REVIEW OF LITERATURE

The objective of review is to discuss recent data.

Recent years have evinced growing concern about the psychological factors that improve and impair the health status of a person. This has led to the emergence of health psychology which is practically an interdisciplinary venture involving mind-body interaction. The field of health psychology emerged in the context of realization that biological mechanisms alone are insufficient to maintain and promote health and well being. To alleviate the physical pain, one has to examine the attitudes, expectations, beliefs and emotional support which the patient has, not just his or her response to the drug treatment. The patients are not mere passive recipients of certain treatment regimen, they should be considered as equal partners acting jointly in achieving the common goal of (better) health. These issues were not attended to by scientific psychology. Clinical psychologists were confined to the study of classification of mental illnesses, etiology, diagnosis and treatment of the afflicted patients. Health psychology grew with the realization and research evidence that psychological knowledge can make important contribution in the wide range of health-related domains. It got recognition only in 1970s and the first journal in this area was started in 1982. Since then it has been one of the most rapidly growing fields of psychology.
Development of Health Psychology In the last two decades, psychological factors have come to be identified as the major causes of a wide range of diseases and disabilities. For example, Type A Personality is considered a major risk factor in the coronary heart disease (CHD). Prolonged psychological stress is found to be responsible for hypertension, peptic ulcer and many other diseases. Also, psychological factors have been found important in the recovery from the physical ailments. Health psychology is now encompassing the strategies for health promotion and making preventive health measures more effective.

Concepts of Health

The most acceptable definition of health is given by the WHO (1978): *Health is the state of complete physical, mental, social and spiritual well-being, and not merely an absence of disease or infirmity.*

Stress and Health

In today's world where stress has become a very common experience, it is one of the most used terms. A large number of symptoms in medical diagnoses are attributed to stress. When people fail to handle their stress experiences the mental and physical health problems start surfacing. There is increasing evidence that grief, depression, and other negative feelings are linked with the increased risk of organic (like cancer) and
infectious (like cold) diseases. For example, recent bereavement has been linked with the increased risk of a number of diseases, such as CHD, tuberculosis, allergies and peptic ulcers (Clegg, 1988). Stress related negative emotions tend to suppress body's immune system over an extended time, rendering the person vulnerable to a host of diseases.

**Stressful Life Events**

The pioneering work of Selye (1976) has suggested that stressful events lead to health impairing physiological changes and illness. People fall ill because of some kind of pressure their lives go through. Following Seley's work, stress was defined in medical science as a specific physiological condition, the *general adaptation syndrome*. This syndrome or physiological change is caused by a person's own adaptive response to the stresses experienced. This means that although the syndrome itself is specific (specific changes in bodily systems) the condition of stress it results in a generalized state of the person (Radley, 1994).

**Psychological Factors Shaping Health**

Psychological research in the area of health has gradually accumulated to provide overwhelming evidence to argue that the mental states do affect the physical health in substantial degree. Some of the main trends are as follows. Personal Dispositions, Health and well being it has been found that the experience of
control and positive attitude are important in the success of surgery. Also, recovery of the surgical patients has been reported to be contingent on patient's emotional state prior to the surgery (see Cohen & Lazarus, 1979). Janis (1958) found a curvilinear relationship between anticipatory fear and post-operative recovery. Type A behavior pattern is found to significantly contribute to the occurrence of coronary heart disease (CHD) (Glass, 1976). A prospective study of CHD and optimism found that "a more optimistic explanatory style, or viewing the glass as half full, lowers the risk of CHD in older men" (Kubzansky, Sparrow, Vokonas, & Kawachi, 2001).

A recent paper published in the British Heart Journal has made a startling revelation that coronary artery disease (CAD) is the most common non-infectious disease in India, and is likely to affect over 65 million Indians by 2015.

The data has highlighted the need to develop a system of care for heart attacks in India. According to the recent data, the prevalence of CAD and myocardial infarction is on rise in the country. One of the key authors of the paper, senior cardiologist Dr Thomas Alexander said, "The overall prevalence in India has risen dramatically over the last two decades. Approximately, three to four per cent of Indians in the rural areas, and eight to 10 per cent in the urban areas suffer from CAD. Moreover, Indians are more likely to develop CAD during their working
years. Among working-age adults (35-64 years old), nearly 18 million productive years of life are expected to be lost due to CAD by 2030. This number over nine times higher than expected in the US." According to the paper, this pattern of the disease has substantial implications for India's growing workforce and economy. The financially backward people suffering from CAD in India appeal- to be at greater risk. Meanwhile, the paper also highlights the need to develop a system of care for heart attacks in India. The paper states that the major challenges in managing heart attacks mainly arise due to the distinctive structure of India's healthcare system, which is one of the most privatized in the world. Dr Alexander said. "As such, specialized the centers in the urban areas offer world class treatment, while much of the country's population still relies on public health systems."

Recent research by frasure- smith and her colleagues has identified depression as a significant independent predictor of mortality at 6 months in post - MI patients. They initially interviewed MI patients, 5-15 days following admission to hospital of which 16% met for major depression. A follow- up report published by the same the author's demonstrated that depression was still a predictor of post- MI cardiac mortality at 18 months.
CHD is the leading cause of death worldwide (Mackey and Mensah, 2004) although men have higher rates than women at all ages and coronary disease occurs up to 10 years later in women (Sharp, 1994). CHD is a major cause of death for both sexes: the WHO estimates that 3.8 million men and 3.4 million women around the world die from it each year. (Mackey and Mensah, 2004).

Psychological and emotional factors have long been implicated in coronary heart disease (CHD). In order to find out the role of emotions and personality in the psychopathology of physiological disorders, the present investigation focuses specifically on the emotional complex of anger, hostility, anxiety and stress in the etiology and pathogenesis of these major cardiovascular disorders.

**PERSONALITY AND CHD:**

Flanders Dunbar [1943] a pioneer in psychosomatic medicine, described patients with coronary heart disease (CHD) as ambitious, hard driving and strongly aggressive. On the basis of her clinical observations of CHD patients, she postulated a "Coronary Personality", which was characterized by aggression, compulsive striving, self-discipline and a strong need for achievement and success. Her work has stimulated a great deal of research on the relationship between anger, hostility and
aggression and the occurrence of CHD (e.g. Gildea, 1949; Miles et. al. 1959; Clereland & Johnson, 1962; Miller, 1965)

The most promising evidence linking CHD to behavior pattern of an individual, however, comes from the investigations pioneered by two cardiologists, Meyer Friedman and Ray Rosenman (Friedman, 1969; Rosenman et al. 1975). They identified a coronary prone behavior pattern, called "Type-A". Such persons are hard driving and competitive. They live under constant pressure, largely of their own making. They seek recognizing and advancement and take on multiple activities with deadlines to meet. Most of the time they may function well as alert, competent, efficient people who get things done. When put under stressful conditions, they cannot control, however, they are likely to become hostile, impatient, anxious and disorganized.

Initial prospective population studies in the United States and Europe yielded evidence that persons classified as type A were more likely to experience cardiac events. The western Collaborative Group Study [CWCGS] by Rosenman et al. (1975) used the structured interview (SI) to study 3,154 men aged 39 to 59 years who had no signs of cardiovascular disease. After 8.5 years, 257 men had developed CHD. The subject classified as Type-A wee twice as likely to have diagnoses of angina pectoris of myocardial infarction. Even after controlling
the traditional risk factors - parental history of heart attacks, high blood levels of cholesterol triglycerides and lipids, diabetes, elevated blood pressure, cigarette smoking; Type A individuals were still twice as likely to develop CHD. The Jenkins Activity Survey (JAS), developed during the WCGS, yielded higher type A scores for the 12 new cases of CHD that occurred during a 4 year follow up period than for the 524 healthy controls.

The Framingham heart study by Haynes et. Al. (1980) performed follow-up on blue - collar and white - collar men and women who were free of CHD. The Framingham type A scale was an independent prediction of CHD and myocardial infarction in middle aged men, and of angina in women 45 to 64 years of age. The association remained at high levels of risk.

Although the above mentioned studies have gone too far in providing a causal relationship between the type a behavior pattern and CHD; more recent studies, however, have failed to substantiate this relationship.

The Multiple Risk Factor Intervention Trial [MRFIT) conducted by Shekelle, Hulley, Neaton, Billings, Borlani, Genace, Jacobs, Laser and Stamler, [1983] performed follow-up on approximately 3000 healthy men for 7 years. The men were at risk for CHD due to the presence of at least 2 of 3 CHD risk factors: smoking, hypertension and high serum cholesterol
levels. Both the JAS and SI were used to assess type A behavior, but neither related to disease outcome.

Similarly, the Aspirin Myocardial Infarction Study by Shekelleet. Al. (1985) designed to investigate the impact of aspirin on subsequent myocardial infarction, found that type A scores on the JAS showed no relationship with subsequent myocardial infarction or mortality.

In an attempt to reconcile the positive and negative studies, investigators considered the multidimensional nature of the type A construct, speculation and evidence that some aspects of type A behavior may be pathogenic, while others may not, and still others may be protective, has stimulated a search for the "toxic" subcomponents of type A behavior.

Bortner rated more than 40 different behavioral factors in audiotaped Sis obtained from a WCGS sub sample. Result of study comparing [with matched controls) new cases of CHD during the first 4 years of follow-up highlighted an "Anger/Hostility" dimension as predictive. This finding was replicated in a larger study of all available cases form the 8.5 year follow-up

Several studies have related component scoring of potential for hostility and anger-in results of angiographic studies of CHD. Although no relationship existed for global type A Dembroski and associates (1989) found that potential for hostility and anger
in had a significant association with CHD severity after controlling for tradition risk factors.

Additionally, Dimsdale [1985] reported a reanalysis of the data and found both potential for hostility and anger-in related to angiographic results. Subsequent reanalysis of data from the multiple risk factor intervention trial also found similar results.

Houston, Chesney, Black, Cates and Hecker [1992], in a recent analysis of data from the WCGS using a component scoring technique and cluster analysis found that a cluster of items defining hostility was related to CHD. Another behavior pattern, which consisted of rapid responses to the interviewer's questions and interrupting; associated with pressured, controlling and socially dominant behavior was also related to CHD.

Sehneiderman, Chesney and Krantz (1989) concluded that research linking Si-elicited hostility to CHD are supported by studies employing alternative measures of hostility. Hardy, Smith and Frohm (1989) used the cook-medley hostility scan (Ho) of the Minnesota Multiphasic Personality Inventory (MMPI) and found it to relate to cardiac morbidity and mortality, as well as to total mortality. He scares are considered to be a measure of cynical hostility, suspicion, resentment and cynicism. High-scoring individuals were likely to experience feelings of anger and mistrust.
The Buss-Durkee hostility inventory has also been used in angiographic studies. A factor analysis to this inventory has isolated 2 factors. One, labeled "expressive hostility", correlated positively with extent of CAD, while the other, labeled "neurotic hostility", correlated with anxiety and was inversely related to the degree of CAD.

In their review of the predictive nature of type A components, Goldstein and Niaura (1992) concluded that expressive hostility and antagonistic interactional style may be most predictive of cardiac disease and points. There results suggest that hostility, like type A behavior may also consist of a number of more or less predictive subcomponents.

*Anxiety, independent of depressive symptoms, is associated with in-hospital cardiac complications after acute myocardial infarction.* (Dec-2008) The aim of this study was to determine whether post-MI anxiety was associated with in-hospital cardiac complications, independent of depressive symptoms. Findings suggest that the association of post-MI anxiety with in-hospital cardiac complications exists above and beyond the effects of depression.

Wulsin and Singal performed a systematic review to see if depression increases the risk of coronary disease. In 10 studies with a follow-up of more than 4 years, the relative risk in people
with depression was 1.64, which was less than that in active smokers (2.5) but more than that in passive smokers (1.25).

A 2007 study from Sweden prospectively followed patients who were hospitalized for depression. The odds ratio of developing an acute MI was 2.9, and the risk persisted for decades after the initial hospitalization.

In longer studies (with up to 19.4 years of follow-up), depression was associated with higher rates of death from cardiac and all causes in patients with coronary artery disease. Lesperance et al found that in MI patients, the higher the Beck Depression Inventory score at the time of hospital admission, the higher the 5-year death rate.

Van Melle et al reviewed 22 studies and found that in the 2 years after an MI, depressed patients had a 2 to 2.5 times higher risk of dying of a cardiac or any other cause than did nondepressed patients.

*Health Related Quality of life in coronary patients* by Maria Duenas. Alejandro Salazar, Begona Ojeda, Spain. Designed to investigate the impact of HRQL on coronary patients found that HRQL is an essential primary outcome in coronary patients. Several variables related to patients' clinical evolution and history of the disease is related to HRQL. Mental health is also significantly affecting the evolution of HRQL in these patients.
DEPRESSION AND CHD:

Joseph J. Westermeyer, Robert E. Feinstain (Jan- 2009) found that there is bidirectional relationship of depression and CAD. Depression is a risk factor for both the development and worsening of CAD.

The relationship between type D personality and perceived social support in myocardial infarction patients. Sararoudi RB, Sanei H, Baqbanian A (2011). Type D personality is based on two global and stable personality traits, including negative affectivity (NA) and social inhibition (SI). Type D personality substantially affects the way MI patients perceive availability of social support from different sources including family, friends, and significant others.

Assessment of psychological status of patients with effort angina: Mamedov MN, Didigova RT, Bulgucheva ZZ psychological status of patients with IHD was characterized by susceptibility to high and medium chronic stress as well as by subclinical and clinical anxiety and depression.

Depression is a risk factor for cardiovascular diseases. Reduced heart rate variability (HRV), which reflects altered autonomic nervous system activity findings extend the depression-reduced HRV relationship to the patients after cardiac surgery.

Association between depression and heart rate variability in patients after cardiac surgery:
Patron E. Messerotti Benvenuti S. Favretto G, Valfre C, Bonfa C, Gasparotto R, Palomba D in the Heart and Soul study, Gehi et al found no distinct relationship between heart rate variability and depression. However, in the same study, de Jong et al' id find specific somatic symptoms of depression to be associated with lower heart rate variability, although cognitive symptoms were not.

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**MOOD STATES AND CHD:**

Mood and transient cardiac dysfunction in everyday life: Mood states have been related to the long term etiology of coronary heart disease (Nicholson et al. 2006) and may act as acute triggers of cardiovascular events (Bhattacharyya and Steptoe 2007; Strike and Steptoe 2005). Emotional states in everyday life may also contribute to episodes of cardiac dysfunction, including transient myocardial ischemia and ventricular tachycardia, in patients with established coronary artery disease. This association has been studied by coupling Holter monitoring with self-completed diaries in which patients rate their moods and activities (Culic et al. 2004; Gabbay et al. 1996; Krantz et al. 1996).
Changes in mood states after coronary artery bypass graft surgery.


Few studies have investigated the change in mood states, such as anger, fatigue and confusion, after coronary artery bypass graft surgery (CABGS). The aim of this study was to describe the progression of these mood states over time and to determine the factors associated with these trajectories. The Profile of Mood States (POMS) was administered to 182 CABGS patients prior to surgery and at two and six months post-operatively. Socio-demographic and medical data were collected before surgery. Growth curve modeling was used to describe the POMS subscale trajectories. Four POMS subscales (tension-anxiety, fatigue-inertia, confusion-bewilderment, and vigor-activity) showed rapid improvement over the first two months after CABGS followed by a lesser improvement. There was no significant change over time for the depression-dejection and anger-hostility subscales. Being younger, male, having a manual occupation and smoking were factors associated with poorer pre-operative mood states. Those at risk of persistent mood disturbance after CABGS were younger, unpatented, female and those with diabetes. These patients can be identified prior to hospital admission.