of treatment etc., interact with concrete levels of self, such as an individual's perceived ability to tolerate the pain and discomfort due to disease and treatment. On

the other hand, abstract features of illness cognition, such as belief about life and death, anticipated injury from serious treatment (chemotherapy, surgery etc.), interact with abstract features of self, such as optimism-pessimism, self efficacy etc. The meanings generated from the interaction between higher order variables are assumed to be important for planning and execution of goal directed behaviour.

Heuristics Involved in Illness Cognition

According to Leventhal, Brissette and Leventhal (2003), there is evidence suggesting the involvement of heuristics in the development of illness cognition. The first heuristic is symmetry. The symmetry heuristic suggests that people combine their abstract experience with labels.

When a new piece of information is added to an existing schema, it gives breadth to the representation and it can expand from one domain to all five domains. Information from various sources, such as perceived changes in one's biological function, observation of these changes in similar others, or through mass media, shapes the representation of illness. The success and failure of a coping strategy serves to revise an illness representation. According to Leventhal, Brissette and Leventhal (2003), the other important heuristics that are used to appraise an illness representation are: The stress illness rule, the age illness rule, the prevalence rule, and the duration rule.

Overall, the illness cognition model suggests that individuals, on the basis of their experiences, develop their own illness models or mental representations that give them lay understanding of their disease and also give guidelines regarding coping and adaptation in the context of illness. Three basic sources of information mould this mental representation (Hagger, Chatzisarantis & Griffin, 2004):

   a) Lay information, assimilated and stored in an individual's mind from various sources, such as social interaction, cultural beliefs about illness, etc.
   b) Information from significant others, such as parent, spouse, doctor, etc.
   c) Individual's experience with illness. This includes bodily cues regarding current illness, past experiences with illness, and previous knowledge in coping with illness, etc.

Illness Cognition and Chronic Illness

The illness cognition approach has been applied to a variety of chronic diseases, such as asthma, arthritis, cancer, heart attack, chronic obstructive pulmonary disease (COPD) etc. (Kaptein et al., 2003). Here it is important to know what is meant by the word chronic. According to Kaptein et al., originally the word chronic was derived from Greek word 'chronos' which means 'time'. Similarly 'chronikos' in Greek refers to 'during a long period of time'. Thus, the element of time is a core concept in defining any chronic disease. Diseases like asthma, arthritis, cancer, heart attack etc. are chronic diseases because they exist in a sufferer's life for a long time and even for the whole life. At this juncture, it is important to discuss three concepts: Disease, illness, and sickness. These three concepts belong to three different domains: Medicine, Psychology, and Sociology respectively. In general, these three concepts are understood as the same, but theoretically they are different. In bio-medical science, disease refers to the state of physiological dysfunction for which any physiological basis exists (Kaptein et al. 2003; Misra & Verma, 1999). Unlike disease, illness is a subjective concept. An illness can be present without being diseased. People associate different subjective symptoms, such as pain, weakness, headache etc., while reporting any illness. The word 'sickness' has been coined by sociologists, which is also related to 'social identity' (Misra & Verma, 1999).

As noted by Kaptein et al. (2003), three characteristics of illness have been outlined in epidemiological studies: Duration, severity of functional limitation, and use of health care services. Here duration means that, to label a condition as chronic, it should last for at least three months or recur for a number of times. The functioning of the individual should be so severely affected to the point that he/she is unable to perform work and other daily activities. In addition, help of medical care services are required for a long period of time.

In the present book, illness cognition refers to patients' understanding regarding disease from a psychological perspective. Various chronic diseases have been studied using the framework of illness cognition. A few such studies are reviewed in the following section:

In a study on asthma patients, Jessop and Rutter (2003) found that both cognitive and emotional representation of asthma, as dictated by the self regulatory model, were related to a patient's adherence to inhaled

preventative asthma medication. Results from multiple regression analyses demonstrated that components of the self regulatory model significantly predicted a subject's current adherence and intention to adhere in the future. In another study, Byer and Myers (2000) found that patients' belief regarding the use of an inhaler was significantly associated with long illness duration and strong identity.

Murphy, Dickens, Creed and Bernstien (1999) conducted a study on patients suffering from rheumatoid arthritis. Results demonstrated a clear association between depression and illness perception. Murphy et al. reported that two of the dimensions of illness perception, consequence and cure control, were strongly related to experience of depression.

Grunfeld, Hunter, Ramirez and Richards (2003) studied the perceptions of breast cancer across the life span. In their study, it was reported that a range of potential breast cancer symptoms were found to be associated with a delay in intention to seek help. In addition, negative beliefs about the consequences were also found to predict a delay in help-seeking intentions among women aged over 65 years.

Relatively few studies have been done in the area of cardiovascular diseases. According to Gump et al. (2001), lay understanding of disease can have a potential effect on adherence to treatment. They reported a study of patients in New Orleans. In their study they reported two different folk models of high blood pressure. One model described high blood pressure as a sort of 'high blood' or 'blood disease' caused by two important factors; heredity and diet. Moreover, for this type of high blood pressure, patients supported adherence to medication and dietary control. On the contrary, the other model described high blood pressure as 'high-pertension' or 'disease of nerves.' Stress, worry, and anger, were attributed as important causes, and medical treatment or dietary control were not understood as part of treatment. It was also interesting that patients characterizing their disease as 'high blood' were more compliant with medical treatment than those who were characterizing their illness as 'high-pertension.'

A study by Walsh, Lynch, Murphy and Daly (2004) on acute myocardial infarction patients highlighted factors that influence the patient's decision to seek treatment for their disease under the framework of the self-regulatory model. In this study, the self-regulatory model partially explained delay by the patients for treatment. They reported complex