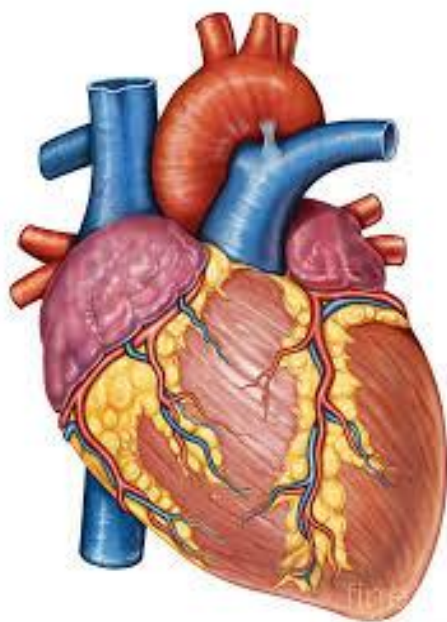


**A SOCIAL PSYCHOLOGICAL
STUDY OF PATIENTS
UNDERGOING
OPEN HEART SURGERY**



Soumen Acharya



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**A SOCIAL PSYCHOLOGICAL STUDY OF
PATIENTS UNDERGOING OPEN HEART
SURGERY**

**THESIS SUBMITTED FOR THE AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY IN PSYCHOLOGY**

By

SOUMEN ACHARYA

Under The Supervision of

M.G. HUSAIN *Ph.D.*

Professor & Head, Department of Psychology, Faculty of Social Science

Jamia Millia Islamia, New Delhi

1994

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CHAPTER 1

INTRODUCTION

“The heart is the chief mansion of the soul, the organ of the vital faculty, the beginning of life, the fountain of vital spirits and so, consequently, the nourisher of the vital heat, the first to live and the last to die”.

Ambroise Pare (1510-1590)

Ambroise Pare' (1510-1590) the famous 16th Century French Surgeon was not alone in the above and similar views about the heart. But in course of time the heart came to be recognised and studied as a muscular pump responsible for receiving the impure blood from the body and for its redistribution after oxygenation in the lungs. The heart has lost its halo but not its importance. It was no longer the chief mansion of the soul, only a mundane thing but a vital member of the corporeal anatomy.

The surgeon laid siege to it. But unlike the other organ in the body it defied the attack and eluded conquest. The heart still remains the last position in the body which the surgeons has not yet fully conquered. All the same a good deal has been gained. Its walls, and its interior have been invaded again and again not for devastation or covnage, but for repair and renovation. This process of subligation goes on continuously and the defience and the resistance are crumbling.

In fact it has recently been estimated that over 90% of cardiac lesion are amenable to surgical correction and the Ist of surgical irremediable cardiac lesion is fast shrinking. Now in the modern time the heart and lung transplantation is taking place in the country where the Government has passed law.

Heart is one of the most vital organs of the body. By its pumping action it supplies oxygen to various parts of the body. Normally the heart lies on the left side of the chest and behind the breast bone. Development of the heart is completed in the mother's womb as early as 8 weeks.

The heart comprises of 4 chambers. The upper part of the heart is called the atria and receives blood from the body and the lungs. The lower chambers are called ventricles and function to pump blood away from the heart. The right ventricle pumps impure blood, which is oxygen

poor and is brought from the body to the lungs. In the lungs the blood is saturated with oxygen. This blood flows to the left atrium from where it is pumped by the left ventricle to various parts of the body. The heart contains 4 valves, 2 separating the atria from the ventricles and the other 2 separating the ventricles from the arteries which arise from it. These valves prevent back flow of blood and only allow forward flow to occur. Heart disease can be congenital (present since birth), or acquired anytime during childhood.

These patients who need an operation to correct the heart disease, sometimes a special test (cardiac catheterisation) is advised for complete diagnosis. In this test a special fine tube (catheter) is passed inside the heart. Though it is like a minor operation, the procedure is quite safe. The catheter is put in through the vessel of the groin after local anesthesia.

Congenital Heart Disease (CHD)

Heart defects present from birth are called congenital heart disease. In majority of the cases the exact cause of congenital heart defect is not known, congenital heart disease may occasionally be inherited. As a rule, if one child in the family is affected with congenital heart disease, the risk of a second child having a similar heart disease is about 2-3 times that of the normal children. There is a higher likelihood for the baby to have congenital heart disease if the parental age is above 35 years or if the marriage has taken place between blood relations. Manifestations of congenital heart disease may be present at birth or occur much later in life. Some of the common forms of congenital heart disease are:

1. Obstruction of various valves producing obstruction to forward flow. If obstruction is very severe the heart cannot pump the required amount of blood forward across the obstruction and fails.
2. Abnormal communication between chambers usually called as holes or defects. Because of higher pressures on the left side such communications produce blood flow from left-to-right (shunting of blood). If the hole is between the upper two receiving chambers of the heart (the atria), it is called "atrial septal defect. The hole between the two lower pumping chambers (the ventricles) is called "ventricular septal defect." A communication between the pulmonary artery and the aorta is called "patent ductus arteriosus". The extra blood shunted to the right side produces load on the right side of the heart. This extra blood also goes through the lungs. So in patients the lungs get a large amount of blood and are prone to infections.

3. Combinations of communication and obstruction. In one of the common heart disease, a large communication between the two ventricles and an obstruction in the valve between the right ventricles and lungs is present. The results in a "blue baby" and defect is called "Tetralogy of Fallot".

Congenital heart defects are structured malformations present since birth due to abnormalities in embryonic development. The etiology of congenital heart disease remain unknown in most patients. However genetic factor (8 percent- 5 percent chromosomal and 3 percent single mutant gene disorders) Environment factor (2 percent tevatogons, Viruses drugs) In remaining 90 percent patients genetic, environmental interaction or mutifactional inheritance

Congenital heart disease due to genetic factors

Chromosomal disorders

Trisomy 21 (Downs Syndrome)
 Trisomy D (Pantan Syndrome)
 Turner's Syndrome (Xo)
 Trisome X (Edward's Syndrome)

Cardiac defect

Ventricular septal defect
 Ventricular septal defect
 Coation of aorta
 Ventricular septal defect

Single gene disorders

Ellis Van Crevald (R)
 Carpenter (R)
 Holt - Oram (D)
 Noonan (2D)

Ardiac defect

Single atrium
 Ventricular Septal Defect
 Atrial Septal Defect
 Atrial Septal Defect

Congenital heart disease due to Environmental factors

Environmental
 Rubella Virus
 Thalidomide
 Tridione
 Maternal Systemic Lupus

Cardiac defect Teratogen
 Patent ductus arterious
 Atrial septal defect
 Ventricular Septal defect
 Congenital Complete erythematosis Heart block

Rheumatic Heart Disease (RHD)

The second most common form of heart disease is an acquired form called rheumatic heart disease. This problem is usually encountered amongst children from the poor socioeconomic status, poor sanitation and over-crowding.

Rheumatic heart disease follows a bacterial throat infection by a apecific organism called streptococcus. After a gap of 3-4 weeks following the throat infection, the child develops fever, joint pains with or without swelling and involvement of the heart. The most common

age of occurrence of streptococcal throat infections in between 5-15 years although it can occur in younger children also. Abnormal movements (chorea) of body can also occur. The heart is usually involved by inflammation of all the three layers - the covering called pericardium, the heart muscle and the valves. The first attack may be very severe and produce heart failure. If not properly treated, repeated attacks of rheumatic fever may occur leading to permanent damage to the heart. The patient may present after several years with symptoms due to damage of the valves. Such damage is most common in the valves of the left side of the heart and can take two forms: (a) due to obstruction (stenosis) of the valve, or (b) due to leakage (regurgitation) of the valve. They can be corrected by open heart surgery like Mitral Valve Replacement, Aortic Valve Replacement and Double Valve Replacement. In patient to whom valve replacement is performed anticoagulation is routinely prescribed. These drugs need to be taken lifelong such drugs make the blood thin and prevent blood from clotting easily and specially so over the valves. The side effects of such a treatment, if not regularly monitored by the doctor, is an abnormal bleeding tendency which sometimes can be life threatening.

The rheumatic heart disease is common, patients with acute rheumatic fever are seen in frequently. The reason for this is not clear but could be due to non recognition of the disease. In case the low incidence of acute rheumatic fever is because patients do not seek medical help till they become symptomatic from heart disease.

Both sex are nearly equally affected. Mitral valve disease and are relatively more common in the female patients whereas aortic valve involvement is more common in male patients.

Ischemic Heart Disease (IHD)

Ischemia refers to a lack of oxygen due to inadequate perfusion. IHD is a condition of diverse etiologies all having in common a disturbance of cardiac function due to an imbalance between oxygen supply and demand substantially collection of abnormal fat cells and debris i.e. atherosclerotic plaques develop different segment on epicardial coronary artery area, and reduces in cross sectional area. When the narrowing of epicardial coronary artery is takes place the reduction in coronary blood flow and cause myocardial Ischemia. All of these transient event can upset the critical balance between oxygen supply and demand and this cause MI. When the block is caused CABG operation is done. In this case a section of a vein is used connection between the aorta and the coronary artery distal to the obstruction lesion or the mammary artery is used.

Myocardial Ischemia due to occlusive arteriosclerotic Coronary artery disease in the third commonest condition requiring the surgical treatment. Surgery is not established as an effective method of treatment. Surgery is not established as an effective method of treatment of occlusive Coronary artery disease. The risk associated with there operation has become less and the operative mortality has rapidly decreased to and acceptable level of less than 5% the risk patients.

Myocardial revascularization improves quality of life. There is in clear evidence it indicates that its prolong the life span with the patients with left main coronary, three vessel and two vessel disease.

When individuals develop cardiac disease, their concepts of themselves and their relationship to the environment change and as a result it is quite likely that certain personality modification will occur if the cardiac disorder is relieved. It would seem, then, that a further understanding of the emotional problems of the patients with heart disease could be obtained if a group of patients who experienced physical improvement from mitral valve replacement procedure was studied. In addition such a study could provide additional information regarding the better ways of prepare these people psychologically for the operation and to rehabilitate them optimally after operation Patients undergoing open heart surgery provide an unusual opportunity for the study of acute and chronic stress. The various psychological responses of these patients to hospitalization and operation illustrate the effects of prolonged adaptation to an increasingly disabling disease which is followed by the hope of surgical rescue but also with risk of sudden death on the table. All these patients had, of course, been victims of rheumatic fever and each had learned during the months or years before coming for operation that his heart had become diseased. Usually such a patient has also been warned at different times by shortness of breath, palpitation. Or an episode of haemoptysis that is physical capacity was limited. This danger not only effected vital decisions concerning marriage, pregnancy and choice of vocation but also influenced the intimate details of daily living including the manner of walking, talking and breathing.

Number of patients with have been incapacitated for many years by this chronic disease and for the new developments in the surgical techniques offer at least partial release from invalidism. Paradoxically enough, the accomplishment of such an operation is not always followed by healthy psychological adaptation. For these patients, illness has been invested with neurotic gains and by their symptoms they have been provided, often for many years,

with a shelter from responsibility and stressful life experiences. Consequently, although an operation may be regarded as successful in the strictly technical sense, it sometimes may not be so if a broader view is considered in terms of the patient's subsequent psychological adjustments.

There are few incidents more calculated to disturb the well ordered routine of the thoracic surgery than when a patient develops a severe psychiatric disorder in the postoperative period. Such episode may occur suddenly after an interval of uneventful recovery and in some instances may be of such severity as to result in an appreciable and even dangerous deterioration in the patient's physical state. The impact on relatives, also should be considered, for it is easy to observe the patient from a state of apparent composure into one of hyperkinetic, excitement, panic, or confusion.

In the past fifteen years thousands of people with heart disease have undergone cardiac surgery. Cardiac surgery is advancing too fast. How many days even operations like heart transplantation are being done in the field of cardiac surgery. In the selection of suitable subjects, in the preparation for operation, in the management of postoperative and adaptation to a new life situation, psychological factors heavily influence the course at each step.

The psychiatric aspects of open heart surgery have received little detailed study, and this is all the more surprising since clinicians (Little and Pearson, 1954) have commented on the psychiatric disturbances which are followed after mitral valvotomy more than a decade ago but it is only in recent years that psychiatric studies are being undertaken to elucidate the frequency and nature of such symptoms.

Patients with RHD CHD IHD have been reported to develop depression, schizophrenic reactions, toxic confessional states and neurotic reactions apparently with greater frequency than those undergoing other life treating surgery. These are more the result of repercussion of surgery upon the patient's total personality and their impact on his life adjustment. The present study was undertaken in an attempt to know that all differ in open heart surgery among men women children. What are the changes before and after the surgery has been done in the follow up field. Psychiatrists wanted to know the effect of cigarettes, alcohol, family history, salt intakes, fat intakes, socio cultural effect, personality effect, relation with wife, children and husband. The failure of risk factors to account completely for heart disease incidence has prompted some investigations to broaden their search to include psycho-social factors that might lead to an improved understanding and control heart disease specially

(IHD), what is relatively new is stress & personality characteristics has become objects of scientific investigation (Beamish 1984). The concepts relating emotional stress to heart disease probably goes much before recorded history.

Friedman and Rosenman in 1950 documented the pathogenic significance of aggressive personal characteristics in a large & well controlled prospective study.

The psychosocial and behavioural factors whose mechanisms are unknown are the other class of risk factors. Indeed Costa & McCrae quote several studies showing that type A relates to measures of neuroticism-anxiety and conclude, "further evidence that Framingham type A scale is more a measure of neuroticism than coronary prone behaviour is given by Smith's finding that Framingham type A scale scores correlated 0.50 & Anxiety scale and Eysenck personality neuroticism scores respectively. Any predictions that type A does relate to poorer mental health, then does not need to count the effect of heart neuroticism which appears to have a common relationship with type A and negative Psychological Symptoms (Roy Payne 1988) Spector (1982) review studies using locus of control is negatively related to trait anxious. Gemmill and Heisler (1972) reported a correlation between locus of control and measure of job tension.

In our culture there is a general tendency for people to distort their perceptions of themselves slightly by exaggerating their own socially desirable qualities and minimising their undesirable attributes (Mc David, 1986) It is rather unusual for a person to regard himself less favorably than his friends associates regarding him. Consequently both unusually low levels of self-esteem as well as other inflated levels of self-esteem, suggest pathological conditions with the personality.

The locus of control as relatively stable characteristic (Rotter 1966) is identified as internal moderator of response to stress. The concept is based on a social learning theory, the interactionist view of the person that the individual learns from the environment throughout modeling and past experience. Reinforcement of certain behaviour affect expectancy, and so eventually expectancy leads to behavioural changes. Locus of control refer to the degree of perceived control over a given situation. The internal oriented person believes that personal decisions and actions influence the outcome. The 'Control' as factor in the expectation of coping with a stressful situation; and so less threat is experienced by the internal compared to the external oriented individual who tends to believe, in luck or fate. However internals may display more anxiety in situations perceived to be not within their control (Mark Sherman,

1979). Style of behaviour in response to stress also varies, internals tend to seek information and engage in problem where as externals are more likely to react with helplessness.

Lefcourt and Ludwing (1965) and Griffin (1962) Cited in Fisher scores and under privilege and poverty.

Recent research suggest that locus of control is not a one-dimensional scale. There may be different domains of central, e.g. Personal and social, political central. Also internality and externality distinctions are more readily manifest in situation where the out come is likely to be negative (Lefcourt 1983). Although the relationship between Ischernic heart disease is Coronary heart disease and psycho social functions is a complex one, this disease group is obviously related to modern life. Industrialized countries the men have exposed to rapid social change. The incidence of coronary heart disease was seem high in upper social class in 1940-50. Now we see the people have adjusted themselves to new technological life in turn the incidence of coronary heart disease has seem in lower social class also (Krnkler 1983). Over the past few decades dozen of factors physiological, anatomical, behavioural, social, metabolic have been proposed as risk factor for. Ischemic heart disease. Hypertension, cigarettes smoking, lipids profile ie cholesterol seem to play an important part in the case of risk factor other are presence of diabetes, sedentany life style and obesity pose additional risk for Ischemic heart disease.

Jenkins (1971, 1976) and other, (Blackburn, 1974; Russek and Russek 19761 Roskies, 1980) have following conclusion about a positive association of psychological facts and coronary Artery Disease. The strength of these associations however varies across different psychological factors. Thus life stress events, anxiety, depression and type A behavior shows relatively. Consistent associations, while demographic indicators, socio-economic status, socio-economic mobility and socio-economic mobility and socio-economic incongruity shows weak or inconsistent associations. Type A behaviour pattern over the past two decades has been largely responsible for the increased interest in an acceptance of psychosocial risk factors for Ischemic heart disease is coronary artery disease.

In this type of research one should also be open to the possibility that different type of Cardio-Vascular disease may be related to different types of personality. Thus Floderus (1974) suggests and provides some evidence for the suggestion, that chest pain is angina, high blood pressure is hypertension and fast heart rate is tachycardia may be related to high stress of anxiety level in the person. Studies examining public belief about Ischemic heart

disease (Farrant and Russel 1987; Calnan 1987) clearly shows that the public feels that stress is one of the major cause of Coronary Heart Disease. Pollock (1988) argues, stress has increasingly come to be regarded as an integral part of every days expenses. Locus of Control refers to differences in people's beliefs that what happens to them is the results of their own behaviour and attitudes (internal control) Versus the result of luck, fate, chane or power full others/external control (Dembrose; 1978) Roberts (1939) has pointed out "general intelligence is a graded characteristic and displays continues variation from one extreme to the other".

Jung's definition of an extra vested attitude is when orientation to the object and the objective facts are so predominant that the most frequent and essential decision and actions are determined not by subjective values but by objectives relations.

Several studies have demonstrated a heightened cardio-vascular reactivity to stress in type A individuals, Demtroski at (197) investigated reactivity of pulse rate and blood pressure in 10 type A and 14 type b men. Type A men pulse rate blood pressure rose significantly more in association with controlled stress Friedman (1975) compared 15 type A and 15 type B men who had been having similar plasmcatecholamine level. Under resting condition under stress concentration of catecholamine increased to 30% in type A type B remain unchanged.

Thus we have a hint that type A person may be susceptible to develop coronary artery disease because of super sensitivity to the metabolic effect of stress. Another group of variables that are usually thought to decrease environmental stress have been called social support factor. Berkman & Syme (1979) gave a social support questioner to responder for a nine year prospective study of 6928 adults in Clifornia. Berkman Syme found, that high scores of social support were associated with two fold to four fold mask rise for Ischemic heart disease.

Their responses to psychological assessments in diagnosed cases may have little or no relation to priors state. Seger et al (1974) highlighted these draw back in screening study of 1695 men. The 176 who were identified to suffer from Ischemic heart disease scored higher than healthy men on manifest and covert anxiety scale.

Trait anxiety (Kahn 1964) is the most obvious variable which might influence perception of stressfulness since it defines the person as being in a state of unease about the uncertainty of events as already indicated not many studies have included measure of trait anxiety. (Kohn 1974) found a modest relationship between an objective measure of role conflict (the sum of

pressures to change behaviour as reported by the role senders who had formal influence on the person in the focal role and perceived role conflict. Further analysis showed however analysis showed however that this relationship largely resulted from those in the sample who were high on anxiety proneness. Buck (1972) used perceptual measures of stress self report personality measures (including anxiety) and self report pressure. These variables correlated very highly so that over 80% of the variance in job pressure was accounted for by the other variables. However perceived stress correlated so highly with the personality variables that variance (9% for manager 17% for manual worker)

In one of the most recent definitions Rosenman (1983) describe type A behaviour pattern type A Behaviour pattern as a set of behavioural dispositions such as ambitiousness aggressiveness competitiveness and impatience, including specific behaviors such as muscle tenseness, alternate rapid and emphatic voice style and the pace of the most activities and emotional responses such as irritability and increased potential for hostility and anger. He concludes TABP is associated with hyperadrenergic responsiveness in the daily milieu, due to perception of environmental stress or and events as challenges and threats to control. Type A individuals perceive too many things as a threat to their control over the environment and as a demands that are incongruent with their preferred rate of activity.

One of the largest and most impressive studies was conducted by Krause and Strykes (1984) on locus of control. Their data were taken from the National Longitudinal study of Middle aged men who were aged 45-54 in 1966. Data from the 1969 & 1971 Parrel interviews were used. They were on schooling and politics sample contained over 2000 men divided into internals (1339) and externals (751) they found that men with external locus of control orientation experience higher level of psychophysical distress because of stressful event (Job and economic event) than with men with internal locus of control. The effect of age marital status race education occupation income and health status was controlled in 1969. More detailed analysis showed some interesting results. The sample was divided into 4 groups group of extreme internal moderate internal moderated external and extreme external. The relationship between stress and distress is significantly different for the moderate internal group from all other groups. Having moderate internal locus of control beliefs reduces the impact of job and economic stress. For extreme external the effect of stress on psychosociological distress did not differ though the two variables are stress was moderate external.

In another study conducted by Keause (1986) on 35% older adults have found that extreme internal & externals had more depressive symptoms. He also showed reported few negative life events and suggested this was because they initiated action to avoid. This being high internal is a mixed to promote stress. Lefcoust (1983) states that Locus of control correlates with anxiety. In the short anxiety stress has an immediate impart on nearly every one irrespective of their Locus of control. However given the passage of time internals succeed in leaving their disappointed behind while the external use them to confirm their belief that the world is outside their control so their effects live on for longer.

A measure of locus of control has been related to cardio vascular reactivity in several studies. In a study of college males Houston (1977) found that subjects with internal Locus of control. Exhibited Heart rate response during a memory task under conditions or both avoidable and unavoidable shock than did those with external Locus of control. In a study of college males Manuck et al (1986) found that compared to those with external locus of control subjects with internal locus of control responded to difficult concept formation task with significantly greater blood pressure response. Anxiety is the reaction of the individuals age to the threatened emergence into conscious awareness of unpleasant, forbidden, unwanted frightening impulses feeling and though Anxiety is a signal of an imminent change of disruption in the equilibrium of the element of the psychological structure. Anxiety in other words motivates the individuals to take action to reduce its intensity.

In the phobic patient that is obvious the patient tries physically to avoid the phobic stimulus. But there are also important internal psychological process set in motion by anxiety that one aimed at controlling the undesirable forbidden impulses and at rending then unconscious by keeping them out of conscious awareness. These are the psychological mechanism of defense.

Let us take another look at phobia. In the analytic terms, one invokes displacement as the mechanism by which anxiety is shifted from its true source to a secondary, in neutral stimulus in terms of early formulation a false connection has been made. In other mode recently conceived terms we could also say that the phobia is a conditioned response. That is we can fashion an explanation of the formation of a phobia (and other clinical symptoms) in the language and concepts of learning theory. In analytic theory, displacement is viewed as a given and as of importance as only one of a number of psychological mechanism in the larger psychological mechanism in the larger psychological equilibrium with which analytic theory

to primarily concerned. In learning theory on the other similar mechanism. Central to an understanding of conditioned and apparent learning theories have brought to life a wealth of new observation not derivable from analytic practice and theory and have there by greatly expanded our knowledge of anxiety and symptomatic formation. Similarly recent psychological investigation of the peripheral and central of autonomic nervous system functioning have significantly evidence our knowledge about the biological aspect of anxiety. Analytic theory of course assumes a neural apparatus underlying anxiety but does not make its primary focus of interest. Rather it views the brain merely as the themes that are the center of and is its concerns Biological research on the other hand has yielded data about the physiochemical aspect of anxiety they are beyond, the preview of analytic investigation but are of equal importance for our understanding of the clinical phenomena.

The complementy of these three approaches (the analytic the behavioural the Biological) to anxiety in particular and to mental illness in the general can perhaps best be seen in their application to a specific clinical syndrome agoraphobia. From a clinical point of view as we are aware agoraphobia offer begins with the sudden onset of a panic attack while the patient is in the public, often crowded, open space. From that point on the patients become overfly fearful of open spaces and crowds and voluntarily restricts his activity of often becoming completely household as a result. Several aspects of this process need explanation (a) the source of the anxiety (b) the severity of the anxiety, which as has been pointed out. When it appears in the form of a panic attack is controls to the often milder form of anxiety (c) the fact that following the appearance of the anxiety, the situation in which the anxiety occurred becomes a potential source of anxiety a though there is nothing in here by frightened or dangerous in the situation itself which has in other words because a phobic stimulus clearly no single explanation model is sufficient to supply an adequate explanation for all the question raised here. The full explanation can come only from a judicious combination of observation and concepts from a variety of approaches. We must look to analytic techniques and concepts for an understanding of the unconscious sources of the anxiety. Without them the appearance of the anxiety in the first place remain a mystery. In our knowledge of the specific nature of its physical manifestations. An understanding of the neuronal path ways and metabolic mechanism underlying their discharge provide us for example with a basis for explaining the various in its intensity from its milder chronic form to the over whelming panic attack. And finally leaning theory gives us the framework for understanding and

shaping the anxiety along the course of illness how it becomes linked to previously neutral stimuli and how its continuous to act as a reinforced for neurotic pattern of behaviour.

Further more as a corollary to their explanatory power these three model aid in determining the treatment of the patient. Therapy based on the analytic approach has the potential for bringing about structural psychological changes that lead to heal their more adaptive psychological functioning. The biological model provides the basis for the direct medical management of the symptoms either as a primary mode of treatment or to potential other forms of therapy. And behaviour techniques supply a power full to and fro reservation of the process involved in the phobic systems formation especially in those stubborn cause that are particular resistant to other forms of therapy. In conclusion it should be emphasized that anxiety is a complex phenomenon. It can be fully understood and treated only when it is investigated and viewed from a variety of relevant theoretical framework and when a similar variety of derived therapeutic techniques are applied as appropriate to the patients suffering from the symptoms. These approaches are complementary, not contradictory. One ignore the findings from one of them at the compromising his ability to help his patients.

Anxiety State

Anxiety is universal. We all have anxiety of some sort or the other. The extent to which anxiety occurs may or may not be normal and varies for individual to individual. A certain amount of anxiety is to be expected in active life and is in fact inescapable. A mild anxiety actually creates conditions of heightened responsiveness, preparedness and for warning, which makes for efficiency in action and keeps active people on their toes.

McDougall defines anxiety as "Anxiety is the namely which we denote our state when the means we are thinking towards the desired end begin to seem inadequate, when we cast about for possible alternatives and begin to anticipate pains of failure. "Not uncommonly the emotions of fear and/or anger arise when a difficulty appears insurroundable. Anxiety thus may be the normal reaction towards some specific circumstances particularly those of stressful nature, of which the person is fully conscious. Anxiety becomes pathological only when it is aroused without adequate stimulates and persistence in the absence of outside reason for such persistence. When Anxiety occurs by itself and when this is the prominent feature of the patient's condition, we call it "Anxiety State". The intensity, frequency and duration of anxiety os out of all proportion to any possible ascertainable cause.

Owing to universality of anxiety symptoms, the term anxiety state has often been misapplied too. During world war II, a considerable number of psychiatric break downs were labeled anxiety-state. Because of extreme commonness of anxiety symptoms under war conditions in forward areas, such a diagnosis was very safe to make, being noncommittal, wastime-saving and gave an idea of disposal of cases from the areas of war where active bombarding were taking place. On detail analysis, however, it was revealed that the term anxiety state was used almost synonymous with mental disease in general.

In practice, however, contrary to popular belief, anxiety state are encountered comparatively infrequently. Hysterical overlay on mild anxiety and depressive states with anxiety are actually times more common.

Etiology

There are people in society who, from early childhood, showed signs of "Nervousness" and a tendency to develop symptoms on the slightest provocation in the face of special situations or responsibilities. There is a genetic and constitutional basis for the illness. The genes involved are those of minor effect.

Constitutionally, the sufferers from Anxiety state are emotionally unstable, introspective and worrying type. They are timid and breakdown under stress.

Besides nature, nurture also has its own quota to contribute to the causation of Anxiety state. Morbid environments, such as faulty training, poor parental example, broken home uncongenial job situations, financial insufficiency, divorce, widowhood and other bereavements, marital mal adjustment, are some of the precipitating factors. Since frustration of any of the primary instincts causes anxiety, it is obvious that any personality would possibly breakdown under the stress of overwhelming circumstances but in anxiety state, the symptoms are disproportionate to the causative factor. Exhausting and debilitating illnesses, fright, worries and grief and some other contributing causes.

Patients with anxiety state have rather unstable and hypersensitive vegetative nervous system. They give brisk autonomic responses. The autonomic imbalance is responsible for disturbed functioning of the various viscera.

Anxiety cases are prone to be perfectionistic by nature. Thus an executive may be tense. Over-ambitious and makes work his life. He undertakes more and more of commitments in

purist of the satisfaction he gets from his work and also because his being perfectionistic, prevents him from delegating work to others. He is thus always heavily booked.

To sum up; anxiety results from conflicts of the individual needs with Reality and may be caused by financial, domestic or any other type of stress. As only a minority breakdown, it is obvious that stress react on vulnerable personalities.

Symptoms and Signs

Anxiety has been viewed as Psycho-biological response to stress. Stress produces a state of fear. According to E. Jones, "All the symptoms are exersations or distortions of the normal physiological accompaniments of fear. The whole neurosis is a perversion of the fear instinct." Anxiety states betray physical signs of fear as well as its subjective experience. The symptoms and signs are both physical and mental.

(a) Physical Symptoms

Physical symptoms, being those of fear, are produced by excessive secretion of Adrenalin. The physical symptoms,

- (i) Cardio-Vascular System: Palpitations, tachycardia, precordial distress, giddiness, raised blood pressure, sweating, pallor, flashings and other vasomotor symptoms. Vasovegal syncope may occur occasionally.
- (ii) Respiratory System: Breathlessness, asthma like attacks sense of suffocation with consequent hyper-ventilatiom. Hyper-ventilation washes out carbon di-oxide, giving rise to light headache, weakness and dazed feelings. Excessive loss of carbon di-oxide produces tingling sensations in fingers and toes. Tension in throat muscles leads to repeated swallowing movements and sighing.

(b) Mental Symptoms

The patient has a sense of apprehension, i.e. he feels that something untoward is about to happen. It is a vague sense of impending danger.

The patient has difficulty in collection of his thoughts. There is irritability, depression, embarrassment and confusion. The patient is tense and strung up. He can not relax. The patient not only sleeps poorly but whatever sleep he gets in interrupted by nightmares. Some of these symptoms are met with in mild hyperthyroidism.

Certain special experiences in life give rise to anxiety attacks. The anxiety becomes "conditioned" to the precipitating circumstances. Thus some students experience anxiety only during final examination, be it after a lapse of few years. The soldier who witnessed lot of shelling and bombing, was considerably shaken and developed anxiety. Subsequently the sound of siren and even sight of aeroplanes give rise to anxiety attacks.

Anxiety symptoms which are very uniform to begin with, may later focus to some specific incident, idea, object or more particularly some organ of the body. Thus, the patient may complain about his heart or any other vital organ in the body. Such patients are worried particularly about their head and heart because of the importance of such vital structures. They need repeated assurances that their heart is healthy. Since fear of insanity is very prevalent among anxiety cases, the patients apprehensions on this score have to be particularly allayed.

In later stages symptoms of Neurasthenia are associated with anxiety when practically exhaustion may set in.

Course and Prognosis

In the acute stage of anxiety, the outlook should be optimistic. In individual cases, the following prognostic pointers are very helpful:

- (i) Premorbid personality: If the patient is one of cheerful disposition and suffers a from anxiety under overwhelming circumstances, the prognosis should be very good. Contrary the person who worries makes a mountain of the mole hill and always broods over circumstances that a balanced personality may just ignore. Therefore personal history of the patient is very important in assessment of any individual case.
- (ii) Constitution and Family History: If other members in the family are worrying type, the disease may be having a strong genetic loading. There may also be faulty parental example and poor training in early years of life. These cases have a comparatively poor prognosis.
- (iii) Precipitating Factors: How overwhelming they are and how much can be done to ameliorate them determines the outcome. The circumstances, if they are really harsh but can be removed, will mean good prognosis.

- (iv) General: In some patients recurrence are frequent in "conditioned" circumstances. Something attacks of anxiety occur periodically under recurrence of precipitating circumstances or at certain stages of life, e.g. Menopause.

In sum: The prognosis depends upon the basis personality and how best the patient can be made to see his condition for himself. Some unfortunate cases have to undergo pre frontal lobotomy or become chronic invalids. They make their life miserable and of those around them. Some of them prove to be chronic institutional wrecks.

Panic Disorder and Cardiac Fears

Anxiety patients frequently seek treatment from various medical specialists concerned that their symptoms indicated a life threatening disturbance of a given organ system (for example, gastrointestinal, neurologic). Although hypochondriacal preoccupations are a well known sequence of panic attacks the association of panic attacks with both mitral valve prolapse and a possible increased cardiovascular mortality has made patients with panic attacks particularly concerned about their cardiovascular system.

Anxiety Related Cardiovascular Risk Factors

Emotional states have been implicated as potential risk factors for cardiovascular disease. People without knowing cardiac risk factors will die suddenly of cardiovascular related events while acutely upset emotionally. In particular anger has been associated with sudden cardiac death (Reich et al. 1981). This emotion may act drastically. This has recently been demonstrated in a study investigating the combined risk factors of anger and coronary ischemia in dogs (Verier et al. 1987).

In addition to affecting autonomic nervous system regulation of cardiac function emotional stress has been implicated in increasing platelet count causing ischemia (Coley 1982).

Alterations in X and B receptors regulation due to stress or to sudden cardiac death by causing coronary vasospasm (Hart et al. 1974). Stress may also act indirectly through the release of norepinephrine and cortisol which can further increase cardiac susceptibility to arrhythmias (Guideri et al 1974, Down et al. 1977). Thus a number of mechanisms exist by which anxiety and other emotions could effect cardiac function.

In spite of the reported relationship between emotional states and cardiovascular dysfunction differences in cardiovascular parameters at rest or under stress have not been consistently

found in patients with anxiety disorders. Blood pressure and heart rate response form controls. Although many laboratory studies of panic disorder patients have found that patients have a higher baseline heart rate than control subjects have been typically obtained in settings where the patients was anxious in anticipation of a stress or such as glucose infusion or CO₂ inhalation. In setting where an effort has been made to minimize environmental stress and offer the patient reassurance baseline differences in heart rates may not be observed (Taylor et al 1986, Coley et al. 1987). Likewise in response to provocative tests such as glucose infusion some investigations have reported significantly elevated heart rate and blood pressure responses, specifically in those patients who panicked where as other investigators have not (Reedem et al 1984).

Ambulatory monitoring has been used to study anxious patients in naturalistic setting. Such studies have generally found higher heart rates for panickers than for controls in situations frightening for the panickers (Holden and Barlow 1986). With such monitoring heart rate elevations disproportionate to physical activity often but not always occur immediately before or during spontaneous panic attack (Taylor et al 1986). However similar disproportional heart rate increase may be found in control subjects not experiencing panic or anxiety. Thus it is clear whether tachycardia precipitates attacks in some way or is a result of attacks. It is certain that attacks are not normally due to the perception of actual arrhythmias. Taylor et al. 1986 did not find arrhythmias in their panicking subjects whereas Shear et al. 1987 who analyzed ambulatory EKG in a more comprehensive way found that although there is a slightly increased frequency of arrhythmias during symptomatic days arrhythmic events seldom coincide with the onset of actual attack. The authors also found higher heart rates during panic intervals than during asymptomatic periods. The changes in rate were modest and the arrhythmias were of minimal clinical significance. As the following case demonstrates tachycardia associated with panic may even suppress abnormal rhythms occurring at times other than during panic attacks.

Psychosocial Problems of the Cardiovascular Patient

The cardiovascular patient, in his adaptation to his handicap and to his social world, faces the problems characteristics of any physically handicapped individual. He also has certain difficulties that are unique to him. As a handicapped person, he is a member of a minority group. The demands and the majority. The ramifications of this reality situation are both sociologic and psychologic; these two aspects often represent the two opposite sides of one

coin rather than separate entities. The handicapped individual's role, his status, and his security in the social structure and determined, as are anyone's by the total person that he is; one complicating handicapped factor in his total. This complication has direct sociologic and psychologic reverberations.

Socioeconomic Aspects of the Psychologic Problems of the Adult Cardiac Patient

Economic problems of the physically handicapped adult are indicative of his minority status. They also indicate certain aspects that are relatively unique to the cardiovascular patient. The poser of our industrial drive for optimum production tends to leave the physically handicapped adult behind. The recently intensified attempt to place the physically handicapped person in industry is extremely gratifying. From industry's standpoint. This means tapping formerly neglected manpower with rewarding results; it also provides economic security and psychologic benefits to the individual.

Certain physical handicaps are not so readily assimilated into industry as are others. It is relatively safe for industry to hire a man with a paralyzed arm if he is placed at work in which he does not need that arm. On the other hand, at least two physical disorders. Namely epilepsy and the cardiovascular diseases, present a more complicated picture for both the employer and the insurance company that carries the accident and health policy covering the employees. Both candidates for different reasons, may result in a drain upon the insurance fund that is not anticipated from the actual figures. It is understandable, therefore, that the person with a cardiac handicap has less security in our economy than do many other types of handicapped people. In general, handicapped adults, if blessed with the intellectual ability and educational background that permit them to retain their place in the economic world through utilization of their unimpaired abilities, find their problem less severe than persons who are limited in employment to manual labour. This is not completely true of the cardiovascular patients with comparable ability and training. If they developed their cardiac lesions after having established themselves in their own work, they cannot necessarily continue to invest as much activity as they formerly did. A man of 46 who, because of inherent brilliance and intensity of purpose, has contributed significantly in the field of research and who is at that period of life when he can anticipate his most effective contribution, cannot continue at his former pace following a damaging coronary occlusion. His colleagues may respect his past achievements and encourage him to "slow down" to work at his own physically optimum level. No matter how understanding his colleagues may be, he

is exposed to two threats: (1) His economic security is threatened by the possibility of less productivity and by the likelihood of increasing limitations as a result of a progression in the cardiac process. (2) Psychologically, he has to adjust to the post ability that, as a result of the necessity of slowing down, the gratification he has experienced from his creativity will be decreased since he will not be able to invest as much of himself in his creative work.

This latter consideration again brings into sharp focus on the contrasts between cardiovascular patients and those individuals who have other types of physical disability our culture values a person who overcome a handicap. The deaf blind or paralyzed person who finds a place for himself that a non handicapped person would strive for is honored. Furthermore a deaf person who is succeeds in lip reading blind person who develops his other senses to partially see for him the paralyzed person who finds ways to use un paralyzed muscles as substitutes for the usual functioning of the paralyzed muscles does not jeopardize his life as he invest in the task of evading the limits imposed by the handicap. However such achievements are attained as a result of heavy investment by physical and emotional energy which the person handicapped by a cardiac condition wisely make. He does not so easily win the society for himself in spite of success.

Thus most physical handicaps can offer a challenge to a patient to overcome circumvent them. The handicap stimulates the Psychologically healthy individual to utilize any further energy he can mobilize to negotiate the effect of the handicap and thereby conquer the disability. The cardiovascular patient, to survive and to enjoy survival, must find a happy way to submit to his handicap it is easier to find gratification in conquering than in being submissive.

Social Aspects of Cardiac Disease in Childhood

It is not only the adult cardiac patient who experiences social difficulties as a result of his handicap. A child with cardiac lesions, if they are sufficient to limit his activity, experiences situations which make social adjustment and psychologic health difficult to attain. Childhood is a period when the individual learns the laws and the enjoyment of living with others. Much of this is gained through participation in activities on the playground, in the neighborhood and in organized groups where physical activity and progress are encouraged. Children of the culture are stimulated to be physically active and to develops physical skills in play and work. Such experience makes a significant contribution to the determination of the child's ultimate pattern of adult adaptation. He learns his role in the social world through such activities. Any

physical handicap limits the child's participation and success in those areas of childhood in which this type of achievement is valued. The handicapped child, therefore, is deprived of an essential enjoyment of childhood and an essential learning experience in preparation for adulthood.

Like the adult with cardiac disease, the child with this condition has a problem somewhat different from that of most other physically handicapped persons. Many types of physical handicap limit a child's activity, but with most of them, ignoring those limitations does not jeopardize the child's life. The activity will not cause an exerection or complication. A blind child does not risk death from eye disease because he tries to see the polio patient will not become more crippled because he tries to be less crippled. But a child with a cardiac handicap may invite increased limitations or a cardiac death as a result of overstraining his heart.

Minimizing the Psychologic Effect of the Cardiac condition. Planning for the activities of a boy or girl in order to compensate for this deprivation of normal social experience and to compensate for it in a way that fosters social and psychologic growth required a careful evaluation of the degree of the child's physical limitations, the nature of his present and potential interests, and his special abilities and intellectual endowment. In many instances, a child limited in his activities because of cardiac disease has been unnecessarily deprived of those experiences in childhood which have enabled him to find a psychologically and socially gratifying place for himself in adulthood. This has been the result of the attitude of those people who guided him through childhood. They saw him as a personified heart rather than as a total person. Medical management of a child with a cardiac condition involves wise management of the child's total life situation. The over-all needs of the cardiac child are identical to those of any child. The way those needs are met must of necessity be within the framework of a careful evaluation of the physical status of the child.

A clinical example will clarify the possible implication of unwise management of the cardiac child. Ram, at the age of 9, had spent 4 of his last 5 years in bed because of supposed attack of rheumatic fever. During those months in bed, his mother had been so effectively impressed by the dangers that lurked in any upper respiratory infection, that she allowed to leave his bed. The physician in charge of the case expressed a great deal of admiration for the mother's care of child. From a limited medical standpoint, she was doing everything in her power to prevent a recurrence of rheumatic fever as well as protecting the heart from strain. For some

circumstances the child was placed in the convent school boarding house. There he immediately revealed, through his behavior and his verbalization, the psychologic damage that had occurred during those 5 years. He was unable to participate in the normal activities of the boys of his own age. This was understandable since he had no experience in their games, games which require a certain amount of skill, which the healthy child develops in the early school years. More significantly, he had no ability to relate socially to other children. His relationships with adults were meaningless to him except as they provided anxious gratifications for his physical needs. His actual life was lived in a fantasy world. With proved to be extremely sterile. Despite his superior intelligence, his fantasies were limited to two stories he told himself and both were things disguised descriptions of himself as a home-imprisoned child who would never grow up. This particular case was especially unfortunate because if the child had rheumatic fever 5 years previously, there was no evidence of any residuum "Attacks" that had been interpreted as due to cardiac decompensation were never observed at the convent school boarding house, in spite of full activity. It is possible that they were of an hysterical nature or were caused by some obscure physiologic imbalance. Whether or not he had had rheumatic fever is really not the point of issue. However, a child whose activity must be limited for valid reasons requires, in order to grow into a psychologically healthy individual, contacts with other and particularly with others of his own age. Ram had lived in the type of world which a schizophrenic patient attempts to create for himself. Adjustment to that world could only result in a personality structure that would be poorly equipped for adaptation to a normal world.

A child with cardiac disease can be given a relatively normal life from the psychologic viewpoint. To do this requires thoughtful planning, with a recognition that the damaged heart is only a part of the total child. Not the reason d'etre for the child. With the growing recognition that the cardiac child, particularly one who has recovered from an attack of rheumatic fever, does not require, in many cases, a long period of invalidism, psychologic health within the requirements of physical care is more easily attained. But psychologically and sociologically constructive plans are possible even for those children who must markedly limit their activity for a long period. Such plans are not so difficult to outline once a need for them is recognized. However over anxiety, pampering and over protection should be avoided otherwise the child will become ill-tempered and neurotic

If the child really needs restains of physical activity, sibling and friends should be well prepared to accept this that he is not well. The others siblings should get proper attention so that there is no sibling rivalry.

Other Social Aspects of Cardiovascular Diseases

The cardiovascular patient is exposed to another aspect of social living that is not easily avoided and can be difficult to handle. Other people fear what may happen to a person with a damaged heart. They are concerned about the unpredictability and the suddenness of the changes that may occur. People are afraid of witnessing sudden death. There are many reason for this. It is response over which rational thinking has little control. This response to the adult with known cardiac disease is not difficult to understand, since there is no assurance that another occlusion of a coronary vessel may not be fatal. It is harder damage that requires minimal limitations. Teachers, and family friends often respond as if the child might suddenly die, they do not convince such people that there is no more danger of that occurring than there is a possibility of another child developing a fatal condition through a illness or as a result of an accident. This attitude has the obvious effect of depriving a child (or an adult) with known cardiac disease of certain activities that he could enjoy without endangering his life. It is also has psychologic repercussions.

The mystery about the heart that knowledge does not always effectively dispel results in certain people considering a person who has cardiac disease as one of the untouchables. The patient senses this reaction in others. It may increase his own anxiety. It may give him a feeling of being unwanted as if he were unclean.

Psychologic Complication of Cardiovascular Disease

The preceding observations of the social problems of the cardiovascular patient could be considered as general in nature. The microscopic components of this macroscopic picture can be fairly easily identified. There are other aspects to the total picture of the social problems of the cardiovascular patients that are not so easily recognized. While they have a psychologic definition, they affect the individual's social adaptation, as well as his way of dealing with his physical difficulties. Some of the following material would apply to all physically handicapped individuals, some is more specifically related to the person with cardiac limitations. From the experience with people having a variety of physical handicaps and particularly from experience with the handicapped child, it has appeared that the individual

with a cardiovascular lesion has a greater variety of problems to solve in order to make a constructive adaptation than any other group of people with permanent physical limitations. Popular expressions suggest that the primary importance of the heart is recognized by the average person more readily than is the function of any other part of the body.

The heart is the symbolic "source of love" It is not only the Valentine Day fantasies of romantic love that keep this symbol alive. A person who richly invests in an activity is often referred to as having put his heart into that activity. If the activity proves a failure and he reacts to the failure with a depressive response he is said to be broken hearted over the outcome. If someone defines the core structure of a problem it is said that he has presented the heart of the matter.

These examples and many others that could be cited suggested that man long before he knew the actual functioning of the heart or understood it in health and disease recognized it as an essential part of his own well being and happiness.

The Heart Patient's concept of himself as inadequate. This appreciation of the heart has repercussions in the psychologic response of the patient whose heart is not functioning adequately. As seen from the legitimate concern created by this condition the individual often reacts to cardiac disease as if his body had been mutilated and as if as a result of the disease he were an inferior being inferior in much broader sense than the organ inferiority of the heart would warrant. It is as if the heart of the matter had proved to be inadequate.

Our research is the socio-psychological study of the patient undergoing open heart surgery. The comparison of the three types of open heart surgery diseases, Congenital Heart diseases, Rheumatic heart diseases and Ischemic heart diseases with relation to preoperative & post operative if in these group in case of personality, Locus of control & anxiety level. With no definite hypothesis have been formulated in this study. As this study may help us understand the patient personality Locus of control and the anxiety level of each type of these patient & prepare further plans who may undergo this type of surgery.

CHAPTER II

REVIEW OF LITERATURE

Historical Background

Although Ambroise Pare in the Sixteenth Century is credited with the recognition of postoperative psychosis, Duputren's 1833 was the first comprehensive account. He wrote that finally the brain itself may be overcome by pain, terror or even joy, and reason leave the patient at the instant when it is most necessary to his welfare that he should remain calm and undisturbed...

Psychiatric complications following general surgical and obstetrical procedures are not uncommon (Lindemann, 1941). These have been attributed to metabolic changes e.g. acidosis (Hudson, 1959), hepatic insufficiency, hypoglycemia, hypoxia, endocrine, etc. (Egerton and Kay, 1964). Symptoms are described as post surgical delirium, at times leading to a functional reactive psychosis. Hackett and Weisman (1960) characterizes the difference between postoperative delirium and psychosis. Delirious states may include periods of acute excitement, accompanied by confusion, disorientation, hallucinations and delusions. The delusions are usually unstructured and lack the regressive fixed psychotic thinking. While psychotic reaction is predominantly a disturbance in the patient's thinking accompanied by less amount of agitation and anxiety. Perceptual disturbances and disorientation are relatively infrequent.

Stengal (1958) in reviewing surgical cases found no case of psychosis BUT states that affective disorders were common with abdominal operations e.g. hysterectomies. Knox (1961) reported that gynecological and eye (cataract) operation were particularly likely to produce post operative psychotic reactions. Following cardiac surgery, psychiatric complications have been described as transient psychosis, delirium states (Hackett and Weisman, 1960), schizophrenic reaction, severe affective states, traumatic neurosis (Meyer and Blacher, 1961), and catastrophic reaction (Meyer et al, 1961). Manifestations of hysteria have been reported (Knox, 1963). The clinical picture is one that may include hallucinations, delusions, confusion, excitement, depression and disorientation, although orientation at times may be normal in one or more spheres. Characteristically, symptoms appear between the second and seventh postoperative day, although reactions have become apparent as late as three months (Little and Pearson, 1954). Duration of symptoms is generally short, lasting

from 24 to 48 hours, with complete remission and no detectable sequence. Blachly and Starr (1964), however, reported an average duration of 14.7 days. At times, transient disorientation may progress to lethargy, coma and death. Neurological findings were generally negative in patients manifesting personality changes. Gilman (1965) noted some neurological changes which significantly carried a poor prognosis. Fowler and co-workers (1962) found 17 per cent of the patients had postoperative neurological complications, which significantly carried a poor prognosis. Out of the patients who developed neurological complications, 72 per cent died after surgery.

Kovaliov (1963) describes two main types of psychosis following heart surgery. They are a transitory (delirious and amnestic) and a prolonged type bearing a slight resemblance to schizophrenia. As far as can be ascertained, the first report of the relationship between mitral valvotomy and psychiatric complications was by Fox and his co-workers (1954). In India, one ICMR inquiry on "neuropsychiatric complications after cardiac surgery" was conducted by Wahi and Wig (1968).

Incidence

Although there is a wide variation in the reported incidence of psychiatric complications following general surgery, it is estimated to be quite low. Da Costa (1910) reported one in 250 operations, whereas Lewis (1955) and Knox (1961) found severe involvement in out of 1500 operations. Titchner and associate (1956) have found that, with a random sample of 200 of a total of 3656 operations, psychiatric problems occurred in 22 per cent of the cases studied. This is considerably higher than the usual incidence after general surgery and gynecological operations. Aging patients who lost the closeness and support of the family, friends, or visitors developed an organic psychosis in response to the stress of illness and surgery more often than those who retained close family contacts. Psychotic depressive reaction represented the major functional psychosis occurring in this series.

Fox and his co-workers (1954) interviewed 32 patients preoperatively and postoperatively and found that 6 cases (19 per cent) had emotional disturbances postoperatively as recorded by the nursing staff. In addition, several other subjects also had less severe and short lasting psychiatric complications. Bliss, Rumel and Branch (1955) examined the hospital records of 37 patients who had undergone mitral valvotomy and found 4 cases of schizophrenic reactions and 2 cases of confessional states. This is equivalent to 16 per cent of the total cases

studied. Another 6 patients, although not psychotic, were sufficiently emotionally disturbed, they were anxious and depressed.

A retrospective study was done by Bolton and Bailey (1955). They analyzed there cords of 1500 patients who had some type of intracardiac surgery for correction of valvular defects resulting from rheumatic fever. They found the incidence of postoperative psychosis to be 3.14 per cent.

Kaplan (1956) studied 18 patients who had mitral valvotomy. His patients were not affected uniformly. There were no major psychiatric complications during the immediate postoperative period but most of them were anxious in future life-adjustments. It was noted that 3 cases (17 per cent) became psychotic.

Thus in three of the studies already outlined the figures quoted for psychotic disturbance after mitral valvotomy (19, 16 and 17 per cent) show considerable agreement. These findings assume significance in view of the claim that the incidence of severe psychiatric disturbances following general surgery is only about 1 in approximately 1500 operations (Lewis, 1955; Knox, 1961).

In 1958, Bnlickenstorefer described postoperative psychosis in 3 per cent of 300 patients following open heart surgery, confirming the 3 per cent incidence reported by Bolten and Bailey (1956) in a group of 1500 patients.

Dencher and Sandhal (1961) described a 5 per cent incidence of mental diseases in a group of 61 patients. In a subsequent report (1962) the authors reviewed 85 patients and found the t 11.5 per cent had experienced psychiatric disturbances. Kovalev (1961) reported in the Russial Literature that) 9 out of 57 patients (16 per cent) had post operative psychosis. The result was similar to those of the previous studies (Fox el al, 1954; Bliss el al, 1955; Kaplan, 1956).

Knox (1963) conducted a study of 90 patients who had undergone mitral surgery. Fifty out of 90 patients were studied retrospectively and seen postoperatively after 2 to 4 years of operation. He found 14 cases (28 per cent) out of 50 had some or other psychiatric complications as given below:

- i. Hysterical symptoms – 7 (14%)
- ii. Postoperative depressive illness now resolved – 2 (4%)

- iii. Anxiety states – 3 (6%)
- iv. Confusional states – 1 (2%)
- v. Organic brain damage – 1 (2%)

In the prospective study 40 patients were investigated peroperatively and at intervals after surgery. This author reported that only one case out of these 40 patients needed psychiatric treatment and 2 were included from retrospective study who also needed psychiatric treatment. One more case was included in this group who needed psychiatric treatment from prospective series. Thus 4 out of 90 cases studied (4.4 per cent) needed psychiatric treatment. The marked difference in findings was attributed to a less efficient surgical technique practiced by the earlier group. The author adds that although psychotic disturbance were uncommon, other psychiatric disorders, particularly hysteria, were frequently seen up to the extent of 15 per cent in the prospective study.

Egerton and Kay (1964) studied 60 patients who underwent open heart surgery. Of these 25 showed delirium, 6 patients expressed ideas of depression and 2 cases had hysterical reaction. Thus, a total of 61 per cent of the patients manifested some or other type of psychiatric disorder. Kornfeld, ZSimberg and Malm (1965) found that a psychosis of acute organic variety occurred in 38 per cent of the 99 cases studied for open heart surgery.

Blachly and Starr (1964) reported delirium in 57 per cent of 139 patients surviving open heart surgery. Abram (1965) at a recent meeting stated that 20 per cent of 15 patients developed post operative psychosis. Severe depression was seen in 1 additional patient and in another severe anxiety was noted. Silverstein and colleagues (1960) reported a 33 per cent incidence in a group of 24 patients undergoing open heart surgery describing the complications as cerebral disturbances. Gilman (1965) noted similar changes after open heart surgery and also described them as cerebral disturbances in 33 per cent of patients in a group of 35.

Wahi and Wig (1969) conducted a study under an ICMR inquiry on 34 cases undergoing cardiac surgery. Out of which 23 were for mitral valvotomy. Eleven patients developed psychiatric complications, 5 major (14 per cent) and 6 minor.

Other workers have been unable to confirm these findings. Meyer et al (1961) had no case of post valvotomy psychosis in 24 cases studied.

Briefly, then, the reported range of psychiatric disturbances varies from nil to 61 per cent, the most significant determinant being how the investigator was inclined to evaluate the extent of the psychiatric disturbances. Although the extent of functional psychosis is lower than that of delirious state, it is important to consider all aspects of personality and behavioural changes requiring psychiatric consultation.

Cardiac Procedures

It was felt that the type of cardiac surgery performed might be of some importance in the evaluation of these various estimates of the incidence of psychiatric complications. Earlier papers described the procedure for mitral stenosis repair as Finger Fracture Valvulotomy whereas later publications refer to it as Mitral commissurotomy. The latter could have been accomplished by closed heart surgery as well as by the open heart surgery with the use of cardiopulmonary bypass. Some workers (Egerton and Kay, 1964; Blachly and Starr, 1964; and Silverstein, 1960) noted the use of cardiopulmonary bypass. Fowler and associates (1962) used bypass but warmed the blood.

In the beginning, reports of psychiatric complications were related to mitral stenosis operated by closed heart finger fracture Valvulotomy. With the availability of cardiopulmonary bypass and hypothermia, procedures for open heart surgery of tetralogy of Fallot, aortic valvular disease, septal defects, and multiple valve prosthesis have been developed. Although there was thought to be a casual relationship between psychiatric complications and mitral surgery, it soon became evident that similar complications could be anticipated with all intracardiac procedures. It was the opinion of Egerton and Kay (1964) that delirium occurs more frequently after open heart surgery than after closed heart procedures, mitral valve lesions manifesting the highest incidence of delirium.

It appears that the increased incidence of complications following closed heart surgery, as compared to general surgical procedures is further increased with open heart surgery with cardiopulmonary bypass.

Sex and Age Relationship

Although not statistically significant, psychiatric complications increased in frequency and severity with an increase in age (Egerton and Kay, 1964; Blachly and Starr 1964). In one study children were noted to have very low incidence of delirium (Egerton and Kay, 1964). No consistent correlation between the patients' sex and delirium was noted. Blachly and Starr

(1964) noted a higher incidence in males (31 per cent) as compared to females (17 per cent), although they noted that there were more males in the groups having more serious cardiac surgery.

Etiology

Emotional factors

In a study directed toward predicting postoperative complications following general surgical procedures, Abram and Gill (1961) found a significant relationship between the postoperative psychological disturbances and the following three factors. Increased postoperative psychological symptoms were seen in the patients with:

- a) Unrealistic expectations of surgery.
- b) Those using denial as a major defense.
- c) Those with a high level of anxiety.

Psychiatric interviews were found to be most helpful when not presented as therapeutic in nature, but as a means of collecting data on the psychological reaction of patient undergoing surgery (Meyer et al, 1961). Important considerations during the interviews were the duration of illness, the degree of incapacitation, and the extent of its use by the patient. Other factors evaluated were the degree of emotional stability as may be reflected by a stable marriage versus divorce or separation, the lack of family history of mental illness and the degree of security stemming from stable interpersonal relationships (Egerton and Kay, 1964) Egerton and Kay (1964) noted that of a group of patients experiencing delirium 16 per cent had a family history of mental illness as compared to 2.5 per cent for the non-delirium group (P 0.01). Sixty percent of the delirium group was reported to have emotional problems at the time of surgery as compared to 6 percent for the non-delirium group (Egerton and Kay, 1964).

Dencker and Sandhal (1961 and 1962) felt that the preoperative personality would assist in predicting predisposition to mental complications. In one study, he reported that 4 out of the 6 patients with complications. In one study, he reported that 4 out of the 6 patients with complications had had previous hospitalization for mental illness. He also found in a retrospective study that patients with psychiatric complications had an overall organic defect.

Preoperative psychiatric hospitalization rate of 6 per cent as compared to the usual population figure of 1.8 per cent.

Dencker and Sandhal (1962) also found that, in this study group, 8.2 per cent of patients had pre operative psychosis as compared to an average group value of 2.2 per cent. He, therefore, believed that the preoperative and postoperative psychiatric picture did not differ much and that the operation alone was hardly responsible for the postoperative psychosis.

Meyer et al (1961) investigated 24 patients subjected to mitral commissurotomy by means of psychiatric interviews, the House4 Tree Person Drawing test, and the inside of the Body test and concluded:

- (i) The findings obtained through the drawing test presented few significant departures from those noted previously on random surgical subjects. Evidence of severe anxiety and various psychological defenses in response to the surgical experience, as well as manifestations of long term characterological and neurotic problems were noted. In addition, the drawings provided clues to fantasies concerning the prospect of repair of a long-standing
- (ii) And it was pointed out that cardiorespiratory symptoms occurring in patients with known mitral stenosis need not necessarily be cardiogenic. Moreover, a psychic stimulus that at one time evokes anxiety may be followed at some later date by cardiac symptomatology.
- (iii) The realistic importance of the heart as well as its protean symbolic meanings as suggested by the specificity of inside of the Body drawings and case histories lend distinctive qualities to cardiac surgery. In addition, the incorporation of the chronically diseased or defective heart into the personality structure and history of the subject leads to complex, unpredictable, and often contradictory attitudes toward its repair, as well as to the well-known discrepancies between the anatomical and functional consequences of commissurotomy.
- (iv) The relative infrequency of prolonged postoperatively psychotic reactions may be attributable in part to an unintended prophylactic psycho/therapy occasioned by this study. The implications of this are followed in stressing the important therapeutic potential in the surgeon's relationships with the patient.

Cardiac Surgery as a Psychological Stimulus

One can easily appreciate that cardiac surgery is very complex psychological stimulus, when one works with patients experiencing it. Its emotional ramifications extend far beyond the surgical event itself. Kennedy and Bakst have done a very thorough review of the entire process, showing that the patient's response to cardiac surgery is an ongoing phenomenon. It begins with hospital admission and complicated diagnostic studies, and continues through the waiting period before surgery, the surgical event itself, the recovery room, the hospital convalescence, the home convalescence and, hopefully, the assumption of the role of non patients. Each step has its own emotional impact on the individual.

Through this complicated experience cardiac surgery patients face a variety of conflicts. They have opportunity to prolong their lives, but simultaneously run the risk of sudden death in surgery. There is opportunity for some to live a fuller and more active life, but at the same time, there is the fear of what demands good health will place upon them. These conflicts can manifest themselves at any stage of the cardiac surgery process.

When a person is facing the stresses of a major surgery, many of his emotional reactions, fantasies and psychological defenses may be influenced by the realization that the danger situation is one which requires passive submission to a direct medical assault at the hands of an authority figure who will cut an opening with knife and remove something from inside the body. There is nothing he can do about it. Success depends upon their interest and ability. He is completely at their mercy.

Persons who display a moderate degree of anticipatory fear before being exposed to physical stress stimulus (pain, bodily discomfort, and severe deprivations) will, be less likely to develop emotional disturbances during or after the stress exposure than those persons who display either a very high degree or a very low degree of anticipatory fear.

The Preoperative Period

For some patients, the initial decision to have surgery is the stumbling block. They refuse the operation when it clearly can be of help. Certainly this is a difficult decision to make, but the factors which influence of final choice often do not include the obvious fear of death on the operation table. For some patients this may reflect a more complicated view of themselves and the world.

Patient whose cardiac disability is in fact, a manifestation of psychiatric illness; and the patient who is depressed and suicidal, hoping consciously or unconsciously that cardiac surgery will be the suicidal agent, need great consideration in the diagnostic phase.

In most cases, the patients with pseudo-cardiac disability do indeed have cardiac disease. However, the degree of their disability is a manifestation of psychiatric factors and not true cardiac decompensation. These patients use physical symptoms to resolve an emotional problem.

The second problem is the patient who is severely depressed and social, seeking death through surgery itself. Any patient who is so depressed as to desire death is a poor surgical risk. It has become clear in recent years that depression is an illness with a wide range of systematic manifestations. These patients are, therefore, biologically not in the optimum condition to withstand the stress of cardiac surgery. Therefore, presence of serious depression is a contra-indication to cardiac surgery, and increases the frequency of postoperative psychiatric complications.

Once a decision has been taken to go ahead with surgery, the problem of excessive emotional responses takes on serious medical and surgical implications. The physiological manifestations of anxiety, depression and rage can play a major role in the production of serious medical complications. It has been demonstrated (Hickam, Cargill and Golden, 1948) that emotions can produce significant shifts in cardiovascular function, and can induce cardiac decompensation in susceptible patients. Excessive anxiety can produce cardiac arrhythmias. Physician has to take note of whether the patient's hyperventilations is manifestation of an anxiety or true dyspnea, and whether the patient's loss of appetite is the result of depression or the digitalis over dosage.

Predictable Psychological Responses

(1) Dental of Fear

While the patient is awaiting surgery, so many responses are being manifested. Many patients are surprisingly stoical and deny any conscious awareness of fear. They do not deny and event about to take place, but isolate the painful affect from consciousness. The denial, however, is quite superficial, and they often are reassured to learn that fear is to be expected and is not a sign of cowardice.

(ii) Anxiety

In many patients anxiety is more over and one can certainly appreciate the appropriateness of this response. For the patients the prospect of having one's heart operated upon can be terrifying over life and death. These patients face the possibility of death more directly than any others, and yet personally elect to take the risk.

Most of these patients obtain some relief from reassurance and ventilations of their fears. There are patients, however, who cannot respond to more reassurance, for them, anxiety approaches panic. In some cases, the patient's fear is reaction to unrealistic fantasy regarding surgery. Some of these patients are found to have been forced into surgery by family pressure. Such patients must be allowed to ventilate their fears and resentment, so that they can develop their own motivation for surgery.

In some cases, the anxiety is not related to fear of surgery alone. Other complicating factors such as a family problem which may add to the patient's burden.

It is striking how effective the preoperative psychiatrist interview can be a result of the intense transference response, which develops quickly. The very nature of the situation places the patient in a very dependent role and many of them try to borrow strength from us. Kennedy and Bakst have suggested that a useful mechanism to convey our optimism is to make an appointment with the patient in a future time beyond surgery.

Postoperative Period

Closed Heart Surgery

Several factors have been suggested to account for these serious postoperative emotional reactions to mitral valve surgery. Fox and associates (1954) suggested these patients were responding to the abrupt change in their lives brought about by the surgical procedure.

Bliss et al (1954) also suggested that the mitral surgery was greater psychological threat than other major surgical procedures and speculated that patients with chronic rheumatic disease might be more vulnerable.

Meyer et al (1961) emphasized the symbolic significance of heart as the "be all and end all of life itself." They noted that cardiac surgery differed from most surgery on that it was both

selective and dangerous, and that is simultaneously offered alleviation of a chronic disabling deficit.

Zake (1959) expressed his belief that psychological stress was not a sufficient explanation for the diverse psychiatric pictures which followed cardiac surgery. He stated that it was not anxiety about the surgical procedure, underlying conflicts, or the several symbolism of the heart, but rather an organic insult to the central nervous system. His report was based on the examination of 75 patients, to whom a battery of tests of cognition functioning were administered preoperative and postoperative. Testing were not done during the first postoperative week when the acute psychotic syndrome manifested itself. The tests demonstrated that the patients having mitral commissurotomy did less postoperatively with tests or visual motor tasks, requiring nonverbal abstract reasoning. He concluded that this demonstrated an organic deficit produced by the surgery, some of these deficits were noted to persist for as long as three years.

Priest et al (1957) gave preoperative and postoperative psychological tests to patients with mitral stenosis and congenital defects, and demonstrated signs of organicity in the rheumatic but not in the congenital defects, group. These organic signs worsened postoperatively and lasted as long as six months. It is of interest, in view of the apparently low incidence of psychotic reactions after mitral commissurotomy in recent years that a similar study by Herbert and Movius (1964) failed to demonstrate any difference in the score before and after surgery. This may also confirm Knox's (1963) impression that the reduction in postoperative psychosis is a reflection of improved surgical techniques.

Long Range Effects

Very little work has been done on long range responses of patients to mitral commissurotomy. Kaplan (1956) reported a long range follow-up study of 18 patients. Projective tests were given and family interviews were utilized. The follow-up period averaged sixteen months. Out of the total group 3 had been bedfast at the time of operation and 8 home bound. A variety of responses to surgery were observed, some patients capitalizing on their improvement and others reluctant to give up their limited functioning. Patients who had been forced by the progressive illness to give up a previously independent adaption were best able to reconstitute the earlier level of functioning after corrective surgery. They were happy to give up what they considered to be vulnerable passive position. The great problem in rehabilitation occurred in patients who had been using the illness to gratify

dependency needs, particularly in patients who are ill since childhood. The change in their physical status produced a profound psychological effect which was disabling in itself.

Knox(1963) conducted a similar study and reported on 90 patients who underwent mitral commissurotomy. A group seen preoperatively was given Cornell medical index and Maudsley personality inventory. Knox attempted to measure each patient's willingness to work in the face of discomfort by the use of the "Dyspnoeic Index" (DI). The patients were then seen at six-month intervals postoperatively. His observations provided a view of the type of the responses which occur, and some observations on possible criteria which could be used to predict the outcome. Out of the patients seen retrospectively, 58 per cent had a good end appropriate response to surgery, 14 percent had hysterical symptoms, 6 percent anxiety states, 4 percent depression, 2 percent confusion, 8 per cent asthamatic symptoms, 2 per cent organic brain damage. He made an interesting observation that the two patients whose surgery had been a technical failure did quite well from symptomatic point of view.

Knox agreed with Kaplan (1956) that patients with a history of prolonged dependency needs are poor risk from postoperative psychiatric complications point of view. He found that a low Dyspnoeic index (less than 35 per cent), which he used as a measure of motivation, was an indication that hysterical symptoms may be anticipated after valvotomy. The Cornell medical index and Maudsly personality inventory were not particularly reliable as prognostic tests.

Open Heart Surgery

A number of independent observes (Abram, 1965; Blachly and Starr, 1964; and Kornfeld et al, 1965) reported a similar transitory psychotic syndrome during the first postoperative week. In each report the picture was the same: a three to five days lucid interval, followed by perceptual distortions, visual and auditory hallucinations, disorientations, and paranoid ideation. The incidence of this psychosis varied from 38 per cent to 61 per cent of the patients. Valve replacement was not a controlling factor, since patients having congenital defects repaired had a comparable incidence of psychosis. The patients having double valve procedures did have a much higher incidence of psychosis. The delirium seemed to be quite rare in children. Egerton and Kay (1964) reported only one case in 36 children. And kornfled, Zimberg and Malm (1965) found none in 20 cases.

Factors affecting Delirium

A variety of preoperative, operative and postoperative factors did appear to influence the incidence of delirium, but none was specifically indicated as the causative factors.

(i) Age

The frequency and severity of delirium increased with age and was almost twice as common in males. The relationship to age was noted by Egerton and Kay (1964). Atherosclerosis is likewise related to age and male sex and was mentioned by Gilman (1965) as an explanation of this relationship.

(ii) Progressive severity of disease process

The progressive severity of preoperative ill news and the presence of organic brain damage (Egerton and Kay, 1964) also appeared to increase the likelihood of delirium.

Kzadi and Zaks (1965), in an independent study of pre operative cardiac surgery patients, found that 24 per cent had evidence of neurological abnormalities. Such signs of organic brain changes were found in patients with more severe cardiac disease.

(iii) Duration of operation

It was found that duration of the procedure or of the time on the heart lung machine appeared to increase the incidence of delirium. As noted earlier, the double valve patients who spent a long time on the operating table and heart-lung machine had a higher incidence of psychosis in each series reported.

(iv) Recovery room set up

The stay in the recovery room was viewed by most patients as a disturbing experience. Recovery room is equipped with elaborate set up, heart-lung machine in action and frightening appearance of these surroundings leads to precipitation of delirium.

(v) Sleep deprivation

Maintenance of the patient postoperatively requires the use of intensive care unit where complexity of equipment and constant observation and handling of patient introduces the effects of sleep deprivation.

Mirsky (1962) studied sleep deprivation and its effect on the E.E.G., finger plethysmography, and respiration while using the continuous performance test. Eight normal subjects were

studied under control conditions after 60-70 hours of sleep deprivation and after administration of 200gms. of chlorpromazine. He reported that sleep deprivation effects resembled those of petit mal epilepsy and that the EEG was the least sensitive of indices used. He felt that behavioural effects of sleep deprivation and chlorpromazine were similar, but that two produce different psychological effects. Both sleep deprivation and chlorpromazine produce marked a impairment in the performance of attention test. Ax and associates (1961) studied the autonomic responses to sleep deprivation and reported that responses at 100 hours suggest a profound fatigue of central sympathetic centers with predominance of parasympathetic system, concurring with a fall in the EEG alpha reported by others. Sleep deprivation increased the incidence of delirium was noted by Egerton and Kay (1964).

It was also apparent that these patients after cardiac surgery were not getting much uninterrupted sleep. Studies on sleep deprivation describe a fifth day turning point in experimental subjects when frant psychotic symptoms appear. At this point, symptoms are said to resemble acute delirium at night and acute paranoid schizophrenia in day. Several cases presented the same picture and symptoms cleared usually within 24 hours after transfer from recovery room.

(vi) Sensory deprivation

Many investigators have considered the role of sensory deprivation as a contributing factor in the production of psychiatric complications. Egerton and Kay (1964) describe a relationship of delirium to restricted visual fields and intermittent auditory stimulation.

The sensory deprivation experiment is really a sensory monotony experience (Kubzansky et al, 1961). The typical experimental situation does not truly deprive the subject of all sensory input, but rather diminishes the input of meaningful stimuli. One method is to immobilize the subject in an open tank respirator, cover his eyes with translucent glass sokggles, and then mask all meaningful sound by allowing the machine to run constantly. This situation closely resembles the experience in open heart recovery room where the patients are immobilized, stare at ceiling, and listen to a constant meaningless noise from the oxygen tent.

(vii) Physiological and metabolic disturbances

It is possible that some metabolic or toxic effect does occur and then spontaneously subside, but no present evidence exists to identify it. Hazen (1966) suggested the increase in

circulating amines resulting from the use of bypass apparatus. Abnormal metabolic pathways of all amines can produce hallucinogenic substances.

Further direct oxygenation of blood may enhance the formation of large amounts of adrenochrome in the bypass apparatus with its effects on the central nervous system detected as the patient recovers. Enzymatic aberrations allowing for abnormal methylation could explain the higher incidence seen and may be a heredity factor, explaining the relationship of complications to a familial history of mental illness and a previous history of emotional problems. The lack of symptoms in children may be related to differences in the need, metabolic pathways, or ability to handle the biological amines.

Blachy (1967) studied metanephrine and normetanephrine in 5 patients and all of these had a marked rise in metanephrine excretion in the postoperative period. The excretion level of some of the patients is said to be higher than that found in persons with pheochromocytomas. Chromatography study by Fellman (1964) revealed a few unidentified spots, possibly indicating the excretion of an abnormal or unusual metabolite of catecholamines. These are being investigated further. The 24 hours Vanillyl Mandelic acid (VMA) excretion was unrelated to both the delirium and metanephrine levels.

Feikes et al (1964) reported that 13 out of 15 cases of postoperative hyponatremia had symptoms of confusion, stupor and coma. They noted it was most common in older patients, especially those with heart disease and on prolonged low sodium diet. It developed with serum sodium values of 104-125mg. per liter. Egerton and Kay (1964) suspected that hyponatremia played a role, but Kornfeld (1965) noted no significant relationship. Blachy (1967) noted that there was usually some inconsistent changes in serum potassium postoperatively but these were unrelated to the development of the delirium.

With the physiological complexity of extra corporeal circulation in brain, one can attempt to postulate casual relationships with psychiatric complications. In his review of extra corporeal circulation, Clowes et al (1960) studied in detail the physiological aspects of cardiopulmonary bypass. Of 74 experiments in which heart and lungs were excluded from the circulation for 20 minutes or more, there was an overall mortality of 46 per cent. Important among the causes of death, which are reviewed were postoperative hemorrhage in 14 animals and probable brain damage in 9 animals manifested by low blood pressure during the total perfusion.

Embolism is of primary importance that can be initiated during cardiac procedures. Air and Oxygen injections were used in animal experiments and were reported to increase the depth of anesthesia, cause ataxia, lethargy, and a slow return to consciousness. Rapid injection of gases caused sudden catastrophe, along with subarachnoid hemorrhage.

Air embolism originating from air trapped in the left heart has been reported to cause difficulties, among them coronary occlusion. Air in the ascending aorta is reported to cause transient cerebral damage for several days. Goldfarb and Bohannon (1963) stress the imperative need for avoiding coronary air embolism with great care used to eliminate the air completely from the heart after open heart surgery.

Oxygen bubbles (emboli) may form when saturated cold blood is heated because of the oxyhaemoglobin dissociation curve. A high PO_2 cold blood perfusion in a warm animal gives rise to gas emboli.

Foaming of blood in the various oxygenators has been decreased with the use of siloxane (DC Antifoam A), but this source then introduced another possible source of embolism. Embolization associated with DC antifoam A has been reported severe brain damage in experimental animals following a 2 hours partial perfusion with the use of a bubble oxygenator. Read and Kittle (1956) noted areas of encephalomalacia with neurological significance following the administration of DC Antifoam A intra-arterially. Taylor (1958), Yates et al (1959), and Penry (1959) noted that sudden occlusion of a large number of capillaries with intracranial injections of DC Antifoam A caused coma and death. In addition to antifoaming agent, silicones are also widely used as surface agents for the bypass apparatus. In a recent communication from Dow Corning Corporation, reference was made to a paper by Helmsworth and associates (1963) concerning the study of silicone emboli. On the basis of their findings it appears that silicone fluid is present in the blood after its use in the cardiopulmonary bypass system.

It is postulated that failures by the brain to take up intravenous injected fluorescein was due to obstruction of the cerebral circulation by emboli. Moore (1953) and Hodges (1958), however, presented another theory, postulating that intravenous fluorescein does not go to the brain unless the blood brain barrier is broken by a pathological process. Their findings indicated negative results with sham surgery but positive results with air and antifoam A emboli.

Fat embolization has been reported by Adams (1960) after prolonged perfusion, by means of Sudan staining technique. Evans (1964) using oil red O stain, found fat emboli in kidney, coronary and pulmonary vessels, and cerebral cortices of a patient who died after open heart surgery with the use of bubble oxygenator with antifoam A. Adams et al (1960) found a direct relationship between the severity of fat emboli and duration of cardiopulmonary bypass. Postulating that direct oxygenation of blood disrupts surface tension of blood lipoproteins, the author believed that the lipid fractions may coalesce to form emboli. Wright et al (1963) reported fat globulemia in oxygenator with a blood oxygen interface but not with a membrane oxygenator. Attention has also been drawn to the aspiration of blood from pericardial areas which invariably contains large globules of fat (Wright et al, 1963). Contrary to the findings reported on embolization possibilities, dencker and Sendhal (1961) commented that they found no signs of cerebral embolization. Egerton and Kay (1964) thought that delirium was not associated with small cerebral emboli, but that large local brain lesion or dysfunction, resulting from general hypoxia or hypothermia damage, appears to be a factor in the causation of delirium.

Problems arising from inadequate perfusion are important in the consideration of its relationship to the psychiatric complications. Most important out of which is hypoxia or metabolic acidosis (Hudson, 1959). He believes that pH of arterial blood does not reflect the acid base changes, but that the alkali-reserve decline and the increased bicarbonate deficit are a more precise measure of hypoxia acidosis. A decreased oxygen anaerobic glycolysis and increased production of acid metabolites is seen (Hudson, 1959). Close (1960) noted that annexes of the central nervous system were frequently present, best measured by cerebral blood flow, oxygen consumption, and EEG abnormalities.

Increased levels of lactate were found to be inversely proportional to the flow rate and venous oxygen content. Griffith et al (1947) reported that lactic acidemia and increased oxygen uptake by tissues occurs with the use of epinephrine. He concluded that the net result of lactic acidemia is ischemia of skeletal and brain tissues.

Inorganic phosphate levels generally increase in perfusion and are augmented by the status of hypoxia or hypercapnea. Experiments at low perfusion rates may cause an increased level of the circulating pressor amines (Woods et al, 1957). Hypoxia has been known to be a stimulus for epinephrine secretion (Kellaway, 1920). Clowes et al (1960) reported that vasotonin accumulation is related to the time during which blood remains in the extracorporeal pool.

Many investigators have suggested that serotonin plays a role in the increased peripheral resistance seen. Woods and co-workers (1957) reported that both man and animals experienced increased catecholamine plasma levels during low perfusion rates and with a higher pump rate, the normal (control) level remained unchanged. Lillehei and associated (1963) have reported epinephrine and norepinephrine increase five to ten times over normal levels during bypass.

The active role of the sympathetic nervous system and the adrenal medulla in maintaining and elevating peripheral resistance with a reduced pump output has been reported pump output has been reported (Woods et al, 1957).

Marked increase of pre-perfusion pressure has been reported, and the possibility of the role of increased circulating adrenalin as a cause for the role of increased circulating adrenalin as a cause for the splanchnic congestion has been postulated. Animal studies show the Bromsulphale in extraction and disappearance rates were repressed during and after perfusion. The former was considered significant in view of increased extraction with decreased hepatic flow rate reported. Perfused patients manifest elevation of the serum glutamic oxaloacetic transaminase (Synder et al, 1958) which may be attributable to ischemia.

With a minimum amount of changed function, kidney can handle extracorporeal circulation maintenance. NO change was noted in the blood urea nitrogen at 24 to 78 hours after 30 minutes of perfusion at low flow rates. A clinical study reports that with a mean arterial pressure greater than 60mm. Hg, there was no apparent change in the renal function, with phosphorous and ammonia excretion remaining normal. It has also been reported that, even at the highest flow rate for one hour, there was some reduction in the renal function as tested by paraaminohippuric acid and creatinine clearance. Occasionally, post-perfusion oliguria has been noted. Urinary potassium increase postoperatively with a suggestion that sodium retention also occurs. Renal silicone embolization is directly related to duration of perfusion (Wright et al, 1963).

While considering the psychiatric complications, the role of hypothermia is of minimal importance. Several observations are presented. Maximal oxygen uptake is decreased to 60 per cent of the basal requirement when the body temperature is decreased to 30⁰ C and 23 percent of based at 20⁰C. At moderate hypothermia, there is a loss of profound hypothermia (16⁰C to 20⁰C), the brain wave disappear and curve was flat. Egerton and Kay (1964) using

hypothermia levels of $8^{\circ} - 12^{\circ}\text{C}$, reported a high incidence of death and brain damage (62 percent) and subsequently worked at levels of $24^{\circ} - 30^{\circ}$ without clinical evidence of brain damage.

Most interesting finding has been the relationship of temperature during bypass and its effects on the circulating amines. Replege and associated (1962) reported very low epinephrine and norepinephrine levels with temperature below 27°C and a significant increase when warming to 30° occurred. During normothermia bypass, marked elevations in circulating epinephrine and norepinephrine were noted.

Although little attention has been given to the effects of anesthesia, one particular aspect studied by Egerton and Kay (1964) is of great interest. Hypnosis, when used for induction of anesthesia, appeared to significantly increase the incidence of delirium in an experimental group as compared to a control group. Mayer and Blacher (1961) found the patients related the most distressing recollections of surgery to the paralyzing action of succinyl choline and the authors suggested resulting of traumatic neurosis.

(viii) Functional Class

Blachy (1967) reported that 72 per cent out of the total 42 patients who has trial fibrillation, developed post-cardiotomy delirium, and there was a close relationship between preoperative functional class and the post-cardiomydelirium. Out of the 14 patients in Functional Class I, only 29 per cent had post-cardiotomy delirium, but 49 per cent of the 43 patients in Functional class II and 69 per cent of the 70 patients in Functional Class III had post-cardiotomy delirium.

(ix) Blood Group

There was a significant relationship between blood type and delirium (Blachy, 1967). Delirium was less frequently noted in patients with blood type O. Twenty eight cases who developed post-cardiotomy delirium, 6 had type O and 15 type A and seven were sub-types. Although this difference is significant ($P < 0.05$ $X^2 = 5.27$), one does not know that what meaning to attach to it. Possible it should be viewed as another form of stress, for the average patient may be exposed to 15-20 units of foreign blood during the procedure, considering the amount needed to prime the pump. Under these circumstances, the type O patient might have less tendency for the type O blood to break down from mechanical factors during cardiopulmonary bypass.

(x) Influence of Drugs

Many of the drugs used postoperatively have been known to cause agitation or delirium. Although at times it appeared the drugs could be influencing the delirium, there was no clear cut relationship. Drugs which are commonly known to precipitate delirium are Demerol, Digitalis, Barbiturates and isoproterenol.

Electro-Encephalographic Correlation

There has been much interest in electroencephalographic changes associated with extracorporeal circulation and the subject has been thoroughly reviewed by Clowes (1960). It was thought the EEG would provide an additional means of monitoring adequate perfusion of Central nervous system. In 1954, Clowes et al reported that recovery followed perfusions during which a normal EEG was reported.

Lennox and co-workers (1938) noted a depression of brain waves associated with a decrease in cerebral blood flow, hypoxia and hypoglycemia. Bloor et al (1958) reported the appearance of delta waves with a cortical oxygen tension below 65 per cent. Martin (1959) reviewed the depressant effects of the anesthetic agents, and the r factors the including the EEG during perfusion.

Changes in EEG postoperatively (Carter, 1965) suggested that surgery affects the brain. EEG changes, predominantly slowing, were present during the lucid interval prior to the onset of the delirium. The maximum slowing was present directly after surgery and during the delirium itself. The slow waves were replaced by alpha rhythm as the delirium cleared. In some cases the slowing persisted even after the delirium cleared but disappeared after about 10 to 12 days.

They and associated (1957) reported the cases of patients perfused at rates near basal cardiac output with the EEG records resembling that of light anesthesia. Several patients had a decreased or absent bypass flow, resulting in a complete cessation of cortical potential. When death did not occur, normal EEG patterns were obtained with the re-establishment of the blood pressure of 60mm. of Hg. without sequelae.

Silverstein et al (1960) recorded EEG's before, after and during surgery. During the operation, changes were related to the placement of the catheter, onset of the perfusion was seen in two patients who subsequently has postoperative focal seizures, and developed

neurological signs. It was suggested that asymmetry of the EEG during perfusion with a normal postoperative EEG and an absence of psychiatric complications.

Blachly and Starr (1964) reported significant EEG changes from the time patients recovered from anesthesia and preceding the development of a delirium in 25 out of the 27 patient. There was positive correlation between the degree of EEG abnormality and the severity of the delirium in 20 patients.

Fowler (1962) found 4 children with a 14 and 6 per second positive spike pattern immediately after operation 3 of whom developed behaviour disturbances. These EEG changes were reported to revert back to normal on a one year follow-up. Fowler also concluded that in a high percentage of cases, displaying an abnormal EEG during bypass and acute neuropathological changes. On pathological examination, there was a high incidence of cerebral oedema and hypoxic changes. Abnormal EEG during cardiopulmonary bypass suggested a poor prognosis, although these abnormalities did not necessarily indicate permanent cerebral damage or that cerebral involvement was the primary cause of death. Of the patients who died, 79 per cent had abnormal tracings during surgery. The appearance of postoperative neurologic signs also suggested a poor prognosis.

Hudson (1959) proposed a classification of electroencephalographic patterns in cerebral depression during unsatisfactory perfusions.

Psychological Testing and Evaluation

Psychological testing was reported to be of no value or of limited value in predicting complications.

Meyer (1961) using the House-tree-person-test found that preoperative regression due to anxiety decreased postoperatively. Silverstein et al (1960) found no significant changes or correlations with the Weschler Bellevue intelligence test or Bender-Gestalt test when used pre and postoperatively. Knox (1963) using the Cornell medical index questionnaire (CMI), progressive matrices and Maudsley personality inventory (MPI) found some correlations. In area M.R. section, 4 patients (14 per cent) showing “good response” scored critical or above the critical level of 10, whereas 14 patients who were emotionally disturbed at the time of interview responded with less than critical score; except one hysterical patient.

Considering the entire series of 50, 32 patients (64 per cent) were of average intelligence as assessed by the progressive matrices and 10 (20 per cent) were above and 8 (16 per cent) below average. This indicated a fairly normal distribution of intelligence in the series. There was a relatively greater proportion of psychiatrically disturbed patients who had below average intelligence, but the difference was not statistically significant.

The M.R. Section of CMI showed a significant result ($P = 0.001$) in patients demonstrating emotional problems with a preoperative score greater than 10. With good surgical result the M.R. score was 6.2 while the group with emotional problems had an M.R. score of 14.6

Herbert and Movius (1964) studied the two groups of 8 each, total 16, preoperatively and postoperatively. They were given Weschler adult intelligence scale (WAIS), Rorschach inkblot, and the Hooper visual organization test. The obtained results did not show any psychological deficit postoperatively.

Priest et al (1957) gave preoperatively and after surgery psychological tests to patients with mitral stenosis and congenital defects, and demonstrated signs of organicity in the rheumatic group but not in congenital group. They used Wechsler Bellevue, an organic battery for generalized deterioration and for frontal to be involvement, the Rorschach Inkblot, the draw a person, TAT, Bender Gestalt and Gotschaltdt Figures, the street Gestalt completion test, the Luchins Jar problems and several attitude scales, scale for depression, rigidity attitude towards sex, prejudice and anomic, and the California F-scale.

The patients were retested psychologically three weeks, six months, one year and two years after the surgical operation. They concluded:

- (1) All patients had severe anxiety, the intensity was most marked in the rheumatic group. This is probably related to the knowledge of heart disease, although it was present where knowledge of heart disease was of only a few weeks duration.
- (2) All of the rheumatics except two had higher performance than verbal I.Q. In this study rheumatics had an average total I.Q. higher than the population at large, 110.
- (3) With the results of tests for Cortical and subcortical organicity, strongly suggest that rheumatic fever ingeneral and not just the choreiform type may cause some degree of permanent cortical and subcortical damage.

- (4) This possibility was further emphasized by the fact that the signs of organicity were more pronounced immediately postoperatively and did not return to the preoperatively level was rarely exceeded even one or more years after operation, thus suggesting permanency of the cortical damage and not a transitory phenomenon caused by reduced cardiac output.
- (5) From a psychiatric stand point, the critical period is first 2-3 weeks postoperatively – the period of reaction to stress of the operation per se.
- (6) The critical psychological period continues for about six months and in fact may not reach its peak until about that time.

This may explain symptomatic inability of the patient to do as much as his improved cardiac dynamics should allow him to do.

Weiss (1966) for assessing the role of psychological factors gave psychological tests (MMPI, Cornell Medical Index Health Questionnaire, TMA, Wechsler memory scale) to patients undergoing open heart surgery pre and postoperatively. Fourteen patients out of 30 experienced postoperatively psychiatric complications.

Statistical analysis of preoperative data shows emergence of ego strength variable of MMPI as having a significant inverse correlation with ‘reaction group’ ($r = -.476$; $P < 0.05$). Further analysis of preoperative MMPI profile configurations resulted in subtle, yet consistent differences in relative profile elevation. With the open heart “reaction group” (14 cases) obtaining significantly higher composite score than the open heart ‘non-reactor group’ ($P < 0.05$). As this observed difference was not reflected in the follow-up MMPI analysis the observed pre operative difference must be considered a temporary reaction to considerable objective stress which was not present under follow-up conditions

Thus, this investigation into the construction of a prediction equation was 100 per cent successful in differentiating 14 reactor from 16 non-reactors on the basis of 25 psychological variables. The variables include 16 scales of psychopathological of MMPI, tow CMI organic scales involving cardiovascular and eye-ear symptoms, four CMI psychiatric scales, plus age.

Management

There is a general agreement that awareness of the possibility of psychiatric complications and detection of the earliest signs of delirium are of utmost importance.

Little and Pearson (1954) treated successfully a case developing psychiatric complications after successful mitral commissurotomy. She became overtly psychotic and was diagnosed as a case of schizophrenica (catatonic type), and case was successfully treated by combined ECT and insulin therapy. They concluded that there is no risk in giving ECT and insulin to the patients after cardiac surgery.

Egerton and Kay (1964) found adequate nocturnal sedative and liberalization of fluids by mouth helpful in management of their patients.

Blachly and Starr (1964) found the phenothiazines (Chlorpromazine) helpful and recommended that barbiturates should not be used.

It is interesting to note that Mayer and Blacher (1961) found repetitive dreams helpful in resolving traumatic neurosis.

Lazarus and Haglus (1968) in an effort to lower the incidence of psychotic reactions following open heart surgery, came to the conclusion that a preoperative psychiatric interview accompanied by individual recommendation for postoperative care, and minimization of the environmental stresses of the recovery room, lessen the risk of postoperative psychotic reaction among heart surgery operation.

Kornfield (1967) found that in most cases the delirium was a self limiting phenomenon, but some agitated patients did require treatment in the recovery room. Small dose of chlorpromazine has proved to be safe and effective (Blachly and Starr, 1964). The initial dose should not exceed 25 mgm. Intramuscularly, and additional doses can be given as needs. In order to reduce the environmental stresses of the recovery room, the following suggestions are proposed:

- (i) Nursing procedures should be modified to allow the maximum number of uninterrupted sleep periods.
- (ii) Patients should be placed in individual rooms. This will serve two purposes:
 - (a) Patients will not be awakened by the activity occurring around the other patients, or kept awake by the need to maintain a lighted room in order to observe others.
 - (b) The patients will not be made more anxious by the emergency procedures performed on the other patients, or by occasional postoperative deaths.

- (iii) All equipments should be kept outside the patients's rooms. This will reduce the monotony of the constant rhythmic signaling sound or lights.
- (iv) Patients should be allowed increase mobility by removing as many wires an dutbes from their extremities as possible.
- (v) The constant noise of the oxygen cooling tent and air conditioning unit is monotonous, and should be eliminated where possible.
- (iv) In order to provide a greater variety of stimuli each patient should be provided with the patient controlled radio and television.
- (vii) Each room should be equipped with a large clock and calendar visible to the patient.

CHAPTER III

METHODOLOGY

The present research was planned to study the background of patients undergoing open heart surgery. The open heart surgery is broadly divided into 3 main type of surgery i.e.

- (1) Congenital heart surgery.
- (2) Rehumatic heart surgery.
- (3) Ischemic heart surgery.

In this study we again sub divided each type of patients into 3 age groups of the following range

- (i) 16 to 35 years.
- (ii) 36 to 50 years.
- (iii) 51 to 65 years.

Each sub group of age was again divided into two group of male and female patients.

In all 162 patients were taken up in this study as each group consisted of 9 subjects (patients) as follows.

The distribution of male patients:

CHD	RHD	IHD
10 – 35 – 9	16 – 35 – 9	16 – 35 – 9
30 – 50 – 9	36 – 50 – 9	36 – 50 – 9
51 – 65 – 9	51 – 65 – 9	51 – 65 – 9

The distribution of the female patients; is as follows who were taken up for study.

CHD	RHD	IHD
16 – 35 – 9	16 – 35 – 9	16 – 35 – 9
30 – 50 – 9	36 – 50 – 9	36 – 50 – 9
51 – 65 – 9	51 – 65 – 9	51 – 65 – 9

Sample

The study was carried out at the All India Institute of Medical Sciences New Delhi. The cardio Thoracic & Neuro Sciences Centre of AIIMS is the first centre in Asia where the First Successful Cardiac Transplantation has taken place and is devoted exclusively to Cardiac problem of Neonatal to the old age problem.

One hundred sixty two patients were interviewed and asked to fill the Questionnaires at the time of admission to the ward on the very first day of the three years as each patient had to match with age, education & working conditions.

Group I

In this group there were 9 subjects who had undergone open heart surgery belongs to the category of congenital heart disease. They were in the age group of 16 to 35 years. The classification of the 9 subjects was as 3 were for Atrial Septal Defect, 3 were for Ventricular Septal Defect, and 3 were for Tetralogy of Fallots. The average was 35 years. All these were male subjects and all are working.

Group II

In this group there were 9 subjects who had undergone Open heart surgery. They belonged to the category of Rheumatic heart disease. They were in the age group of 16 to 35 years. The classification of the subjects was as 3 were of Mitral Valve replacements 3 were of Aortic Valve replacement and 3 were of Double valve replacement. The average age of this group was 35 years. All these were male and are working.

Group III

In this group there were 9 subjects who had undergone Bypass surgery. They belonged to the category of Ischemic heart disease. They were in the age group of 16 to 35 years. The classification of the 9 subjects were 3 were of Single vessel disease, 3 were of double vessel disease and 3 were of triple vessel disease. The average age of this group is 35 years. All of these were male subjects and all are working.

Group IV

In this group there were 9 subjects who had undergone Open heart surgery. They fall in the category of Congenital heart disease. They were in the age group of 16 to 35 years. The classification of the 9 subjects were 3 were for Atrial Septum defect, 3 were of Venticular

septum defect and 3 were for Tetralogy of Fallot. The average age of this group is 35 years. All of these were female subjects and were working.

Group V

In this group there were 9 subjects who had undergone Open heart surgery. They belong to the category of Rheumatic heart disease. They were in the age group of 16 to 35 years. The classification of the subjects were 3 were of Mitral Valve replacements 3 were of Aortic Valve replacement and 3 were of Double valve replacement. The average age of this group was 35 years. All these were female and are working.

Group VI

In this group there were 9 subjects who had undergone Bypass surgery. They belonged to the category of Ischemia heart disease. They were in the age group of 16 to 35 years. The classification of the 9 subjects were 3 were of Single vessel disease, 3 were of double vessel disease and 3 were of triple vessel disease. The average age of this group is 35 years. All of these were female subjects and all are working.

Group VII

In this group there were 9 subjects who had undergone Open heart surgery. From the category of Congenital heart disease. They were in the age group of 36 to 50 years. The classification of the 9 subjects were 3 were for Atrial Septum defect, 3 were of Ventricular septum defect and 3 were for Tetralogy of Fallots. The average age of this group is 45 years. All of these were males and all are working.

Group VIII

In this group there were 9 subjects who had undergone Open heart surgery. They were from the category of Rheumatic heart disease. They were in the age group of 36 to 50 years. The classification of the subjects were 3 were of Mitral Valve replacements 3 were of Aortic Valve replacement and 3 were of Double valve replacement. The average age of this group was 45 years. All these were males and are working.

Group IX

In this group there were 9 subjects who had undergone Bypass surgery. They belong to the category of Ischemia heart disease. They were in the age group of 36 to 50 years. The

classification of the 9 subjects were 3 were of Single vessel disease, 3 were of double vessel disease and 3 were of triple vessel disease. The average age of this group is 45 years. All of these were males subjects and all are working.

Group X

In this group there were 9 subjects who had undergone Open heart surgery. Who were from the category of Congenital heart disease. They were in the age group of 36 to 50 years. The classification of the 9 subjects were 3 were for Atrial Septum defect, 3 were of Ventricular septum defect and 3 were for Tetralogy of Fallots. The average age of this group is 45 years. All of these were females and all are working.

Group XI

In this group there were 9 subjects who had undergone Open heart surgery. They belong to the category of Rheumatic heart disease. They were in the age group of 36 to 50 years. The classification of the subjects were 3 were of Mitral Valve replacements 3 were of Aortic Valve replacement and 3 were of Double valve replacement. The average age of this group was 45 years. All these were females and are working.

Group XII

In this group there were 9 subjects who had undergone Bypass surgery. They subjects were from the category of Ischemia heart disease. They were in the age group of 36 to 50 years. The classification of the 9 subjects were 3 were of Single vessel disease, 3 were of double vessel disease and 3 were of triple vessel disease. The average age of this group is 45 years. All of these were females subjects and all are working.

Group XIII

In this group there were 9 subjects who had undergone Open heart surgery. In this category the subjects had Congenital heart disease. They were in the age group of 36 to 50 years. The classification of the 9 subjects were 3 were for Atrial Septum defect, 3 were of Ventricular septum defect and 3 were for Tetralogy of Fallots. The average age of this group is 45 years. All of these were males and all are working.

Group XIV

In this group there were 9 subjects who had undergone Open heart surgery. In this category they had Rheumatic heart disease. They were in the age group of 51 to 65 years. The classification of the subjects were 3 were of Mitral Valve replacements 3 were of Aortic Valve replacement and 3 were of Double valve replacement. The average age of this group was 55 years. All these were males and are working.

Group XV

In this group there were 9 subjects who had undergone Bypass surgery. In this category the subjects had Ischemia heart disease. They were in the age group of 51 to 65 years. The classification of the 9 subjects were 3 were of Single vessel disease, 3 were of double vessel disease and 3 were of triple vessel disease. The average age of this group is 55 years. All of these were males subjects and all are working.

Group XVI

In this group there were 9 subjects who had undergone Open heart surgery. In this category they had Congenital heart disease. They were in the age group of 51 to 65 years. The classification of the 9 subjects were 3 were for Atrial Septum defect, 3 were of Ventricular septum defect and 3 were for Tetralogy of Fallots. The average age of this group is 55 years. All of these were females and all are working.

Group XVII

In this group there were 9 subjects who had undergone Open heart surgery. In this category the subjects had Rheumatic heart disease. They were in the age group of 51 to 65 years. The classification of the subjects were 3 were of Mitral Valve replacements 3 were of Aortic Valve replacement and 3 were of Double valve replacement. The average age of this group was 55 years. All these were females and are working.

Group XVIII

In this group there were 9 subjects who had undergone Bypass surgery. In this category the subjects had Ischemia heart disease. They were in the age group of 51 to 65 years. The classification of the 9 subjects were 3 were of Single vessel disease, 3 were of double vessel disease and 3 were of triple vessel disease. The average age of this group is 55 years. All of these were females subjects and all are working.

Tools used

There different scales/tests were used to measure different personality characteristics of the subject, They were: (16 PF) Cattells test designed by R.B. Cattell It is a comprehensive coverage of personality test. It was first commercial publication of list was is 1949. The second test used was the adapted version of locus of control of Reinforcement (1966) and the third test was, Sinha Comprehensive anxiety test (SCAT). During the last three decade the concept of anxiety has figured in psychology literature.

Sarason and Mandler (1952) gave the first detailed description of anxiety test to certain psychometric and social class data. Taylor (1953) developed personality scale. Cattell R.B. (1957) Constructed the IPAT. In 1958, Cattell and Scheier compared results of 13 multivariate analysis, in common the method of oblique rotation to simple structure, but involving a variety of subjects and avariables which emphasized puratative measures of anxiety. Martin (1959) reported that anxiety factors was relatively in dependent of intelligence motivation in psychological experimentation and paper and pencil test, Sinha & Sinha found that test is existence (both Indian & Foreign) found that they were not covering certain facets of anxiety. Further, there existed a good deal of disagreement and confusion concerning the concept of anxiety. Several aspects of anxiety appeared to be ignored. All this led to the development of Sinha's Comprehensive Anxiety test.

The locus of control scale which has been used is an adaptation of J.B. Rotter's scale, "generalized expectancies for internal versus external control of Reinforcement." It is referred to Levenson's Internal, powerful others and chance scale (1974). However, the items are mixed up. The internal External locus of control is related to a number of constructs of behaviour involving attitudinal changes with references to values, sentiments, social rules and regulations, etc. Hence keeping in view the complex nature of locus of control items related to need for achievement, striving for superiority, competence, personal causation have been selected. This self report measure for assessing locus of control (Internal, powerful others and chance) uses a scale, each of which comprises of 8 items in a Likert formal (possible range on each scale = 0 to -8). The three scales were derived on a priority basis from several items adapted from Rotters – 1 – E scale a set of statements written specifically for the new scales while previous studies have found slight to moderate correlations between powerful others and chance orientations were the first three clusters to emerge from factor analysis (Levenson 1973 A). These factors seem to be conceptually pure in that only items from the appropriate

scale load on that one factor. The statements in this scale attempt to measure the degree to which a subject perceives the event in his own life as being a consequence of his own effects, under the control of powerful other, or determined by chance forces.

The three new scales differ from Rotter's I – E scale in four important ways.

- (a) Instead of a forced choice format Likert type 6 point scale is used so that the three scales are statistically independent of one another.
- (b) The statements on the scales are worded in the first person (person control), rather than mixing first person with third person (system control phrasing. This distinction was made based on the factor analysis of Gurin, Gurin Lao and Beattie (1969) and Mirels (1970)
- (c) The scales have a high degree of parallelism in content among each triad.
- (d) The scales are not correlated with the measures of social desirability. The scale is presented to the subject as a unified attitude scale of 24 items.

The internal scale has 8 items which deal with the individual's belief that he is responsible for the outcome of events and this outcome is the result of his ability and effort. The external or powerful others scale has 8 items which deal with the individual's belief that rewards, or outcomes are not controlled by him but by 'Powerful other' people.

The others or chance scale has eight items which deal with the intervention of fate, luck or chance in the outcome of events.

Reliability of Scale

Test retest reliability was calculated on male and female sample of 200 each with an interval of 2 months. The reliability coefficient was found to be .78 for under graduates and .82 for Post graduates student (N = 100 each).

For determination of reliability of entire sample, the test retest reliability coefficient was calculated by Spearman – Brown prophecy which worked out to be .80

Validity of the scale

The validity of the scale was determined by the administration of present English version of the scale and Rotter's 1 E scale to a 100 post graduate student within an interval of 2 days. The validity coefficient was found to be .77.

SINHA & SINHA of institute of Psychological Research and Service, Patna University developed and modified the anxiety test known as Sinha's Comprehensive anxiety test (SCAT). It was administered on 100 college student who approached for psychological assistance complaining of one or several symptoms of anxiety. No time limit was imposed. The subject were required to response to each items in form of "Yes" or "No". The yes response to each item was indicative of anxiety and was given score of one. A score of Zero was given to No response. For item analysis the point biserial correlations being correlations were computed. The critersion of a co-efficient of correlations being significant at .001 was fixed for the inclusion of item in the final test. Out of 245 coefficient of correlation 90 were significant at or beyond .001 level.

Consequently 90 items constituted the tests in final form.

Reliability

The coefficient or reliability was determined by using the following two methods:-

- (1) The test retest method (N = 100) was employed to determine the temporal stability of the test. The product moment correlation between the test and retest scores were 0.85
- (2) The internal consistency reliability was ascertained by adopting odd – even procedure (N = 100)

Using the Spearman Brown formula, the reliability coefficient of the test was found to be 0.92.

Both the values ensure a high reliability of the test.

Validity

The coefficient of validity was determined by computing the coefficient of correlation between scores on comprehensive Anxiety Test and on Taylor's Manifest Anxiety Scale. It was .62 which is significant beyond .001 level of confidence.

As regards Cattle's 16 PF (Personally Factors) the manual provides test the description of these tests only. The validity and reliability of the test could not be found in the manual. The short description of the factors is given below:-

Factor A

Reserved, detached, critical cool (Sizothymia)

The person who scores low (sten of 1 to 3) tends to be stiff cool skeptical and aloof. He likes things rather than people working alone and avoiding compromise of view points. He is likely to be precise and rigid in his way of doing things and in personal standards and in many occupations. These are desirable traits. He may tend at times to be critical obstructive or hard.

Vs.

Outgoing

Warmhearted Easy going participating (Affectothymia). The Person who score high (sten of 8 to 10) tends to be good natured, easy going, emotionally expressive, ready to co-operate, attentive to people, soft hearted, kindly adaptable. He likes occupations dealing with people and socially impressive situation. He readily forms active groups. He is generous in personal relations less afraid of criticism better able to remember names of people.

Factor B

Less Intelligent

Concrete thinking (Lower Scholastic mental capacity)

The person scoring low tends to be slow to learn and grasp, dull, given to concrete and literal Interpretation. His dullness may be simply a reflection of low intelligence. Or it may represent poor functioning due to psychopathology.

Vs.

More Intelligent

Abstract thinking, Bright (Higher Scholastic mental capacity)

The person is quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture and some with alertness. High scores contra indicates deterioration of mental functions in pathological functions.

Factor C

Affected by Feelings

Emotionally less stable easily upset (Lower ego strength)

The person is low in frustration tolerance for unsatisfactory conditions changeable and plastic, evading necessary reality demands, neurotically fatigued easily emotional and annoyed, active in dissatisfaction having neurotic symptoms (Phobias, sleep disturbances, psychosomatic complaints etc.).

Vs. &a3000V

Emotionally Stable

Faces reality, calm, mature (Higher ego strength)

The person is emotionally mature, stable, realistic about life, unruffled, possessing ego strength, better able to maintain solid group morale. Sometimes he may be a person making a resigned adjustment to unsolved emotional problems.

Factor E

Humble

Accommodating, Conforming (Submissiveness)

The person tends to give way to others, to be docile and to conform. He is often dependent, confessing, anxious for obsessional correctness. This passivity is part of many neurotics.

Vs.

Assertive

Independent, aggressive, competitive, stubborn (Dominance)

The person is assertive, self-assured and independent minded. He tends to be a law to himself, hostile or extra-punitive, authoritarian and disregards authority.

Factor F

Sober

Prudent, Serious, Taciturn (Desurgency)

The person is retained, introspective. He is sometimes, pessimistic unduly deliberates, and considered by observers. He tends to be a sober, dependable person.

Vs.

Happy Go Lucky

Impulsively lively, Enthusiastic (surgency).

The person tends to be cheerful active talkative, frank expressive often carefree. He is frequently chosen as an elected leader. He may be impulsive and merciful.

Factor G

Expedient

Evades rules feels few obligations (weaker super ego strength).

The person tends to be un study in purpose. He is often casual and lacking in effort for group undertaking and cultural demands. His freedom from group influence may lead to anti social acts but at times makes his refusal to be bound by rules.

Vs.

Conscientious

Persevering, Rule bonds (stronger superego strength)

The person is exaggerating in character dominated by sense of duty persevering responsible painful. He is usually conscientious and moralistic prefers hard working people to witty companions. The inner categorical imperative of this essential superego should be distinguished from superfiscally similar social ideal self of Q3.

Factor H

Shy

Restrained Diffident, Timid (Thretia)

The person is shy withdrawing, cautions. He has usually has inferiority feelings. He tends to be slow and imeded in speech and in expressing himself dislikes occupations with personal contacts prefers one or few close friends to large groups and is not given to keeping in contact with all that is going on around him.

Vs.

Venturesome

Socially bold uninhibited, spontaneous (Parmia)

The high scorer on this factor in sociable, bold ready to try new things, spontaneous and abroubt in emotional response. His thick kindness enables him to face wear and tear in dealing with people and quarreling emotional situations without fatigue. However he can be careless of detail, ignores danger, signals and consumes much time in talking. He tends to be pushy and actively interested in the opposite sex.

Factor I

Tough Minded

Self-reliant Realistic No Nonsense (Harria)

The low score in this factor is practical, realistic, masculine, independent, responsible but skeptical of subjective cultural, elaboration. He is sometimes unmoved, hard, cynical and snug. He tends to keep a group, operating on a practical and realistic no-nonsense basis.

Vs.

Tender Minded

Dependent, over-protected, sensitive (premsia). The persons tends to be tender-minded, day dreaming, srstistic, fast and is feminine. He is sometimes demanding of attention and help, impatient, dependent, impracticable. He dislikes crude people and rough occupation. He tends to slow up group performance and to upset group morality unrealistic confusion.

Factor L

Trusting

Adaptable free of jealousy easy to get on with (Alaxia)

The person tends to be free of jealous tendencies, adaptable cheerful, uncompetitive, concerned about other people, a good team worker.

Vs.

Suspicious

Self opinionated Hard to fool (pretension)

The person is mistrusting and doubtful. He is often involved in his own ego, is self opinionated and interested in internal mental life. He is usually deliberate in his actions unconcerned about other people, a poor team member.

Factor M

Practical

Careful conventional Regulated by external Realities, Proper (Praxernia). The person is anxious to the right things attentive to practical matters and subject of the dictation of what is obviously possible. He is obviously possible. He is concerned over detail, able to keep his head in emergencies but sometimes unimaginative.

Vs.

Imaginative

Wrapped up in inner urgencies careless of practical matters Absent-minded (Autia). The person is unconventional unconcerned over every day matters, self motivated imaginatively creative, concerned with essentials and oblivious of particular people and physical realities. His inner- directed interest sometimes lead to the unrealistic situations accompanied by expressive out trusts. They individuals tend to cause him to be rejected in group activities.

Factor N

Forthright

Natural, artless, sentimental (Artlessness)

The low scores here is unsophisticated, sentimental and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous.

Vs.

Shrewd

Calculating, worldly, penetrating (Shrewdness)

The high scores is polished experienced, worldly shrewd. He is often hardheaded and analytical. He has an intellectual approach to situations, an approach a kin to cynicism.

Factor O

Placid

Self assured, confident, Serene (untroubled adequacy)

The person tends to be placid, with unshakable nerve. He has a nature unconscious confidence in himself and his capacity to deal with things. He is relitent and seems but to the point of being insensitive of when a group is not going along with him, so that he makes, antipathies and distrust.

Vs.

Apprehensive

Worrying Depressive troubled (Guild pronessness)

The person tends to be depressed, melodies worries full of foreboding and boring. He has a child like tendency to anxiety in difficulties. He does not feel accepted in groups or free to participate.

Factor O1

Conservative

Respecting, established ideas, tolerant of traditional difficulties (Concervatism)

The low scores in confident in what he has been thought to believe, and accepts the “tried and true” despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas. Thus he tends to oppose and postpone changes, is

indicated to go along with tradition is more conservative in religion and politics, and tends not to be interested in analytical “Intellectual” thought.

Vs.

Experimenting

Critical, Liberal, Analytical free thinking (Radicalism)

The person is interested in intellectual matters and has doubts on the fundamental issues. He is skeptical and inquiring regarding ideas, either old or new. He tends to be more well informed less inclined to mobilize, more inclined to experiment in life, and more tolerant of inconvenience and change.

Factor O

Group dependent

A “Joiner” and sound Follower (Group adherence)

This indicates a preference to work and make decision with other people likes and depends on social approvals and admiration. He tends to go along with the group and may be looking in individual resolution. He is not necessarily gregarious by choice, rather he needs group support.

Vs.

Self Sufficient

Prefers own decisions Resourceful (Self-Sufficiency)

The person is temperamentally independent, accustomed to going his own way making decision and taking action on his own. He discounts public opinion but is not necessarily dominant in his relations with other. He does not dislike people simply does not social repulsions need their agreement or support.

Factor O3

Undisciplined Self- conflict

Careless of protocol. Follows own urges (Low integration)

The person will not be bothered with will control and regard for social demands. He is not oversell considerate, careful or pains taking. He may feel mattered gusted, and many males adjustment shows Q3

Vs.

Controlled

Socially precise Following self- image (High self concept control)

The person tends to have strong control of his emotion and general behaviors, is inclined to be socially aware and careful, and evidence what is commonly termed self-respect and regards for

Factor O4

Relaxed

Tranquil, Torpid, Unfrustrated (Low Ergic Tension)

The person tends to be sedate, relaxed, composed and satisfied. In some situation his over satisfaction can lead to laziness and low performance in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance.

Vs.

Tense

Frustrated, Drives, Over worked (High ergic Tension)

The person is tense, excitable, restless, fretful, impatient. He is often fatigued but unable to remain inactive. In groups he takes a poor view of the degree of units, orderliness and leadership. His frustration represents an excess of stimulated, but undischarged drives.

Analysis of Data

The data were analyzed by using the Anova and T test, and obtained results were interpreted and mentioned in the next chapter.

CHAPTER IV

RESULTS AND INTERPRETATION

The present study was conducted to see whether there is a socio- psychological difference in the case of patients undergoing open heart surgery. The open heart surgery consists of Ischemia Heart Disease i.e. CABG. Rheumatic Heart Disease is AVR, MVR, DVR. Congenital Heart Disease i.e. ASD, VSD, TOF. A total of 162 subjects in the age group 16 to 65 were taken up for study with equal number of male and female patients. 81 were male patients and 81 were female patients. The age group was divided into 3 sub groups of 16 to 35, 36 to 50 and 51 to 65 years. The whole sample was taken from A.I.I.M.S., C.T. Centre. The subjects were given questionnaires to fill day to day activity. They were tested before the surgery and after surgery on sets of test of locus of control, (Internal, external and others) anxiety and personality. They were asked to fill the tests as spontaneously. The data collected were split into 18 groups which was then analyzed with the help of two statistical techniques viz analysis of variance and t test. The results obtained with the help of analysis of variance as showed that the locus of control (other interval in the three groups did not show any deference. The anxiety level and the personality charteristic in the three groups were different in the case of Congenital heart disease, Rheumatic heart disease and Ischemic heart disease. The anxiety level was high in all the three group in male and female before the surgery. The personality factors in the three group were more or less the same with slight variation in trait in some cases which is described in detail. In the case of patients taken up for study in the Ischemia heart disease in the age group 16 to 65 years were 54 i.e. (27 male and 27 female). This age group was divided into 3 sub groups of 16 to 35 years 36 to 50 years and 51 to 65 years. They were of single vessel, double vessel and triple vessel disease for CABG. operation. The education status was that 80 percent of them were graduate 10 percent were PhD. All of them are married. The average income of these patients was Rs. 10, 000 per month. The total number of persons who have their own business was about 70 percent, 20 percent work in private sector undertaking and rest 10 percent work in Government sector. The average height of three patients was 169 cm and average weight is 80kg. The smoking description is that 100 percent smoke cigar or cigarettes. 80 percent smoke cigarettes and 20 percent smoked cigar. The daily consumption of cigarettes is about 20 per days and 8 cigars per day. All the patients drink daily. The average alcohol consumption is 50 pegs per day. The 80 percent drink wine, 10 percent drink rum and 5 percent drink whiskey and 5 percent

drink beer. All the patients are non vegetarian. 80 percent take daily 2 eggs and rest one egg daily. The meat consumption is 6 times a week by most of the patients. The oil ghee fat and butter consumption of salt in the month is about 1 kg. The blood group is 80 percent have B+ and 20 percent have O+. In the case of congenital heart disease the total number of cases studied in the age group of 16 to 65 were 54 i.e. 27 male and 27 female. This group was divided into three sub group of 16 to 35, 36 to 50 and 51 to 65. They were for ASD, VSD, TOF operation the education was that all of them were graduate. 80 percent of them are married and 20 percent are not married. The average income is Rs. 7000 per month. 70 percent are having their own business 20 percent work in private sector and 10 percent work's in government sector. The average height of these patients are 165 cm and weight is 70 kg. The 80 percent do not smoke and 20 percent smoke cigarette at rate of 5 cigarette per day. The alcohol consumption is 80 percent of the patients with 2 peg per day with 80 percentage take wishkey. 10 percent rum and 10 percent beer. The 50 percent are vegetarian and 50 percent non vegetarian. The egg consumption is 1 egg daily in case of non veg. patients. The meat is consumed 3 days in week and the oil, ghee consumption is 1 liter per month with salt consumption is ½ kg. per month. The blood group is 80 percent have B+ and 20 percent O+.

In the case of Rheumatic heart disease patient the total number of case studied were 54, 27 male and 27 female in age group 16 to 65 divided into 3 sub groups 16 to 35, 36 to 50 and 51 to 65 years. The education status of all the patients were 90 percent was graduate and 5 percent post graduate and 5 percent PhD. The average income is Rs. 8000 per month. The 80 percent are in business class. 10 percent are semi government worker and 10 percent are in government sector. 30% person are group are not married 70 percent are married. The average height of the patient was 160 cms weight 58 kg. The 80 percent do not smoke and 20 percent smoke 2 cigarette per day. The alcohol consumption is 100 percent. 80 percent drink 4 peg per day of alcohol. 20percent drink rum 3 peg per day. 80 percent are non vegetarian and 20 percent vegetarian. The egg consumption is 2 eggs in week. The meat consumption is 5 times in week. The oil and ghee consumption is 1.5 liter and salt 1/2 kg. per month. 80 percent have O+ and percent B+ blood group.

Detailed Results have been given in the following Tables.

Table 1

The following ANOVA table shows the difference on anxiety level of the pre operative and post operative patients in the age group of 16 to 35 male and female in the case of Congenital, Rehumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	216.861	17	11.521	1.821	.0301
Within Groups	1116.111	111	7.961		
Total	1393.309	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on anxiety level with the help of ANOVA. The obtained F-Ratio is 1.821 and probility is .0301 which is significant. This implies that the two groups do differ from one another in terms of anxiety level.

Table 2

The following ANOVA table shows the difference on anxiety level of the pre operative and post operative patients in the age group of 36 to 50 male and female in the case of Congenital, Rehumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	200.111	17	11.791	1.830	.0295
Within Groups	928.000	111	6.111		
Total	1128.111	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on anxiety level with the help of ANOVA. The obtained F-Ratio is 1.830 and probility is .0295 which is significant. This implies that the two groups do differ from one another in terms of anxiety level.

Table 3

The following ANOVA table shows the difference on anxiety level of the pre operative and post operative patients in the age group of 51 to 65 male and female in the case of Congenital, Rehumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	216.861	17	11.521	1.821	.0301
Within Groups	1116.111	111	7.961		
Total	1393.309	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on anxiety level with the help of ANOVA. The obtained F-Ratio is 1.821 and probability is .0301 which is significant. This implies that the two groups do differ from one another in terms of anxiety level.

Table 4

The following ANOVA table shows the difference on personality level of the pre operative and post operative patients in the age group of 16 to 35 male and female in the case of Congenital, Rheumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	109.290	17	21.076	1.533	1.671
Within Groups	761.881	111	5.312		
Total	1171.179	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on personality level with the help of ANOVA. The obtained F-Ratio is 1.533 and probability is 1.671 which is insignificant. This implies that the two groups do not differ from one another in terms of personality factors.

Table 5

The following ANOVA table shows the difference on personality level of the pre operative and post operative patients in the age group of 36 to 50 male and female in the case of Congenital, Rheumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	317.128	17	18.673	3.555	1.138
Within Groups	756.111	111	5.252		
Total	1073.883	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on personality level with the help of ANOVA. The obtained F-Ratio is 3.555 and probability is 1.138 which is insignificant. This implies that the two groups do not differ from one another in terms of personality factors.

Table 6

The following ANOVA table shows the difference on personality level of the pre operative and post operative patients in the age group of 36 to 50 male and female in the case of Congenital, Rehumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	233.679	17	13.716	2.120	2.113
Within Groups	817.778	111	5.679		
Total	1051.157	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on personality level with the help of ANOVA. The obtained F-Ratio is 2.120 and probility is 2.113 which is insignificant. This implies that the two groups do not differ from one another in terms of personality factors.

Table 7

The following ANOVA table shows the difference on locus of control of the pre operative and post operative patients in the age group of 16 to 35 male and female in the case of Congenital, Rehumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	228.991	17	13.170	2.118	7.910
Within Groups	903.111	111	6.272		
Total	1132.105	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on locus of control with the help of ANOVA. The obtained F-Ratio is 2.118 and probility is 7.910 which is insignificant. This implies that the two groups do not differ from one another in terms of locus of control (Internal, External, and others).

Table 8

The following ANOVA table shows the difference on locus of control of the pre operative and post operative patients in the age group of 36 to 50 male and female in the case of Congenital, Rehumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	273.111	17	13.170	2.118	7.910
Within Groups	825.333	111	6.272		
Total	1132.105	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on locus of control with the help of ANOVA. The obtained F-Ratio is 2.118 and probability is 7.910 which is insignificant. This implies that the two groups do not differ from one another in terms of locus of control (Internal, External, and others).

Table 9

The following ANOVA table shows the difference on locus of control of the pre operative and post operative patients in the age group of 51 to 65 male and female in the case of Congenital, Rheumatic and Ischemic heart disease.

Source	Sum of Sq.	D.F.	Mean Sq.	F. Ratio	Prob.
Between Groups	130.191	17	7.676	.950	.5178
Within Groups	1163.778	111	8.082		
Total	1291.372	161			

Subjects from the two groups i.e. pre operative and post operative, were compared on locus of control with the help of ANOVA. The obtained F-Ratio is .950 and probability is .5178 which is insignificant. This implies that the two groups do not differ from one another in terms of locus of control (Internal, External, and others).

Results obtained with the help of t test

Table 10

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	1.55	1.02	1.51	.08
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.51 of pre operative and post operative groups shows that the probability is .08 which is insignificant for factor A.

Table 11

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	1.2222	.61	1.97	.0188
II				
Group I – Pre operative		Group II – Post operative		

The t value is 1.97 of pre operative and post operative groups shows that the probability is .0188 which is significant for factor B.

Table 12

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	2.2222	.6620	3.3567	1.990
II				
Group I – Pre operative		Group II – Post operative		

The t value is 3.3567 of pre operative and post operative groups shows that the probability is 1.990 which is insignificant for factor C.

Table 13

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	.8889	.8210	1.0787	.1561
II				
Group I – Pre operative		Group II – Post operative		

The t value is 1.0787 of pre operative and post operative groups shows that the probability is .1561 which is insignificant for factor E.

Table 14

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	.9286	.7520	1.2318	.1191
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.2318 of pre operative and post operative groups shows that the probability is .1191 which is insignificant for factor F.

Table 15

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	.7778	.9216	.812	.2123
II				

Group I – Pre operative

Group II – Post operative

The t value is .812 of pre operative and post operative groups shows that the probability is .2123 which is insignificant for factor G.

Table 16

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	.1111	.6035	.7365	.2112
II				

Group I – Pre operative

Group II – Post operative

The t value is .7365 of pre operative and post operative groups shows that the probability is .2112 which is insignificant for a3720.

Table 17

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	1.2222	.7778	1.5711	.0771
II				
Group I – Pre operative			Group II – Post operative	

The t value is 1.5711 of pre operative and post operative groups shows that the probability is .0771 which is insignificant for factor I.

Table 18

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	2.1111	.6961	3.0227	8.121
II				
Group I – Pre operative			Group II – Post operative	

The t value is 3.0227 of pre operative and post operative groups shows that the probability is 8.121 which is insignificant for factor L.

Table 19

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	.2222	.9686	.2291	.1122

II			
Group I – Pre operative		Group II – Post operative	

The t value is .2291 of pre operative and post operative groups shows that the probability is .1122 which is insignificant for factor M.

Table 20

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	1.3333	.8819	1.5119	.0815
II				
Group I – Pre operative		Group II – Post operative		

The t value is 1.5119 of pre operative and post operative groups shows that the probability is .0815 which is insignificant for factor N.

Table 21

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	2.0000	1.1180	1.7889	.0557
II				
Group I – Pre operative		Group II – Post operative		

The t value is 1.7889 of pre operative and post operative groups shows that the probability is .0557 which is insignificant for factor O.

The t value is .1011 of pre operative and post operative groups shows that the probability is .1610 which is insignificant for factor Q3.

Table 25

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff.	Std. Error	t	P
I	2.1111	.9111	2.5882	.0161
II				
Group I – Pre operative		Group II – Post operative		

The t value is 2.5882 of pre operative and post operative groups shows that the probability is .0161 which is insignificant for factor Q4.

Table 26

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

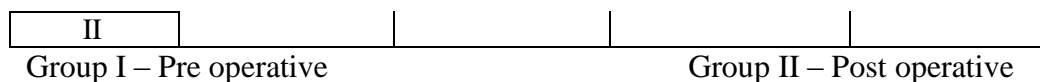
Groups	Mean Diff	Std. Error	t	P
I	1.5556	1.0289	1.5119	.0815
II				
Group I – Pre operative		Group II – Post operative		

The t value is 1.5119 of pre operative and post operative groups shows that the probability is .0815 which is insignificant for factor A.

Table 27

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.2222	.6186	1.9757	.0188



The t value is 1.9757 of pre operative and post operative groups shows that the probability is .0188 which is significant for factor B.

Table 28

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	2.2222	.6620	3.3567	1.990
II				
Group I – Pre operative		Group II – Post operative		

The t value is 3.3567 of pre operative and post operative groups shows that the probability is 1.990 which is insignificant for factor C.

Table 29

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.8889	.8210	1.0787	.1561
II				
Group I – Pre operative		Group II – Post operative		

The t value is 1.0787 of pre operative and post operative groups shows that the probability is .1561 which is insignificant for factor E.

Table 30

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.9286	.7520	1.2318	.1191
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.2318 of pre operative and post operative groups shows that the probability is .1191 which is insignificant for factor F.

Table 31

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.7778	.9216	.812	.2123
II				

Group I – Pre operative

Group II – Post operative

The t value is .812 of pre operative and post operative groups shows that the probability is .2123 which is insignificant for factor G.

Table 32

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.1111	.6035	.7365	.2112
II				

Group I – Pre operative

Group II – Post operative

The t value is .7365 of pre operative and post operative groups shows that the probability is .2112 which is insignificant for factor H.

Table 33

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD,

TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.2222	.7778	1.5711	.0771
II				
Group I – Pre operative			Group II – Post operative	

The t value is 1.5711 of pre operative and post operative groups shows that the probability is .0771 which is insignificant for factor I.

Table 34

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	2.1111	.6961	3.0227	8.121
II				
Group I – Pre operative			Group II – Post operative	

The t value is 3.0227 of pre operative and post operative groups shows that the probability is 8.121 which is insignificant for factor L.

Table 35

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.2222	.9686	.2291	.1122
II				
Group I – Pre operative			Group II – Post operative	

The t value is .2291 of pre operative and post operative groups shows that the probability is .1122 which is insignificant for factor M.

Table 36

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.3333	.8819	1.5119	.0815
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.5119 of pre operative and post operative groups shows that the probability is .0815 which is insignificant for factor N.

Table 37

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	2.0000	1.1180	1.7889	.0557
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.7889 of pre operative and post operative groups shows that the probability is .0557 which is insignificant for factor O.

Table 38

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.5556	1.0289	1.5119	.0815
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.5119 of pre operative and post operative groups shows that the probability is .0815 which is insignificant for factor Q1.

Table 39

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.8889	.9782	1.9311	.0118
II				
Group I – Pre operative			Group II – Post operative	

The t value is 1.9311 of pre operative and post operative groups shows that the probability is .0118 which is insignificant for factor Q2.

Table 40

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.1111	1.0985	.1011	.1610
II				
Group I – Pre operative			Group II – Post operative	

The t value is .1011 of pre operative and post operative groups shows that the probability is .1610 which is insignificant for factor Q3.

Table 41

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	2.1111	.9111	2.5882	.0161
II				
Group I – Pre operative			Group II – Post operative	

II			
	Group I – Pre operative		Group II – Post operative

The t value is 3.3567 of pre operative and post operative groups shows that the probability is 1.990 which is insignificant for factor C.

Table 45

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.8889	.8210	1.0787	.1561
II				
	Group I – Pre operative		Group II – Post operative	

The t value is 1.0787 of pre operative and post operative groups shows that the probability is .1561 which is insignificant for factor E.

Table 46

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.9286	.7520	1.2318	.1191
II				
	Group I – Pre operative		Group II – Post operative	

The t value is 1.2318 of pre operative and post operative groups shows that the probability is .1191 which is insignificant for factor F.

Table 47

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.7778	.9216	.812	.2123
II				

Group I – Pre operative

Group II – Post operative

The t value is .812 of pre operative and post operative groups shows that the probability is .2123 which is insignificant for factor G.

Table 48

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.1111	.6035	.7365	.2112
II				

Group I – Pre operative

Group II – Post operative

The t value is .7365 of pre operative and post operative groups shows that the probability is .2112 which is insignificant for factor H.

Table 49

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.2222	.7778	1.5711	.0771
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.5711 of pre operative and post operative groups shows that the probability is .0771 which is insignificant for factor I.

Table 50

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD,

TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	2.1111	.6961	3.0227	8.121
II				

Group I – Pre operative Group II – Post operative

The t value is 3.0227 of pre operative and post operative groups shows that the probability is 8.121 which is insignificant for factor L.

Table 51

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.2222	.9686	.2291	.1122
II				

Group I – Pre operative Group II – Post operative

The t value is .2291 of pre operative and post operative groups shows that the probability is .1122 which is insignificant for factor M.

Table 52

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.3333	.8819	1.5119	.0815
II				

Group I – Pre operative Group II – Post operative

The t value is 1.5119 of pre operative and post operative groups shows that the probability is .0815 which is insignificant for factor N.

Table 53

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	2.0000	1.1180	1.7889	.0557
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.7889 of pre operative and post operative groups shows that the probability is .0557 which is insignificant for factor O.

Table 54

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.5556	1.0289	1.5119	.0815
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.5119 of pre operative and post operative groups shows that the probability is .0815 which is insignificant for factor Q1.

Table 55

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of CHD, RHD, IHD, consisting of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	1.8889	.9782	1.9311	.0118
II				

Group I – Pre operative

Group II – Post operative

The t value is 1.9311 of pre operative and post operative groups shows that the probability is .0118 which is insignificant for factor Q2.

The t value is .0887 of pre operative and post operative groups shows that the probability is .1657 which is insignificant for locus of control (internal, External, and others)

Table 59

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Rheumatic heart disease consisting of Mitral value replacement (MVR) Aortic value replacement (AVR) and Double value replacement (DVR) and Congenital heart disease (ASD), (VSD), (TOF) and Ischemic Heart disease. Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.6667	.8819	.7559	.2357
II				
Group I – Pre operative			Group II – Post operative	

The t value is .7559 of pre operative and post operative groups shows that the probability is .2357 which is insignificant for locus of control (internal, External, and others)

Table 60

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Rheumatic heart disease consisting of Mitral value replacement (MVR) Aortic value replacement (AVR) and Double value replacement (DVR) and Congenital heart disease (ASD), (VSD), (TOF) and Ischemic Heart disease. Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.1111	1.1191	.3970	.3509
II				
Group I – Pre operative			Group II – Post operative	

The t value is .3970 of pre operative and post operative groups shows that the probability is .3509 which is insignificant for locus of control (internal, External, and others)

Table 61

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Rheumatic heart disease consisting of Mitral value replacement (MVR) Aortic value replacement (AVR) and Double value replacement (DVR). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	5.0000	2.0817	2.4019	.0215
II				

Group I – Pre operative

Group II – Post operative

The t value is 2.4019 of pre operative and post operative groups shows that the probability is .0215 which is insignificant for anxiety level

Table 62

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Rheumatic heart disease consisting of Mitral value replacement (MVR) Aortic value replacement (AVR) and Double value replacement (DVR). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	5.8889	1.3275	4.4360	1.0905
II				

Group I – Pre operative

Group II – Post operative

The t value is 4.4360 of pre operative and post operative groups shows that the probability is 1.0905 which is insignificant for anxiety level

Table 63

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Rheumatic heart disease consisting of Mitral value replacement (MVR) Aortic value replacement (AVR) and Double value replacement (DVR). Age group of the patient is 51 to 65 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	5.8889	1.3275	4.4360	1.0905
II				

Group I – Pre operative

Group II – Post operative

The t value is 4.4360 of pre operative and post operative groups shows that the probability is 1.0905 which is insignificant for anxiety level

Table 64

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Congenital heart disease consisting of Atrial

Septal Defect (ASD), Ventricular Septal Defect (VSD), and Tetralogy of Fallot (TOF). Age group of the patient is 16 to 35 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.1111	1.2522	.1657	.1657
II				

Group I – Pre operative
Group II – Post operative

The t value is .1657 of pre operative and post operative groups shows that the probability is .1657 which is insignificant for anxiety level

Table 65

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Congenital heart disease consisting of Atrial Septal Defect (ASD), Ventricular Septal Defect (VSD), and Tetralogy of Fallot (TOF). Age group of the patient is 36 to 50 years (male and female patients).

Groups	Mean Diff	Std. Error	t	P
I	.6667	.8819	.7559	.2357
II				

Group I – Pre operative
Group II – Post operative

The t value is .7559 of pre operative and post operative groups shows that the probability is .2357 which is insignificant for anxiety level

Table 66

The table shows the difference between mean of pre operative and post operative patients undergone open heart surgery. In the case of Congenital heart disease consisting of Atrial Septal Defect (ASD), Ventricular Septal Defect (VSD), and Tetralogy of Fallot (TOF). Age group of the patient is 51 to 65 years (male and female patients).

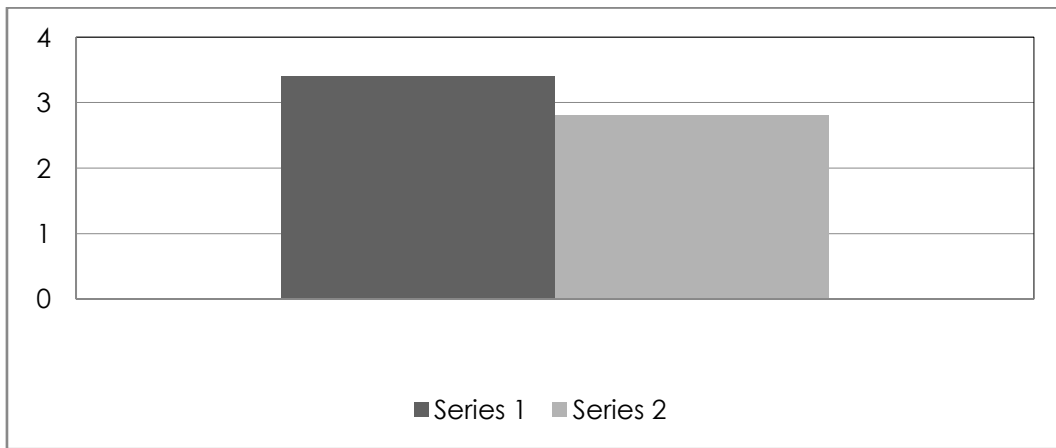
Groups	Mean Diff	Std. Error	t	P
I	.1111	1.1191	.3970	.3509
II				

Group I – Pre operative
Group II – Post operative

The t value is .3970 of pre operative and post operative groups shows that the probability is .3509 which is insignificant for anxiety level

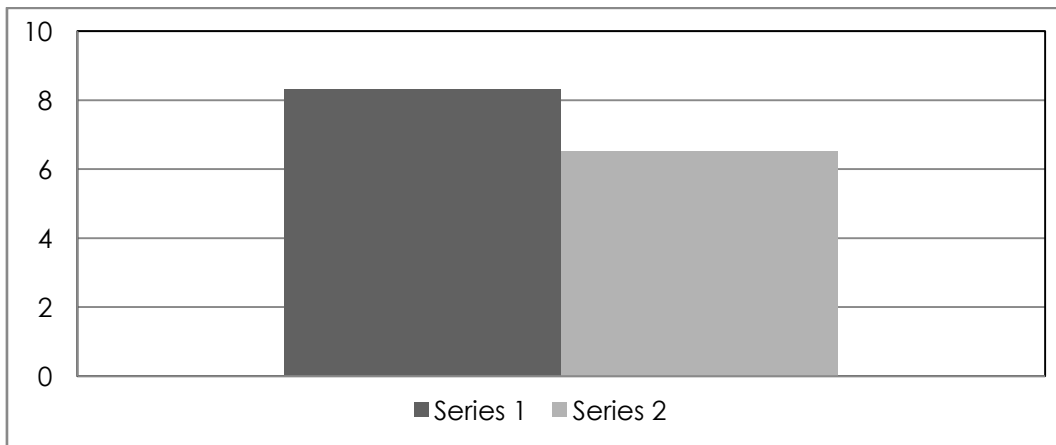
Table 67

Anxiety Level of Patient undergoing OHS Rheumatic Heart Disease 16-35 Female



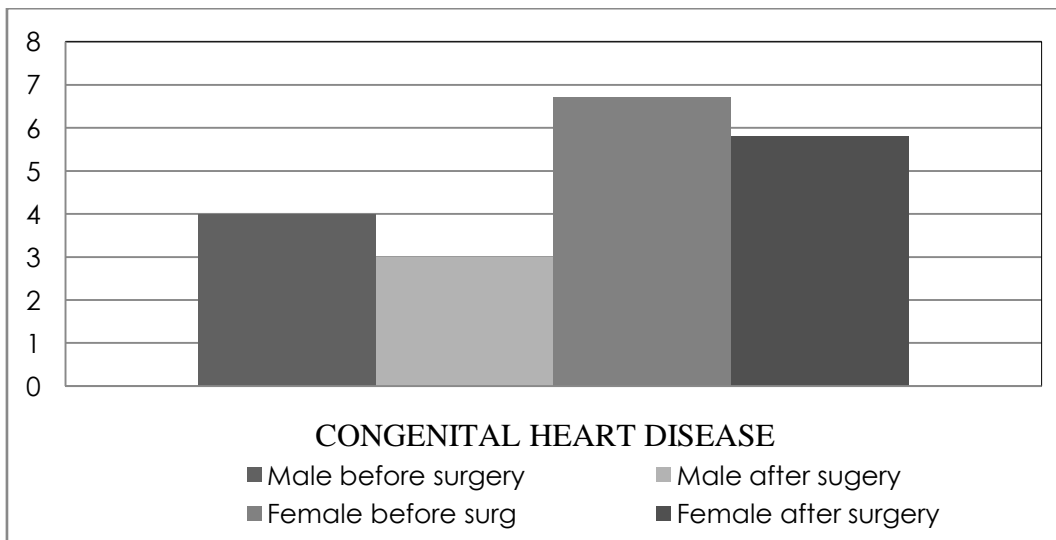
Before and After Surgery

Anxiety Level of Patient undergoing OHS Ischemic Heart Disease 16-35 Female



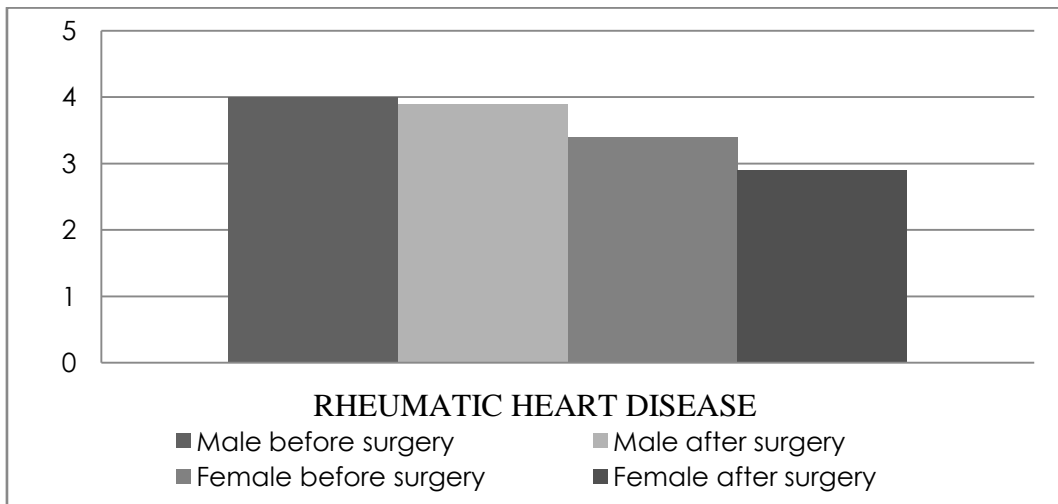
Before and After Surgery

Anxiety Level Comparison between Males Females undergone OHS, CHD Age 50-65



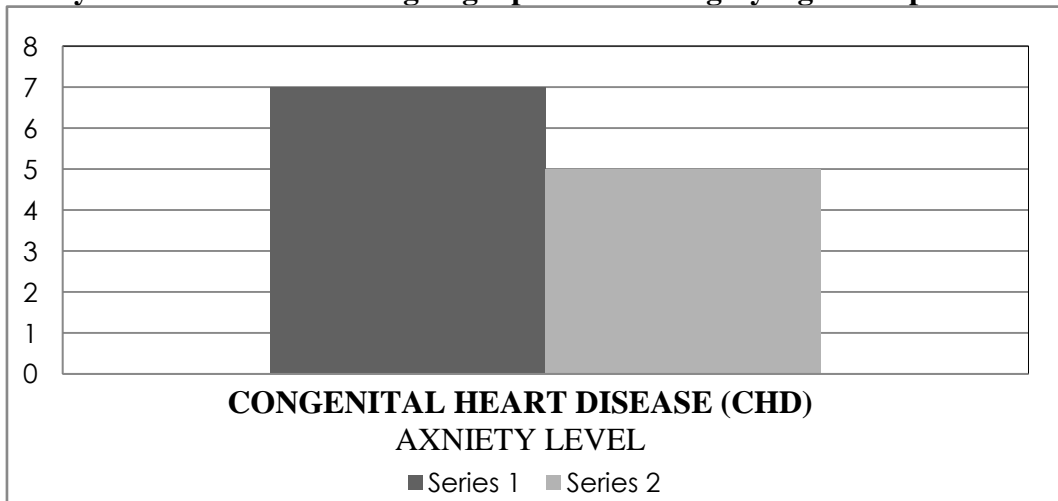
Male & Female Before and After Surgery

Anxiety Level Comparison between Males Females Undergone OHS, CHD Age 16-35

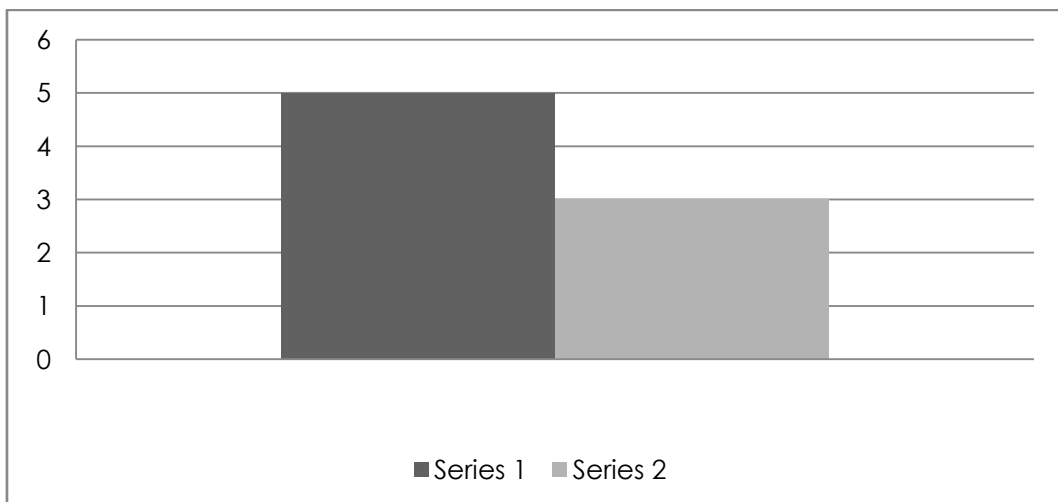


Male & Female Before and After Surgery

Anxiety Level of Patient undergoing Open Heart Surgery Age Group 36-50 Male

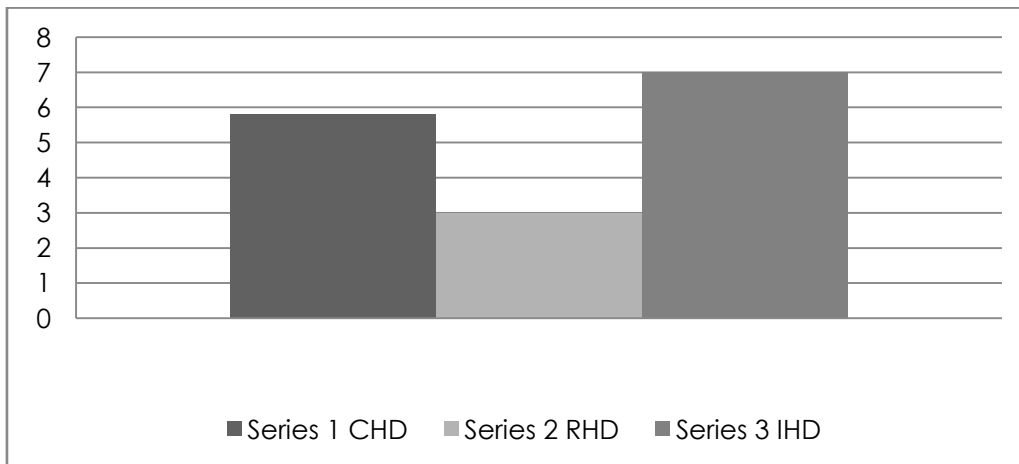


Anxiety Level of Patient undergoing OHS I.H.D 16-35 Female



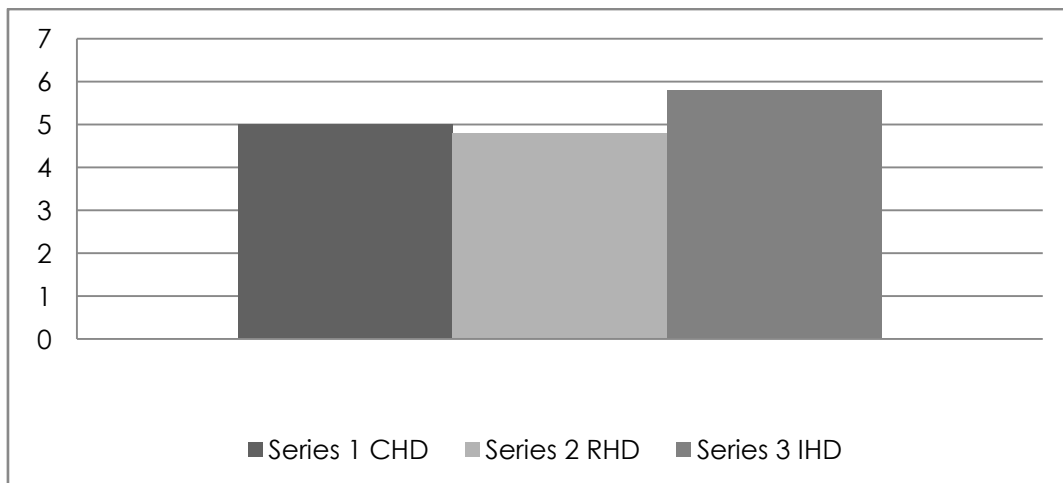
Before and After Surgery

Anxiety Level Comparison Between CHD, RHD, IHD 16-35 Female



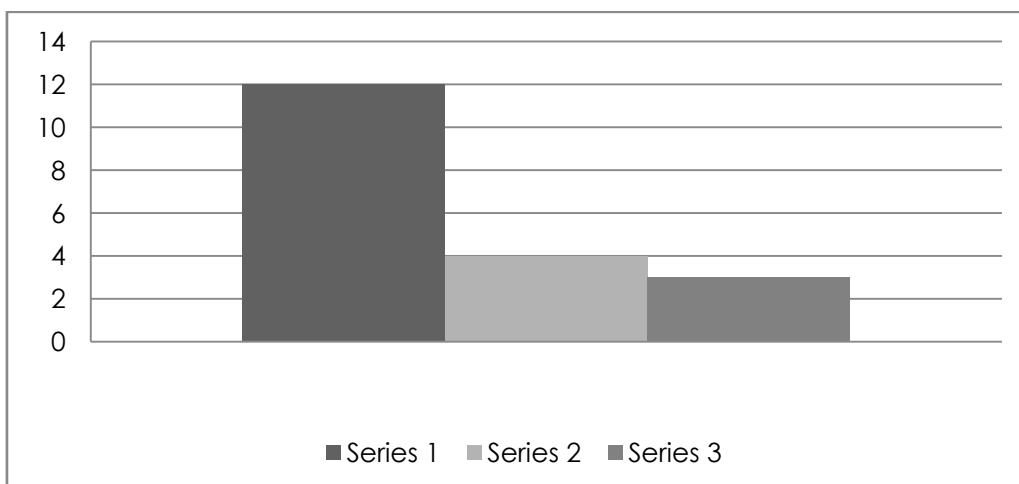
After Surgery

Anxiety Level Comparison between CHD, RHD, IHD 35-50 Male



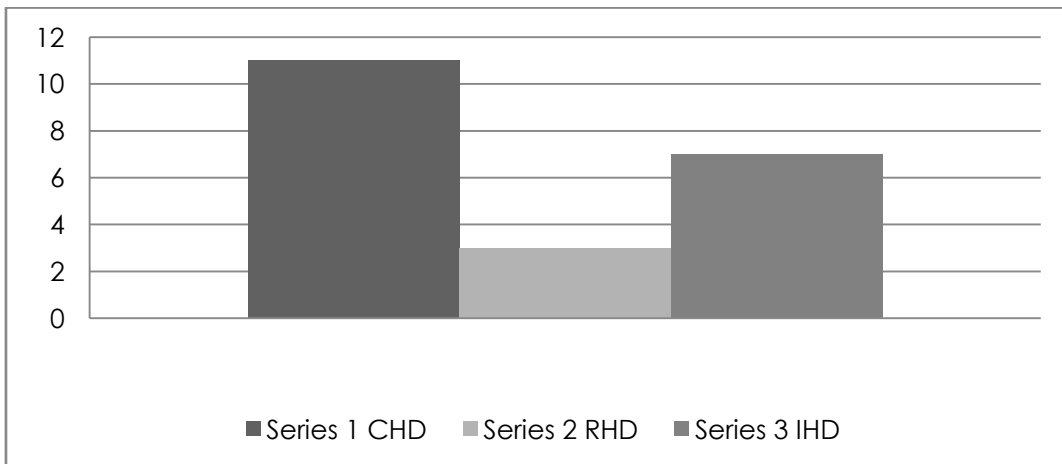
Before Surgery

Anxiety Level Comparison between CHD, RHD, IHD Male 16-35



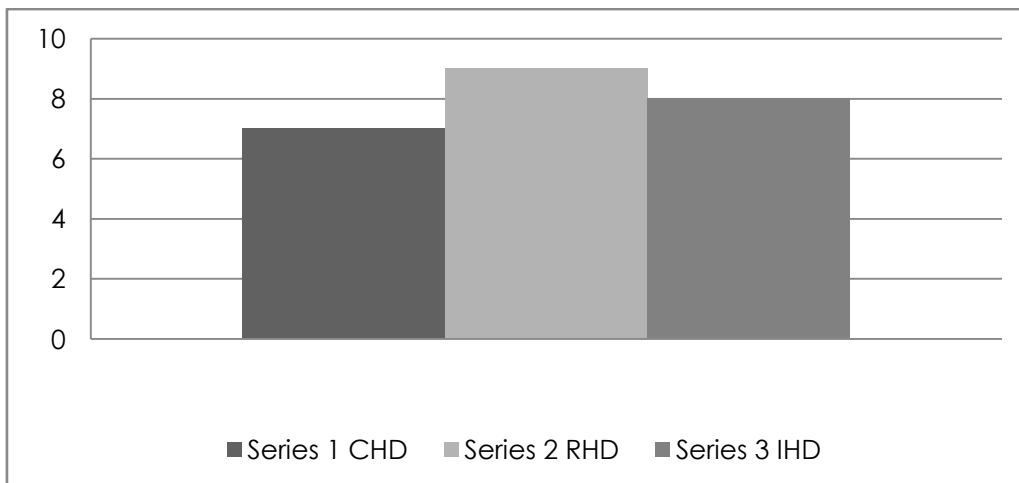
After Surgery

Anxiety Level Comparison between CHD, RHD, IHD Female 16-35



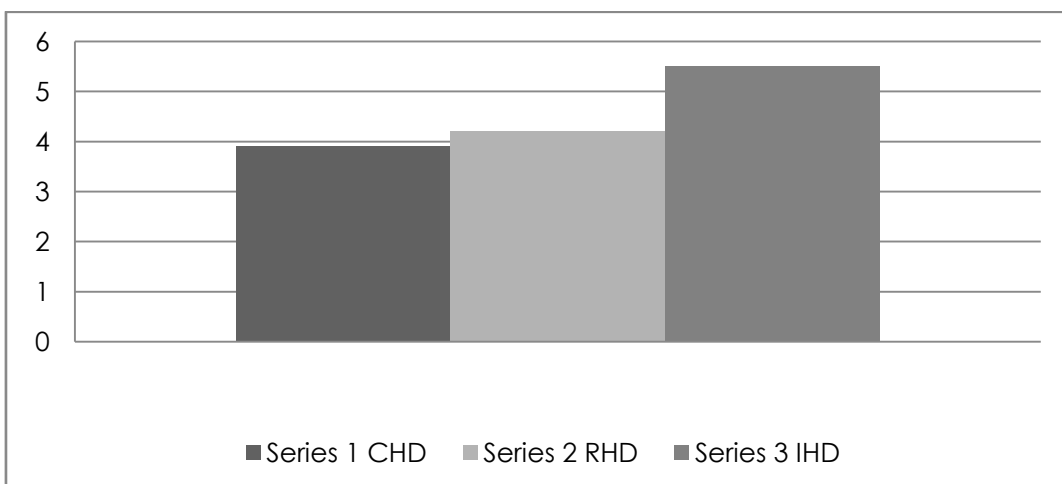
Before Surgery

Anxiety Level Comparison between CHD, RHD, IHD 35-50 Male



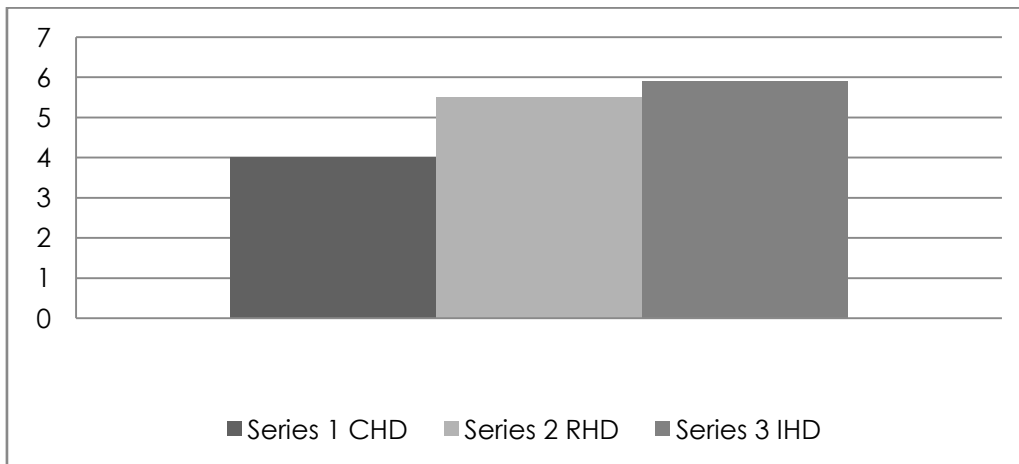
After Surgery

Anxiety Level Comparison between CHD, RHD, IHD 35-50 Female



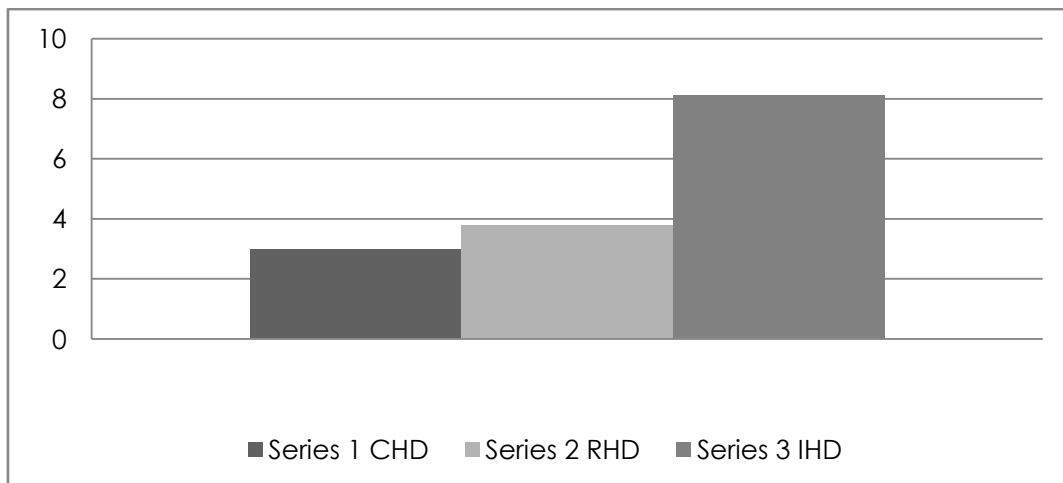
After Surgery

Anxiety Level Comparison between CHD, RHD, IHD 50-65 Male



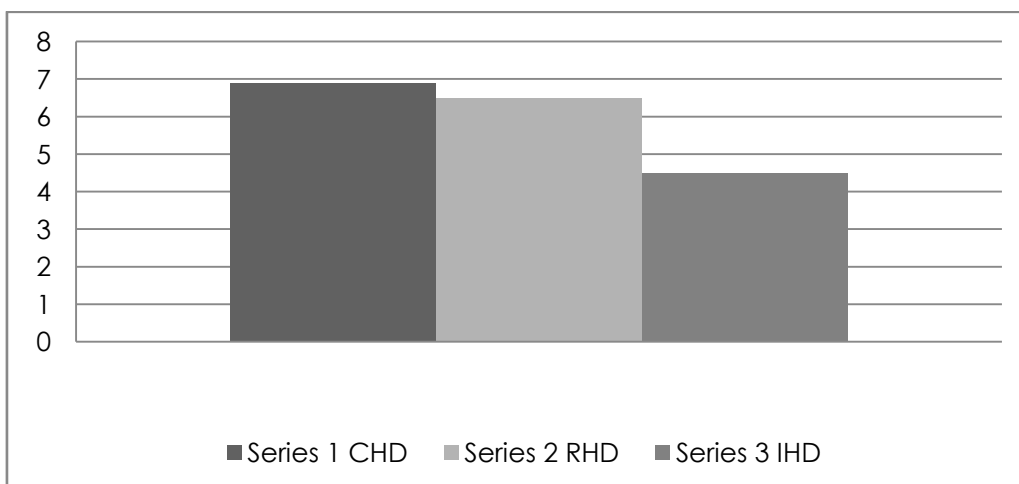
Before Surgery

Anxiety Level Comparison between CHD, RHD, IHD Male 50-65



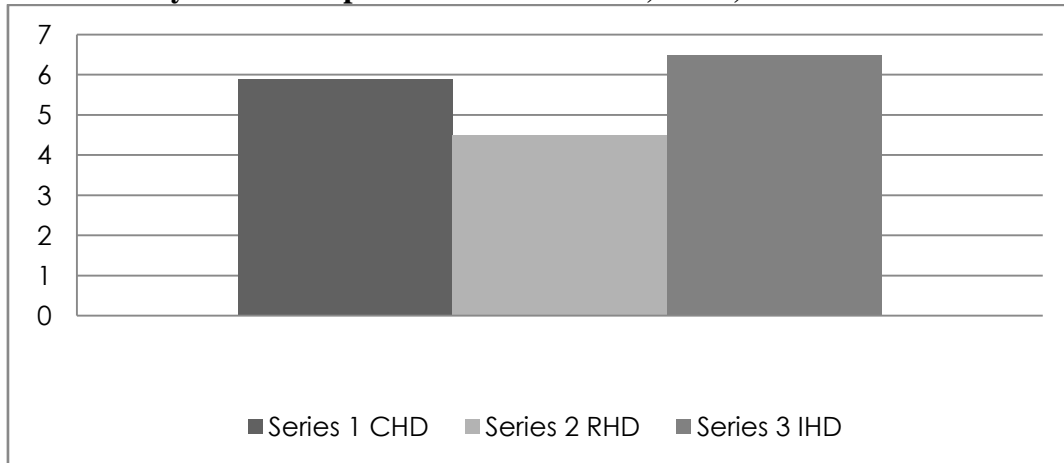
After Surgery

Anxiety Level Comparison between CHD, RHD, IHD 50-65 Female



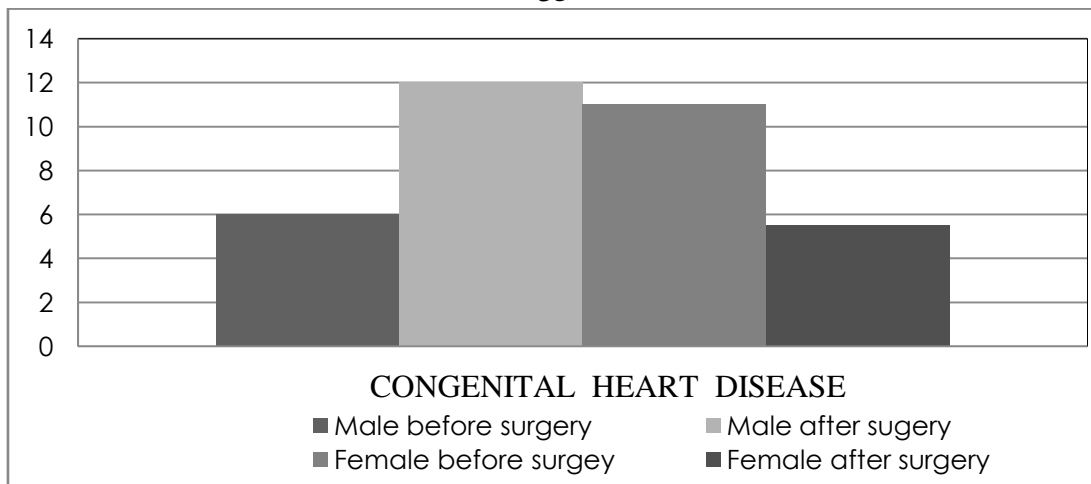
Before Surgery

Anxiety Level Comparison between CHD, RHD, IHD 50-65 Female



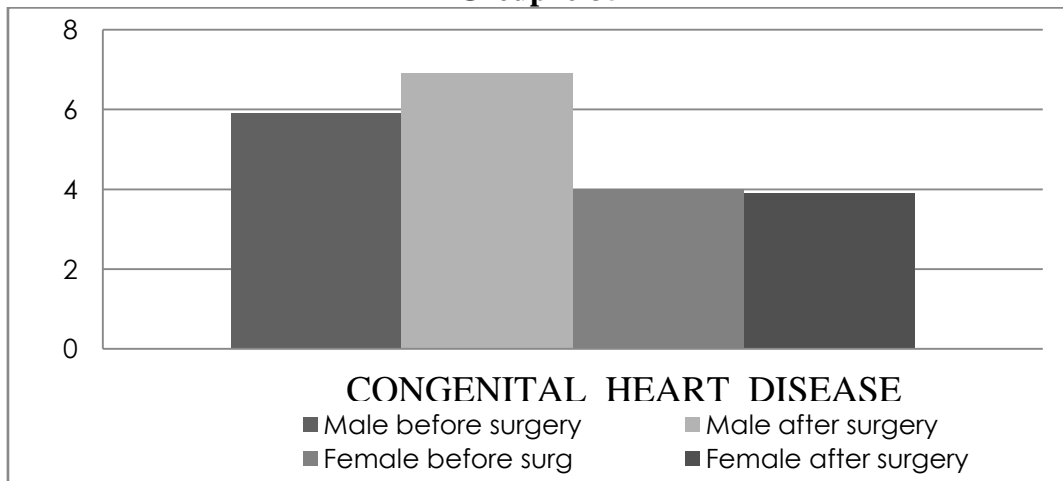
After Surgery

Anxiety Level Comparison between Male Female undergone OHS CHD Age Group 16-35



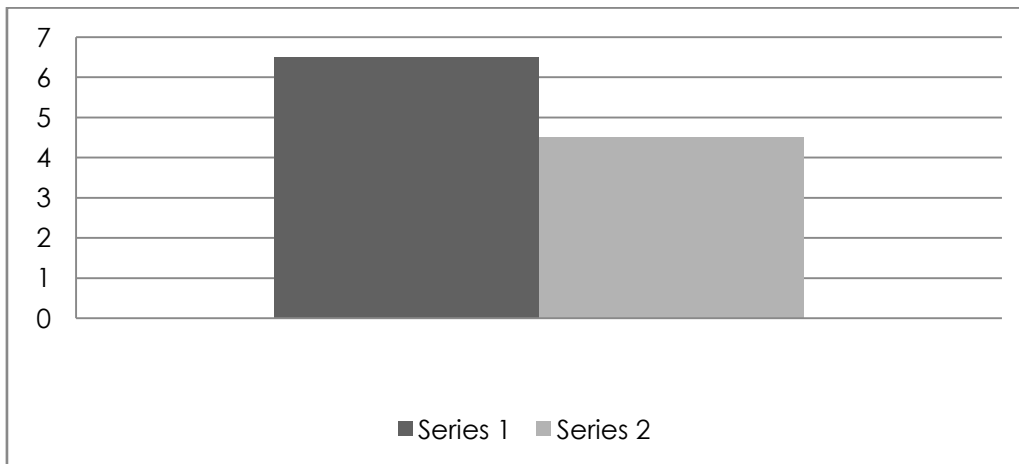
Before and After Surgery

Anxiety Level Comparison between Male & Female undergone OHS CHD Age Group 16-35



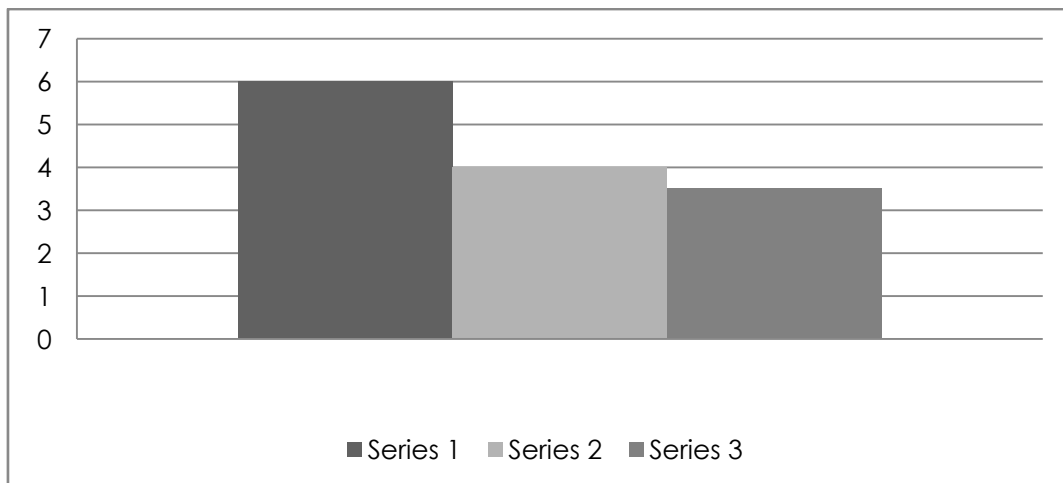
Male & Female Before and After Surgery

Anxiety Level of Patient undergoing OHS Rheumatic Heart Disease 50-65 Female



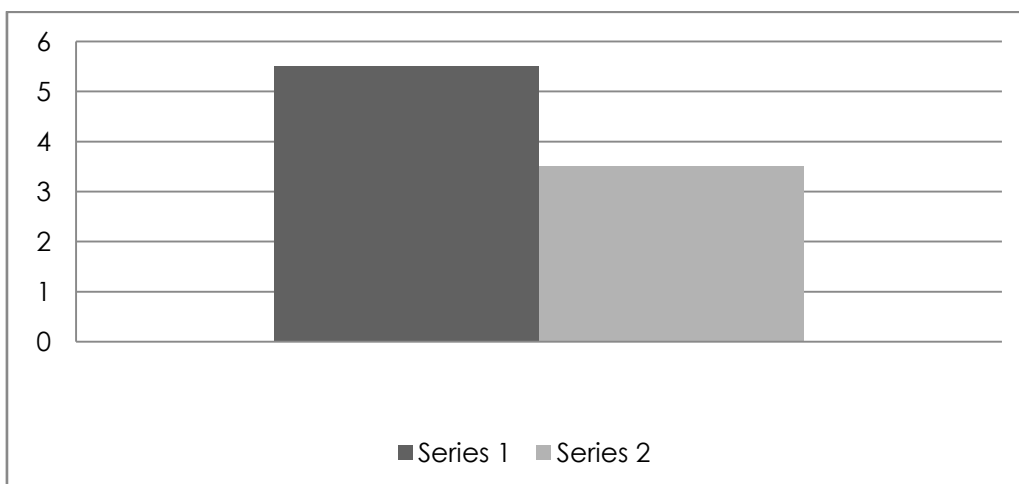
Before and After Surgery

Anxiety Level Comparison between CHD, RHD, IHD Male 15-35



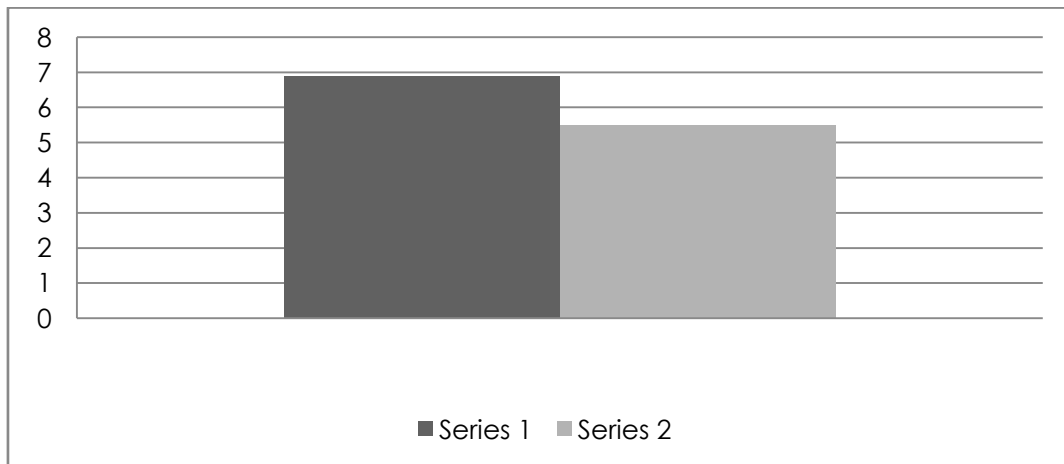
Before Surgery in Three Groups

Anxiety Level of Patient undergoing OHS Rheumatic Heart Disease 50-65 Male



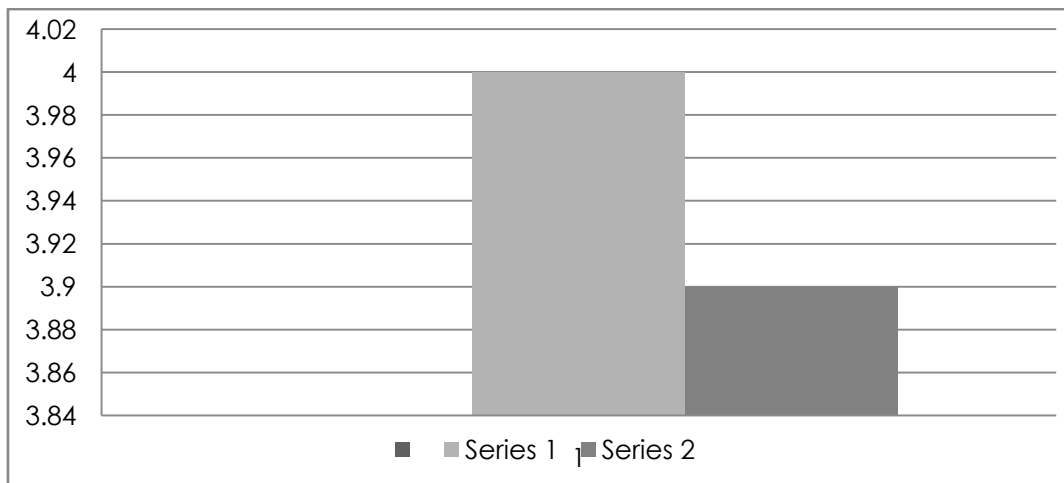
Before and After Surgery

Anxiety Level of Patient undergoing OHS Congenital Heart Disease 50-65 Female



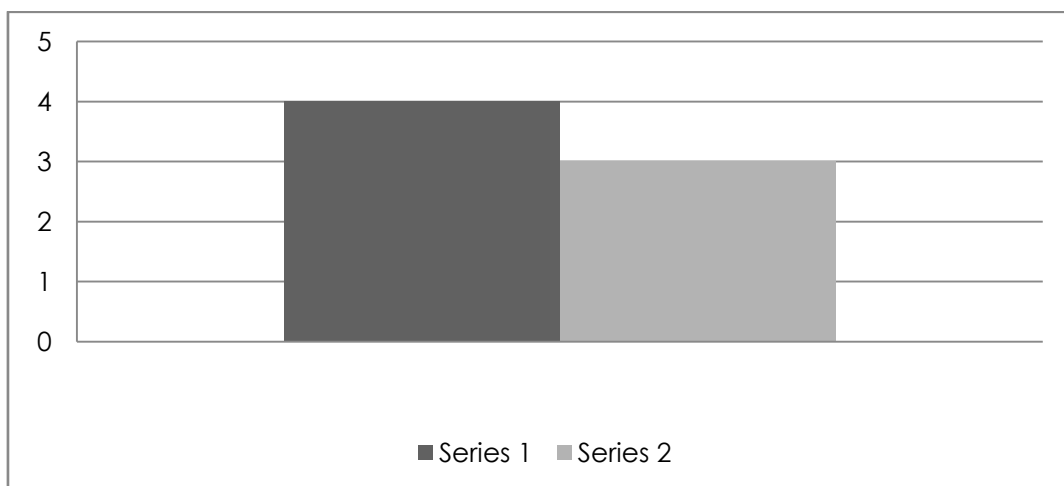
Before and After Surgery

Anxiety Level of Patient undergoing OHS Congenital Heart Disease 35-50 Female



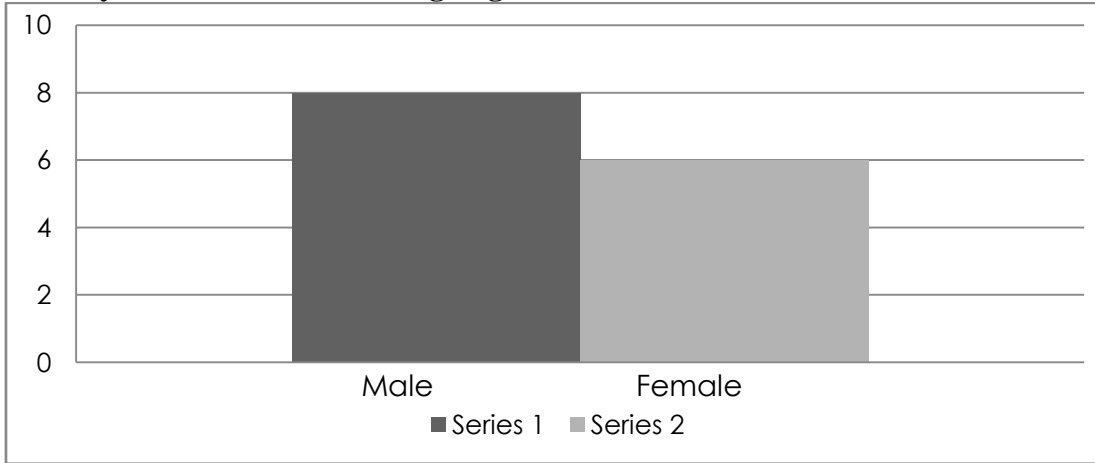
Before and After Surgery

Anxiety Level of Patient undergoing OHS Congenital Heart Disease 50-65 Female



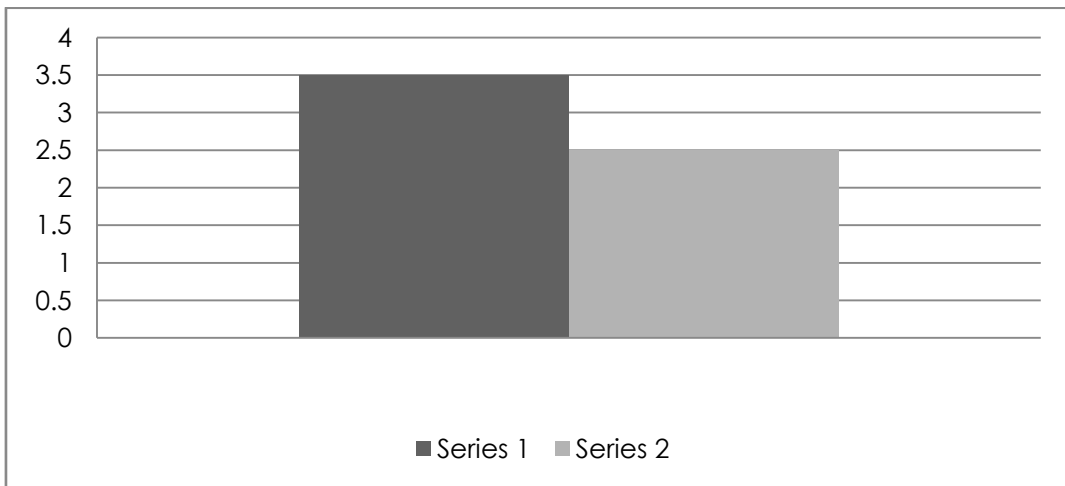
Before and After Surgery

Anxiety Level of Patient undergoing OHS Rheumatic Heart Disease 36-50 Male



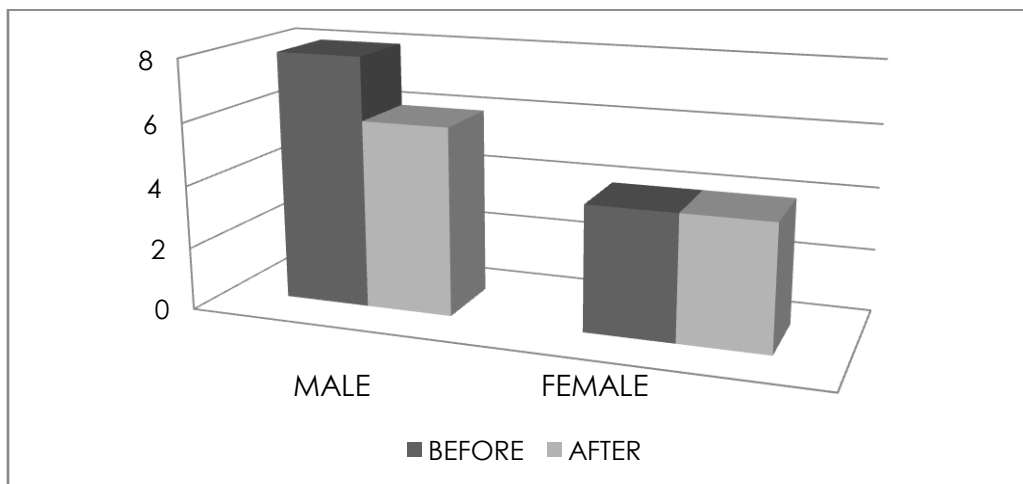
Before and After Surgery

Anxiety Level of Patient undergoing OHS Ischemic Heart Disease 16-35 Male

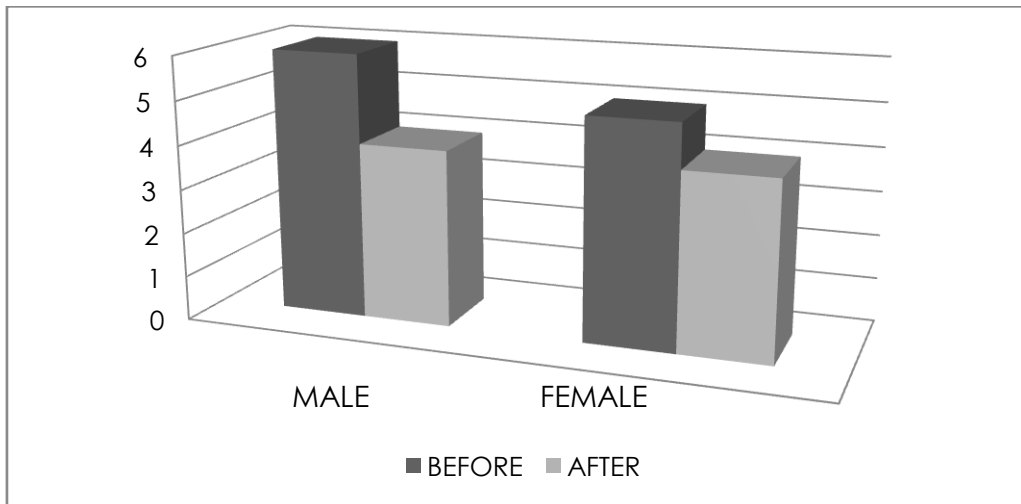


Before and After Surgery

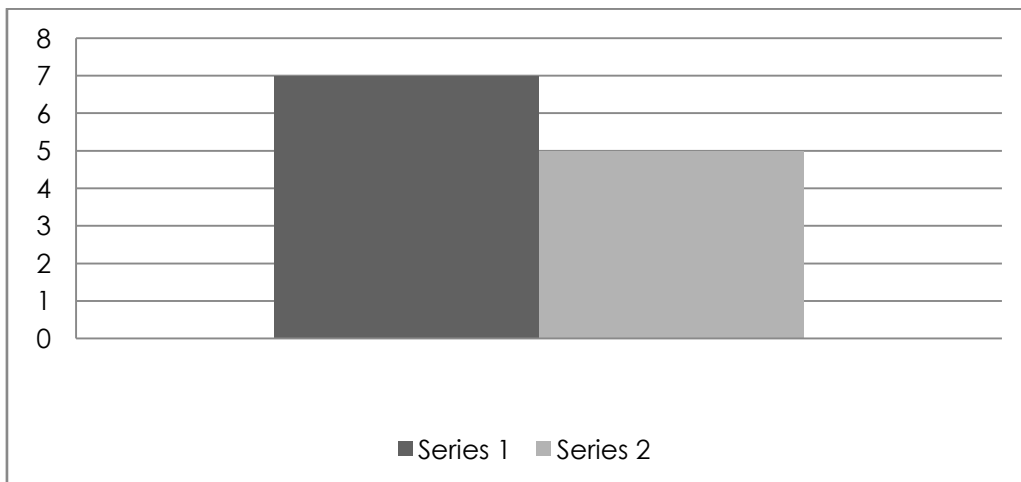
Anxiety Level of Patient undergoing Open Heart Surgery (CHD) Age Group 16-35 Comparison between Male and Female



**Anxiety Level of the Patient undergoing Open Heart Surgery (IHD) Age Group 51-65
Comparison between Male and Female**

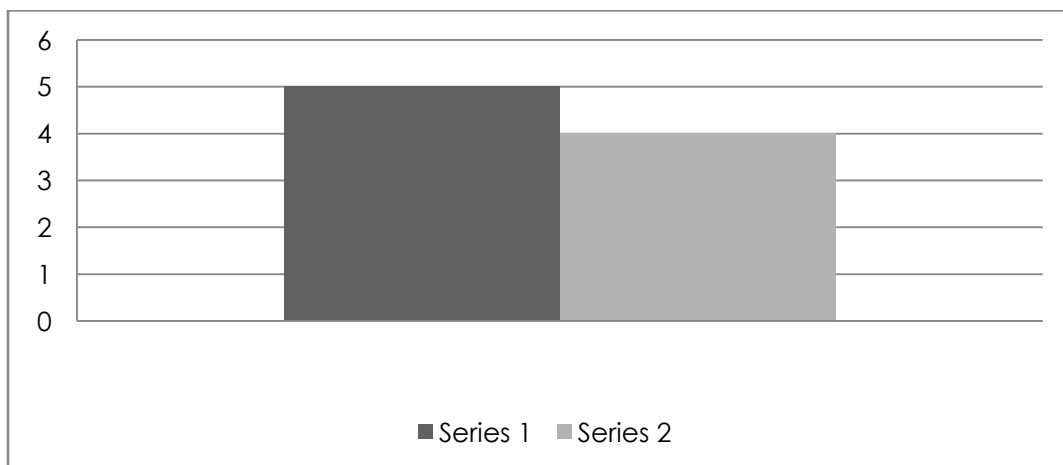


Anxiety Level of Patient undergoing OHS Rheumatic Heart Disease Male 16-35



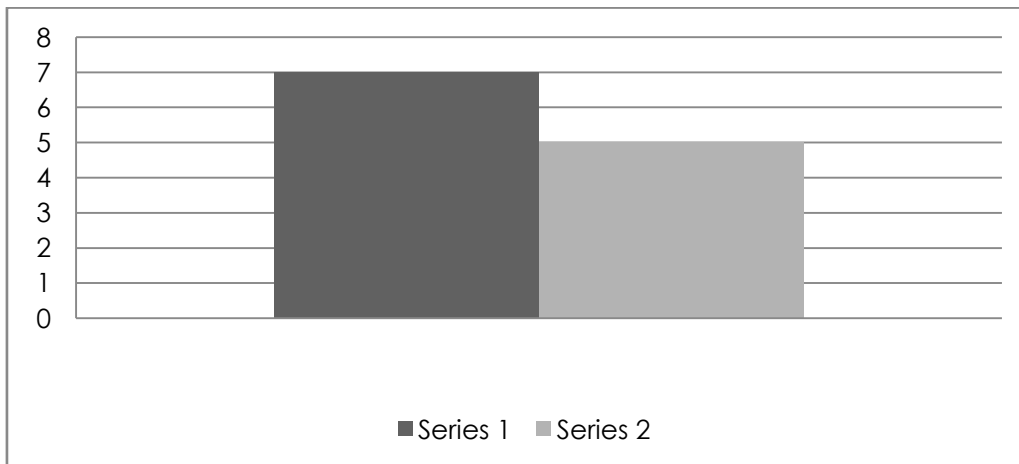
Before and After Surgery

Anxiety Level of the Patient undergoing OHS Rheumatic Heart Disease 36-50 Female



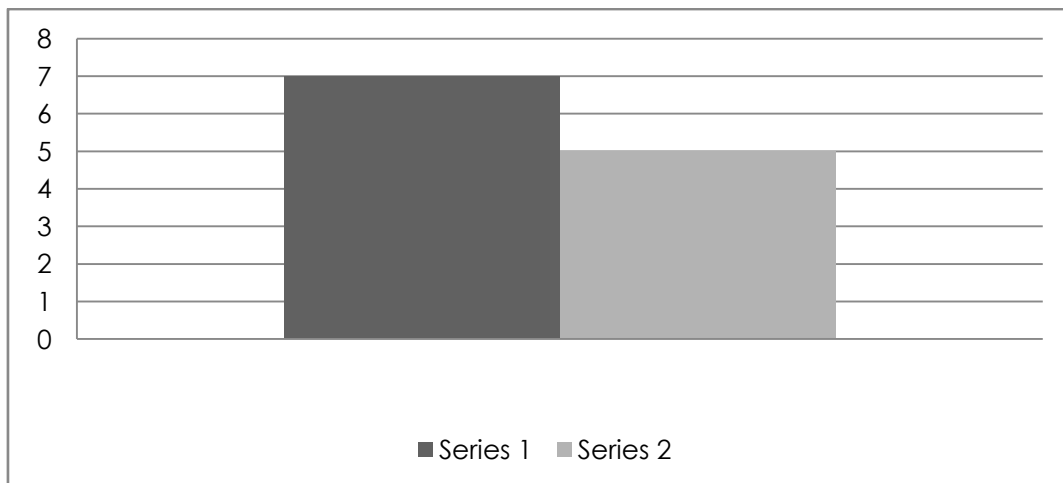
Before and After Surgery

Anxiety Level of the Patient undergoing OHS Ischemic Heart Disease 16-35 Female



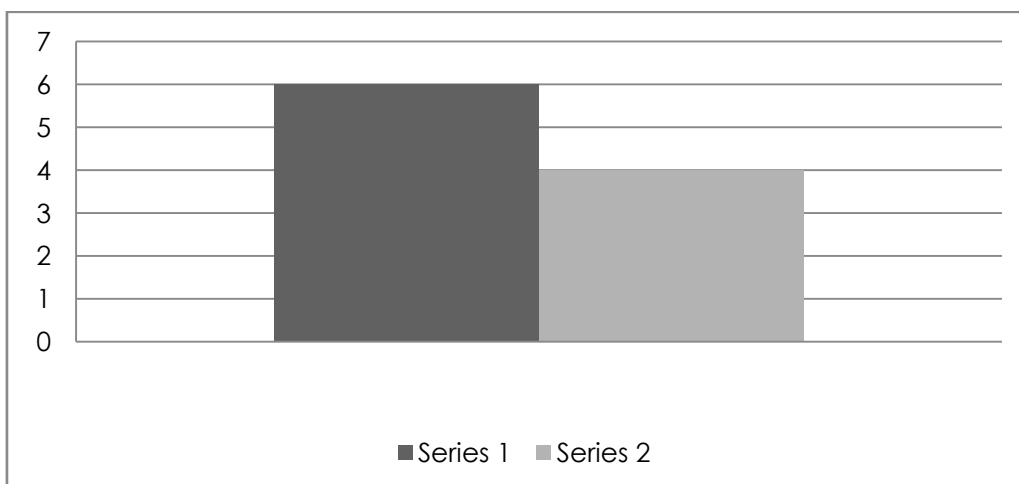
Before and After Surgery

Anxiety Level of the Patient undergoing OHS Rheumatic Heart Disease 36-50 Female



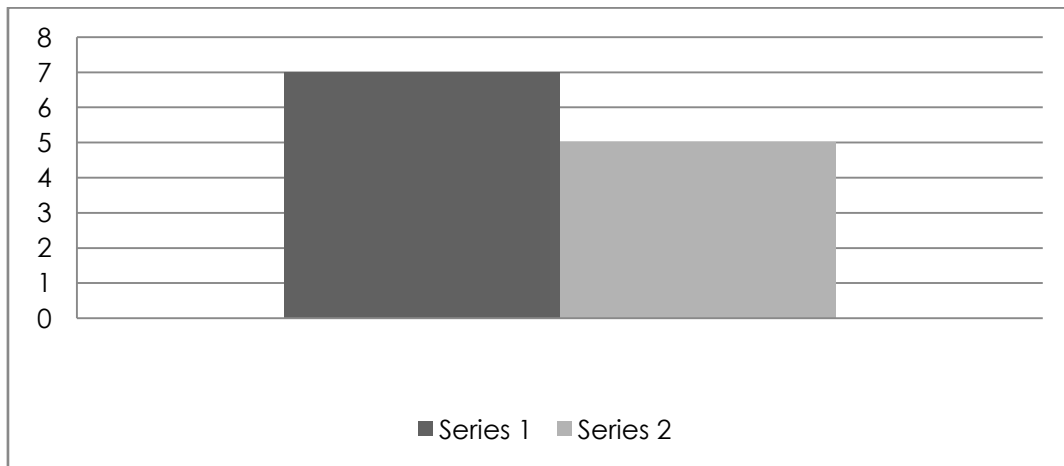
Before and After Surgery

Anxiety Level of the Patient undergoing OHS Rheumatic Heart Disease 36-50 Male



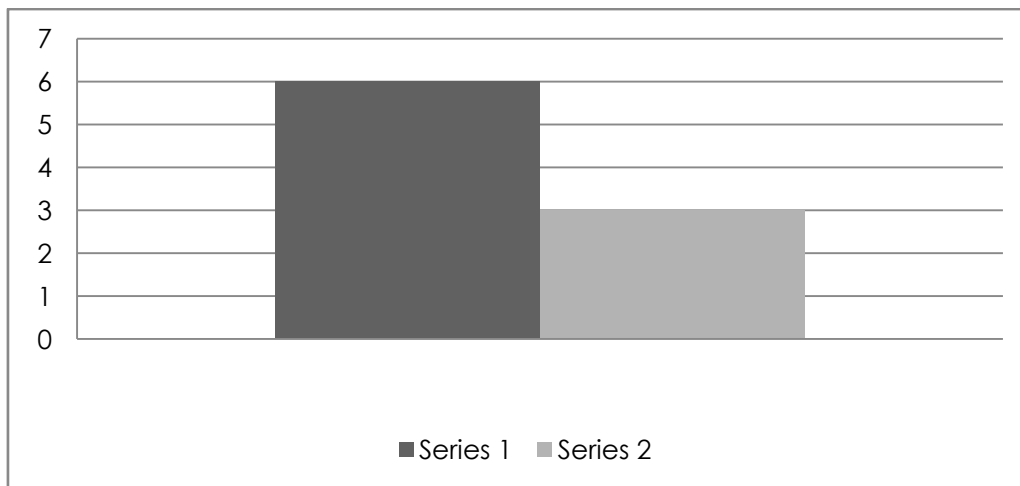
Before and After Surgery

Anxiety Level of the Patient undergoing OHS Ischemic Heart Disease 36-50 Male



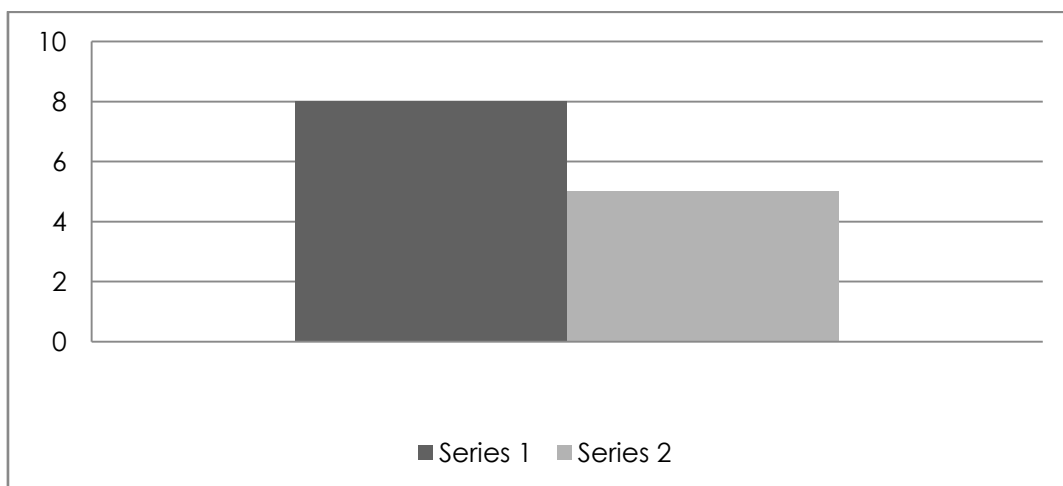
Before and After Surgery

Anxiety Level of the Patient undergoing OHS Ischemic Heart Disease 51-65 Female



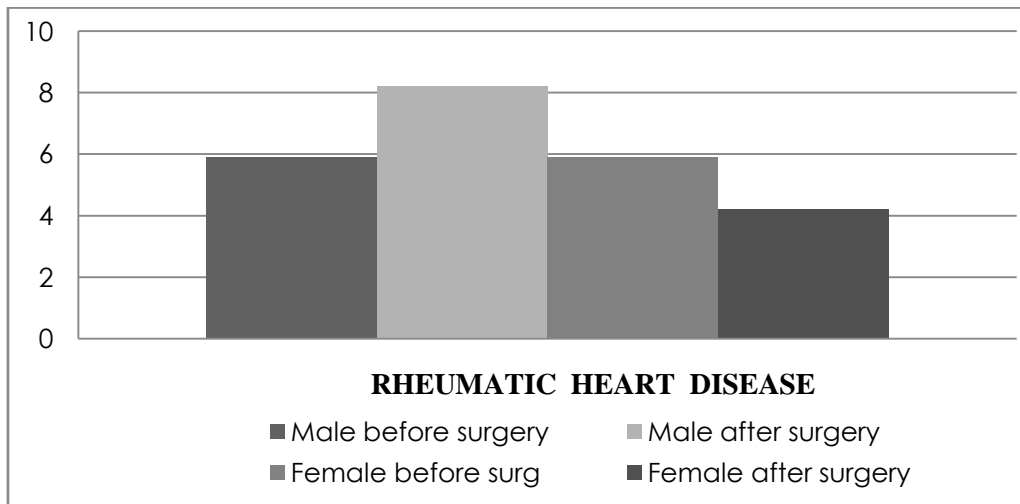
Before and After Surgery

Anxiety Level of Patient undergoing OHS Ischemic Heart Disease 51-65 Male



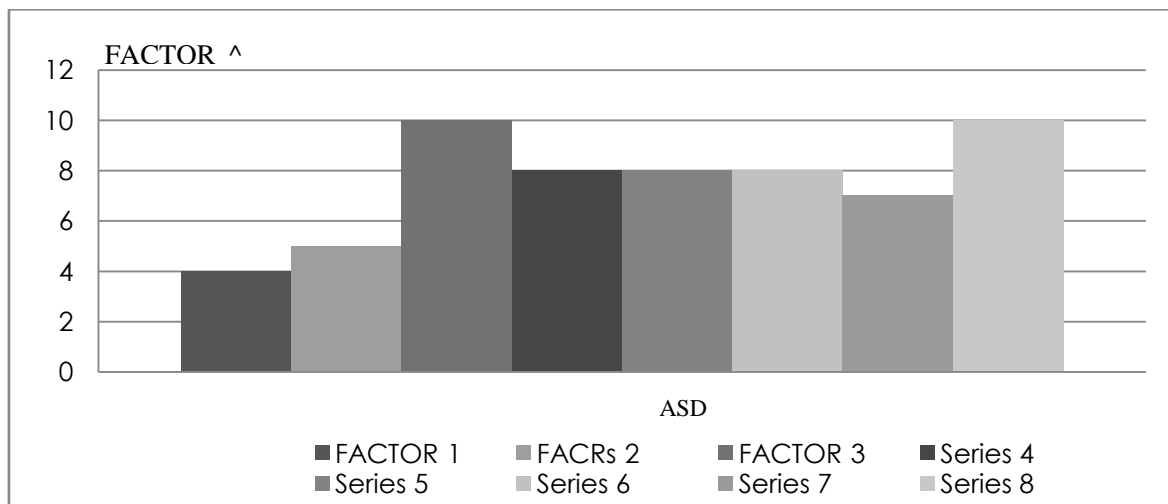
Before and After Surgery

Anxiety Level Comparison between Male Female undergoing OHS, RHD Age 35-50

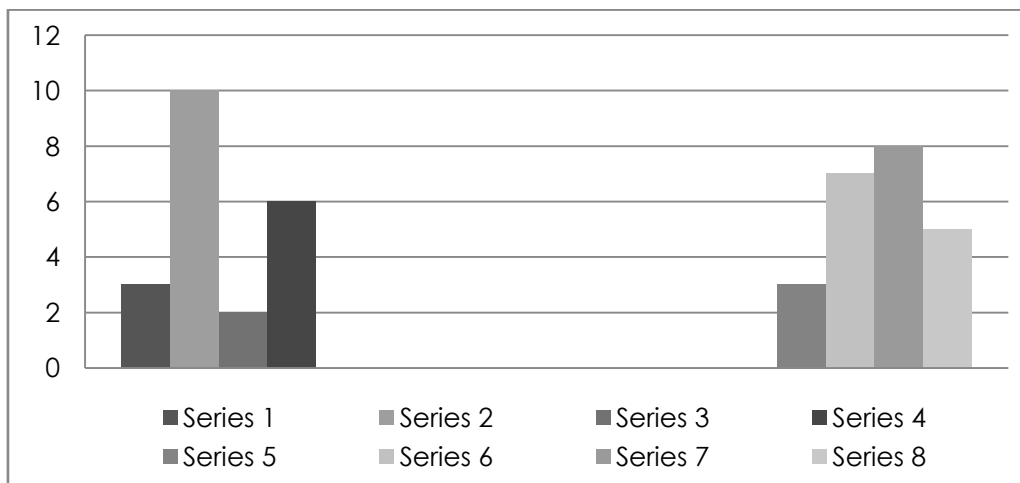


Male & Female Before and After Surgery

16-35 CHD

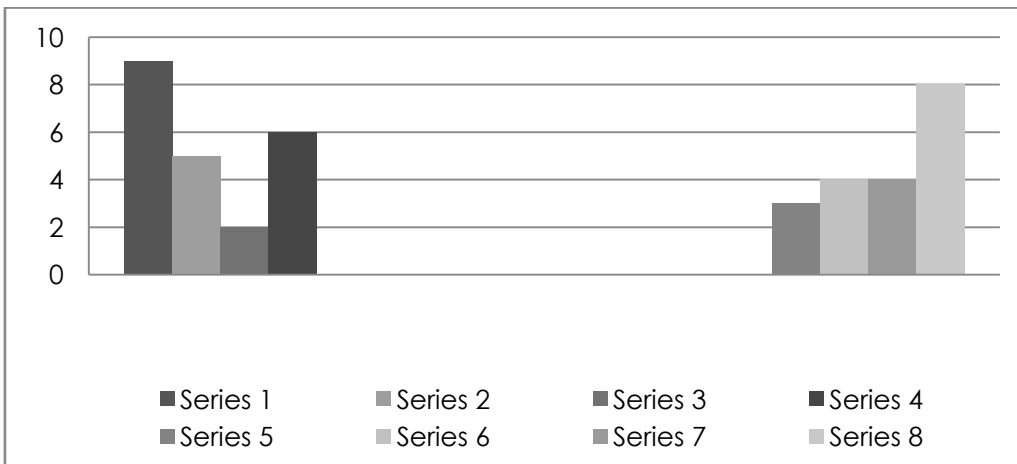


Open Heart Surgery 16-35 ASD Male Before and After Surgery



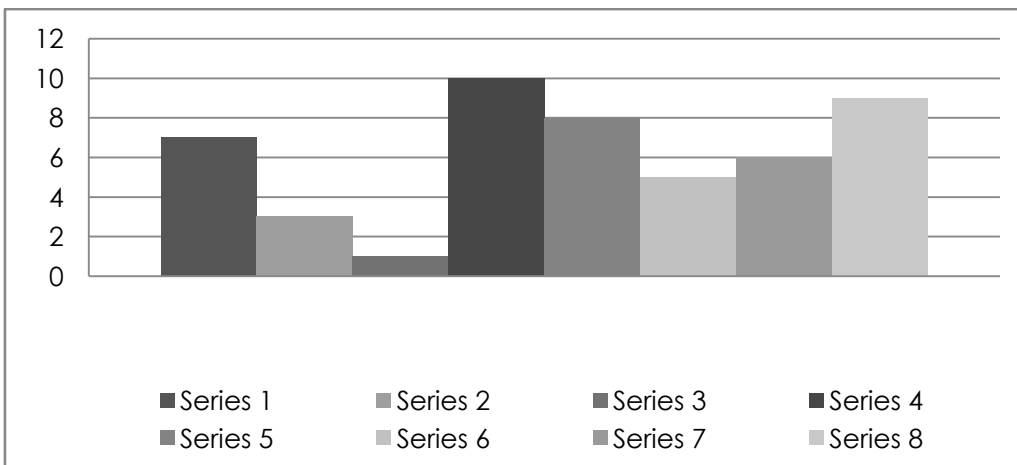
Congenital Heart Disease

Open Heart Surgery 16-35 VSD Male Before and After Surgery



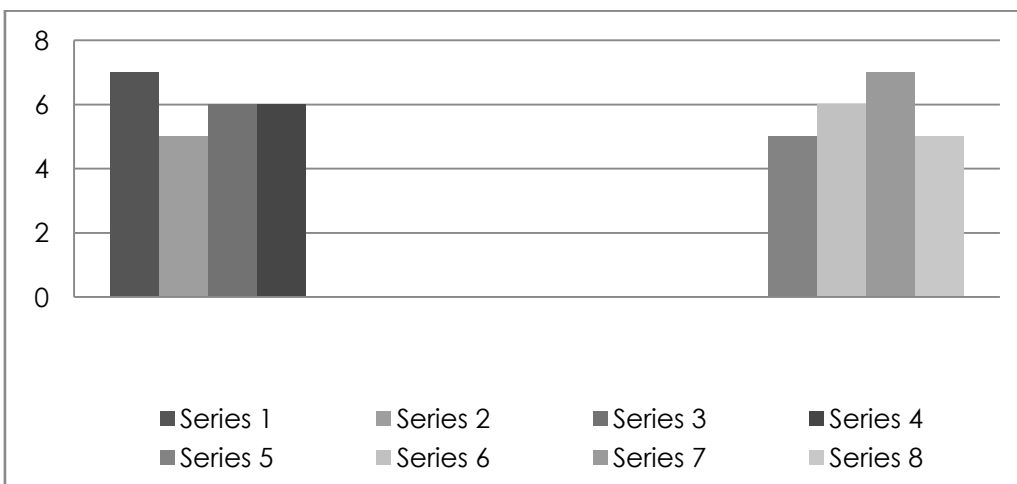
Personality Factors A B C E F G H I

Open Heart Surgery 16-35 Male Before and After Surgery



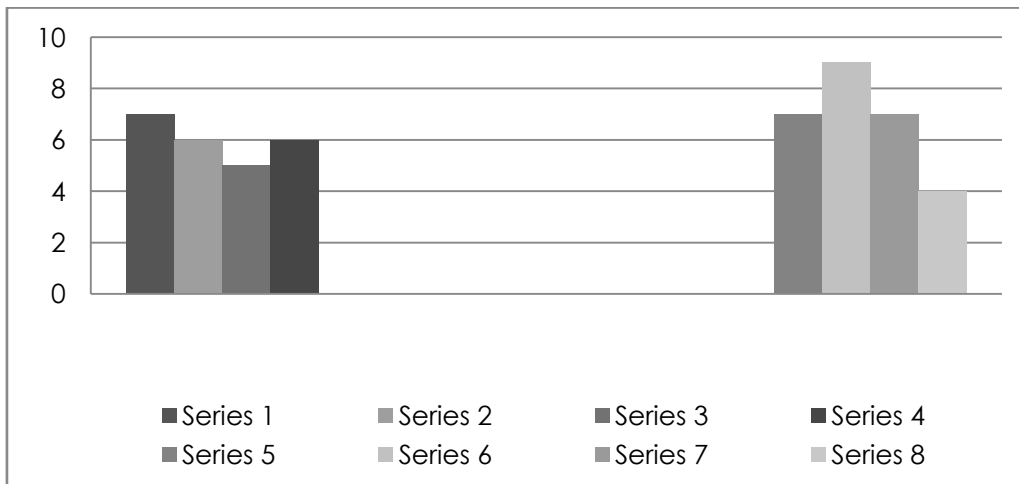
Personality Factors L M N O Q1 Q2 Q3 Q4

Open Heart Surgery 16-35 Male TOF Before and After Surgery



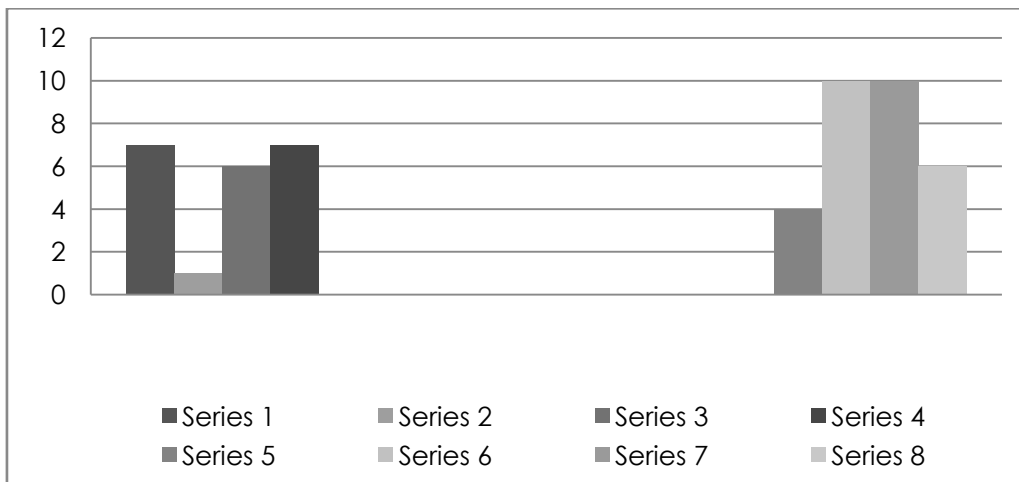
Personality Factors A B C E F G H I

Open Heart Surgery TOF 16-35 Male Before and After Surgery



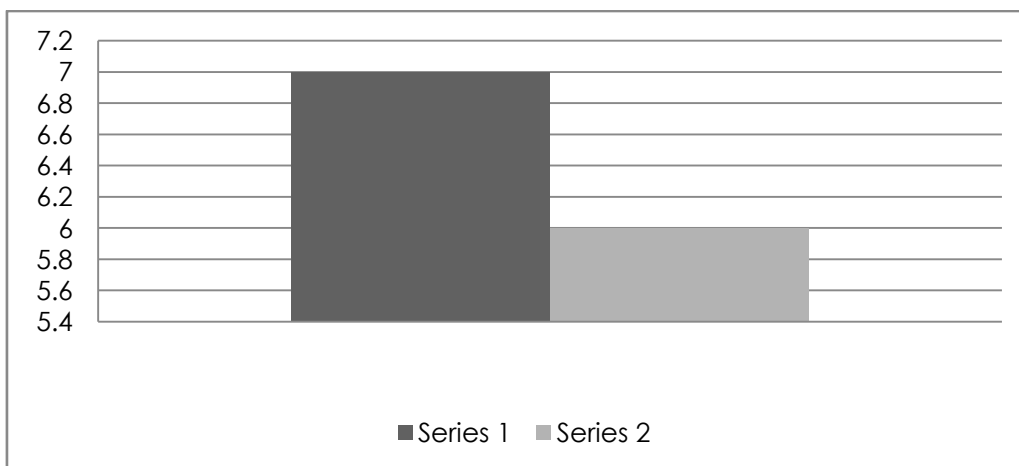
Personality Factors L M N O Q1 Q2 Q3 Q4

Open Heart Surgery 35-50 Male ASD Before and After Surgery



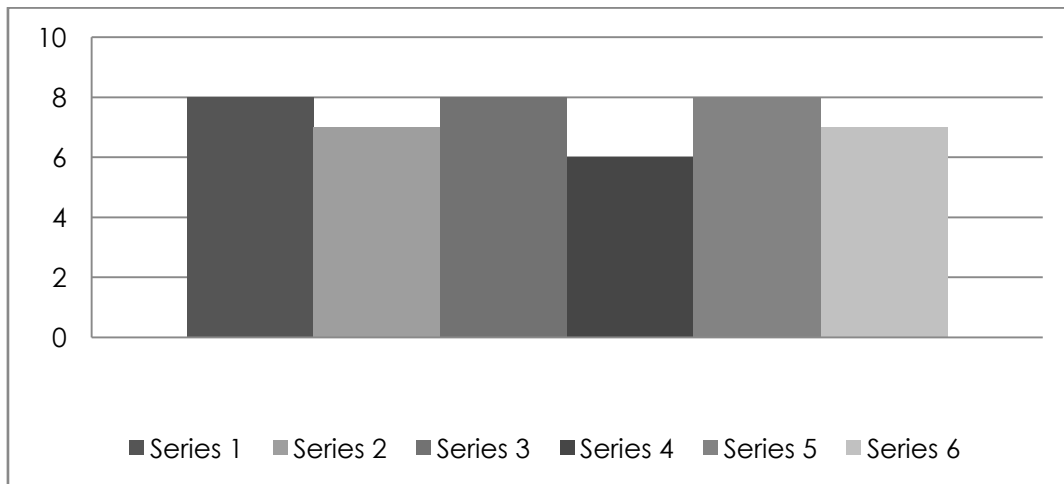
Personality Factors A B C E F G H I

Anxiety Level of the Patient undergoing OHS Ischemic Heart Disease 51-65 Male



Before and After Surgery

O.H. Surgery Locus of Control 16 65 Male & Female



Before and After Surgery

CHAPTER V

DISCUSSION

The purpose of the present study was to examine the socio-psychological analysis of the patients undergoing open heart surgery. The present research was planned to study the background of patients undergoing open heart surgery. The open heart surgery is broadly divided into 3 main type of surgery Congenital heart surgery, Rheumatic heart surgery, Ischemic heart surgery.

In this study we again sub divided each type of patients into 3 age groups of the following range 16 to 35 years, 36 to 50 years and 51 to 65 years. Each was divided into the sub group of age and was again divided into two group of male and female patients. In all 162 patients were taken up in this study.

The variables studied was anxiety, locus of control, internal, external and others r the personality factors. Matarazzo (1984) dioceses behaviour as “behavioral pathogens”, and behavioral immunogens’. With in his conceptualization type A behaviour would be considered as a behavioural pathogen. The patients undergoing open heart surgery are passing through a major cause of anxiety from death.

Obtained data were treated with the help of analysis of variance, t test and coefficient correlation. The obtain f ratio is insignificant for locus of control (internal, external and other) pre operative and post operative. The obtain F ratio for these variable was insignificant. Besides the overall comparison, the group of 16-65 male and female in the case of CHD consisting of ASD, VSD, TOF RHD consisting of MVR< AVR< DVR IHD consisting of 1 Vessels 2 Vessels 3 Vessels, were also made with the help of t test. These comparisons were intergroup and within group the tow groups did not show any significant difference in the mean, this the level of the locus of control, internal external and other are more or less the same. This shows the behaviour of personality in the he three type of surgery group IHD, CHD AND RHD in same before and after surgery.

In the case of means for the locus of control (external) in case of IHD was little high. House (1975) noted that people with extrinsic motivations for work, such as desire for status or money are likely to select stressful jobs for prestige they carry. In contrast those who are interested in the work itself are less swayed by external factors. Further more, it is clear that

many elements contribute to the subjective of a particular work environment. Obvious conditions such as heavy work load, greater responsibility may be harassing, but can also be perceived as challenging similarly, overwork is not simply a function of load but may result form a disorganised work strategy or failure to failure to delegate in each case the personal dimension must be added to measurement of external demands. This is reflected in the emphasis placed by any investigators on perceived work loaded and the job responsibility. (house et al 1979) Therefore, when we analyze the three group of 16-30, 31 to 50 and 51-65 of the patients for CABG have a higher level of anxiety and locus of control (external than other in the group. The factor which can be attributed to a higher anxiety level can be because these individual category of the people in this type of personality are working in the society for the organization or for themselves. Therefore it can also be their perception which rise the locus of control (external) level. Another individual difference variable which might affect perception of the environment is locus of control. In our compression of different groups. Locus of control (external dominates, followed by locus of control (others) and locus of control (internal.) Payne and Hariley (1987) found a positive correlation between perception of the severity of problem facing 399 unemployed men and an abbreviated measure of Rotter's locus of control. Payne's study (1988) has measured both anxiety and locus of control variables and their perception of environmental stress fullness of control (others) levels are high and they may be having a similar response to men in the Kraus and Styker (1984) study. In case of person it was show that people high in anxiety were more apt to be diagnosed as having angina pectoris than their better adjusted peers, although the two group had an equal incidence of objective vilified by CAD (costa and MC Grae 1982). The influence of anxiety operative at all adult ages, regardless and actual state of health. Finding dictate that even though older persons are subject to increased complaints and disorder specifically in the cardiovascular system they do not make disproportionately more physical complaints than young people. This was supper to by both cross sectional and longitudinal data (costa and macrae 1982). Successful efforts, commonly experienced during early adulthood as well as in privileged living condition are through to be harmless to the patients of cardiovascular system.

Fisher (1985) has reported a tendency for association between externality scores and underprivilage and poverty, the sample group selected for case study were well placed in life. According to the interview which the researches had with the patient, the patients had been through a crisis. The crises was either related to his job, business or family. In all the three

group in IHD, RHD, CHD so we can say that in order to identify the people with high anxiety level for surgery and personality of them person undergoing open heart surgery these variable of anxiety is very important.

The locus of control score of those male and female patients who under went open heart surgery in case of CHD, RHD, IHD, in case of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3 operation in the age group of 16 to 35 showed more or less similar locus of control before surgery as follows. They showed score of 12 on internal control, on powerful other score of 10, chance score of 15 and after the surgery it showed score of 12 on internal control, on powerful other score of 10, chance score of 15. This shows that there is no change in the locus of control score before and after surgery in the case of male and female patients. (Table No. 58 .) t value = .0887 which is insignificant.

The locus of control score of those male and female patients who under went open heart surgery in case of CHD, RHD, IHD, in case of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3 operation in the gae group of 36 to 50 showed locus of control before surgery as follows showed score of 10 on internal control, on powerful other score of 12, chance score of 14 and after the surgery it showed score of 12 on internal control, on powerful other score of 13, chance score 15. This shows that there is a change in the locus of control score before and after surgery in the case of male and femalepatients. (Table No. 59) . t value = .2357 which is insignificant.

The locus of control score of those male and female patients who under went open heart surgery in case of CHD, RHD, IHD in case of ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3 operation in the age group of 51 to 65 showed locus of control before surgery as follows showed score of 10 on internal control, on powerful other score of 12, chance score 13. This shows that there is no change in the locus of control score before and after surgery in the case of male and female patients. (Table No. 60). t value = .3970 which is insignificant.

The result of anxiety test conducted on male and female patients under going open heart surgery in the case of CHD patients of ASD, VSD, TOF, in the age group 16-35 showed raw score of 80 i.e extreme high anxiety type and after surgery it showed raw score of 70 i.e high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 60 t value = 2.4019, which is insignificant.

In the case of male and females patients undergoing open heart surgery in the case of RHD of AVR, MVR, DVR type in the age group of 16-35 showed raw score of 82 i.e. extreme high anxiety type, before surgery. After surgery it showed raw score of 72, i.e. of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 61 t value = 2.4019 which is insignificant.

The result of anxiety test conducted on male and female patients under going open heart surgery in the case of RHD patients of AVR, MVR, DVR, in the age group 36-50 showed raw score of 72 i.e of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 62 t value = 4.4360 which is insignificant.

In the case of male and female patients undergoing open heart surgery in the case of RHD of AVR, MVR, DVR type in the age group of 51-65 showed raw score of 88 i.e. extreme high anxiety type, before surgery. After surgery it showed raw score of 74, i.e. of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 63 t value = 4.4360 which is insignificant.

The result of anxiety test conducted on male and female patients under going open heart surgery in the case of CHD patients of ASD, VSD, TOF in the age group 16 - 35 showed raw score of 75 i.e extreme high anxiety type and after surgery it showed raw score of 70 i.e of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 64 t value = .1657 which is insignificant.

In the case of male and females patients undergoing open heart surgery in the case of CHD of ASD, VSD, TOF type in the age group of 36 -50 showed raw score of 85 i.e. extreme high anxiety type, before surgery. After surgery it showed raw score of 70, i.e. of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 65 t value = .7559 which is insignificant.

The result of anxiety test conducted on male and female patients under going open heart surgery in the case of CHD patients of ASD, VSD, TOF in the age group 51 - 65 showed raw score of 75 i.e extreme high anxiety type and after surgery it showed raw score of 70 i.e of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 65 t value = .3970 which is insignificant.

In the case of male and females patients undergoing open heart surgery in the case of CHD of ASD, VSD, TOF type in the age group of 36 -50 showed raw score of 85 i.e. extreme high anxiety type, before surgery. After surgery it showed raw score of 70, i.e. of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 66 t value = .3509 which is insignificant.

The result of anxiety test conducted on male and female patients under going open heart surgery in the case of IHD patients of CABG 1, CABG 2, CABG 3 in the age group 16 - 35 showed raw score of 75 i.e extreme high anxiety type and after surgery it showed raw score of 70 i.e of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 67 t value = 2.4019 which is insignificant.

In the case of male and females patients undergoing open heart surgery in the case of IHD of CABG 1, CABG 2, CABG 3 type in the age group of 51 - 65 showed raw score of 85 i.e. extreme high anxiety type, before surgery. After surgery it showed raw score of 70, i.e. of high anxiety type. There is not a marked change in the anxiety level before and after surgery. The anxiety level is on the higher side before and after surgery, in this group. Table No. 69 t value = .7559 which is insignificant.

The results of Cattels 16 PF test conducted on male and females before and after the open heart surgery in the group of CHD, RHD, IHD for operation ASD, VSD, TOF, AVR, MVR, AVR, CABG 1, CABG 2, CABG 3 in the age group 16 – 35 of is as follows:-

The subjects have got raw score of 9 for factor A with sten score of 4 this shows, that the subjects have got an average trait on the reserved vs outgoing trait. Reserved . detached, critical cool (Sizothymia) The person who scores low (sten of 1 to 3) tends to be stiff cool skeptical and aloof. He likes things rather than people working alone and avoiding

compromise of view points. He is likely to be precise and rigid in his way of doing things and in personal standards and in many occupations. These are desirable traits. He may tend at times to be critical obstructive or hard. Vs. Out going- Warmhearted Easy going participating (Affectothymia) The person score high (sten of 8 to 10) tends to be good natured, easy going, emotionally expressive, ready to co-operative, attentive to people, soft hearted, kindly adaptable. He likes occupations dealing with people and socially impressive situation. He readily forms active groups. He is generous in personal relations less afraid of criticism better able to remember names of people. Table No. 10 t value = 1.51 which is insignificant.

They possess both detached and easy going personality. The subjects have got a raw score of 6 for factor B with sten score of 5. This shows that the subjects have got an average degree on intelligence. LESS INTELLIGENT Concrete thinking (Lower Scholastic mental capacity) The person scoring low tends to be slow to learn and grasp, dull, given to concrete and literal Interpretation. His dullness may be simply a reflection of low intelligence. or it may represent poor functioning due to psychopathology. Vs. More Intelligent Abstract thinking, Bright (Higher Scholastic mental capacity) The person is quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture and some with alertness. High scores contra indicates deterioration of mental functions in pathological functions. Table No. 11 t value = 1.97 which is insignificant.

The subject have got raw score of 12 for factor C with sten score of 6. This shows that the subjects have got an average trait in between that of effected by feeling vs. emotionally stable type. Affected By Feelings Emotionally less stable easily up set (Lower ego strength) The person is low in frustration tolerance for unsatisfactory condition changeable and plastic, evading necessary reality demands, neurotically fatigued easily emotional and annoyed, active in dissatisfaction having neurotic symptoms (Phobias, sleep disturbances, psychosomatic complaints etc.). Vs. Emotionally Stable Faces reality, calm, mature (Higher ego strength) The person is emotional mature, stable, realistic about life, unruffled, possessing ego, strength, better able to maintain solid group moral. Sometimes he may be a person making a resigned adjustment to unsolved emotional problems. Table No. 12 value of t = 3.3567 which is insignificant.

The subjects have got a raw score of 16 for factor E with score of 7. This shows that the subjects have got an average trait in between that of humble vs. assertiveness type. Humble Accommodating, Conforming (Submissiveness) The person tends to give way to others, to be

docile and to conform. He is often dependent, confessing, anxious for obsessional correctness. This passivity is part of many neurotic. Vs. Assertive Independent, aggressive, competitive, stubborn (Dominance) The person is assertive, self assured and independent minded. He tends to be a law to himself, hostile or extra punitive, authoritarian and disregards authority. Table No. 13 value of $t = 1.0787$ is insignificant.

The subjects have got a raw score of 14 for factor F with sten score of 6 this shows that the subjects have got an average trait in between that of sober vs happy go lucky type. Sober Prudent, Serious, Taciturn (Desurgency) The person is retained, introspective. He is sometimes, pessimistic unduly deliberates, and considered by observers. He tends to be a sober, dependable person. Vs. Happy go Lucky Impulsively lively, Enthusiastic (Surgery). The person tends to be cheerful active talkative, frank expressive often carefree. He is frequently chosen as an elected leader. He may be impulsive and merciful. Table No. 14 value of $t = 1.2318$ which is insignificant.

The subjects have got a raw score of 16 for factor G with sten score of 7. This shows that the subjects have an average degree on conscientious trait with an average degree on super ego strength. Expedient Evades rules feels few obligations (weaker super ego strength). The person tends to be un study in purpose. He is often casual and lacking in effort for group undertaking and cultural demands. His freedom from group influence may lead to anti social acts but at times makes his refusal to be bound by rules. Vs Conscientious Persevering, Rule bonds (stronger supergo strength) The person is exaggerating in character dominated by sense of duty persevering responsible painful. He is usually conscientious and moralistic prefers hard working people to witty companions. The inner categorical imperative of this essential supergo should be distinguished from superfiscally similar social ideal self of Q3. Table No. 15 value of $t = .812$ which is insignificant.

The subjects have got a raw score of 12 for factor H with sten score of 7. This shows that the subjects have an average trait in between that of shy vs venture some type. Shy Restrained Diffident, Timid (Thretia) The person is shy withdrawing, cautions. He has usually has inferiority feeling. He tends to be slow and impeded in speech and in expressing himself dislikes occupations with personal contacts prefers one or few close friends to large groups and is not given to keeping in contact with all that is going on around him. Vs. VENTURESOME Socially bold uninhibited, spontaneous (Parmia) The high scorer on this factor in sociable, bold ready to try new things, spontaneous and abroubt in emotional

response. His thick kindness enables him to face wear and tear in dealing with people and quarreling emotional situations without fatigue. However he can be careless of detail, ignores danger, signals and consumes much time in talking. He tends to be pushy and actively interested in the opposite sex. Table No. 16 value $t = .7365$ which is insignificant.

The subjects have got a raw score of 12 for factor I with sten score of 7 this shows that the subjects have an average trait in between that of tender minded vs tough minded. Tough Minded Self-reliant Realistic No Nonsense (Harria) The low score in this factor is practical, realistic, masculine, independent, responsible but skeptical of subjective cultural, elaboration. He is sometimes unmoved, hard, cynical and snug. He tends to keep a group, operating on a practical and realistic no-nonsense basis. Vs Tender Minded Dependent, over-protected, sensitive (premsia). The persons tends to be tender-minded, day dreaming, artistic, fast and is feminine. He is sometimes demanding of attention and help, impatient, dependent, impracticable. He dislikes crude people and rough occupation. He tends to slow up group performance and to upset group morality unrealistic confusion. Table No. 17 value of $t = 1.5711$ which is insignificant.

The subjects have got a raw score of 9 for factor L with the score of 7 this shows that the subjects have an average trait in between that of trusting vs suspicious type. Trusting Adaptable free of jealousy easy to get on with (Alaxia) The person tends to be free of jealous tendencies, adaptable cheerful, uncompetitive, concerned about other people, a good team worker. Vs. Suspicious Self opinionated Hard to fool (protension) The person is mistrusting and doubtful. He is often involved in his own ego, is self opinionated and interested in internal mental life. He is usually deliberate in his actions unconcerned about other people a poor team member. Table No. 18 value of $t = 3.0227$ which is insignificant.

The subjects have got a raw score of 14 for factor M with the score of 6. This shows that the subjects have an average trait in between that of practical vs imaginative type. Practical Careful conventional Regulated by external Realities, Proper (Praxernia). The person is anxious to the right things attentive to practical matters and subject of the dictation of what is obviously possible. He is obviously possible. He is concerned over detail, able to keep his head in emergencies but sometimes unimaginative. Vs Imaginative Wrapped up in inner urgencies careless of practical matters Absent-minded (Autia). The Person is unconventional unconcerned over every day matters, self motivated imaginatively creative, concerned with essentials and obvious of particular people and physical realities. His inner- directed interest

sometimes lead to the unrealistic situations accompanied by expressive out trusts. They individuals tend to cause him to be rejected in group activities. Table No. 19 value $t = .2291$ which is insignificant.

The subjects have got a raw score of 8 for factor N with the score of 5. This shows that the subjects have got an average trait in between that of forthright vs shrewed type. Forthright Natural, artless, sentimental (Artlessness) The low scores here is unsophisticated, sentimental and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous. Vs. Shrewd Calculating, worldly, Penetrating (Shrewdness) The high scores is polished experienced, worldly shrewd. He is often hardheaded and analytical. He has an intellectual approach to situations, an approach a kin to cynicism. Table No. 20 value of $t = 1.5119$ which is insignificant.

The subjects have got a raw score of 10 for factor O with sten score of 6. This shows that the subjects have got an average trait in between that of placid vs apprehensive type. Placid Self assured, confident, Serene (Untroubled adequacy) The person tends to be placid, with unshakable nerve. He has a nature unconscious confidence in himself and his capacity to deal with things. He is relisent and seems but to the point of being insensitive of when a group is not going along with him, so that he makes, antipathies and distrust. Vs. Apprehensive Worrying Depressive troubled (Guild Pronessness) The person tends to be depressed, melodies worries full of foreboding and boring. He has a child like tendency to anxiety in difficulties. He does not feel accepted in groups or free to participate. Table No. 21 value $t = 1.7889$ which is insignificant.

The subjects have got a raw score of 11 for factor Q1 with a score of 7. This shows that the subjects have got an average trait in between that of conservative vs experimenting type. Conservative Respecting, established ideas, tolerant of traditional difficulties (Conservatism) The low scores in confident in what he has been thought to believe, and accepts the “tried and true” despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas. Thus he tends to oppose and postpone changes, is indicated to go along with tradition is more conservative in religion and politics, and tends not to be interested in analytical “Intellectual” thought. Vs. Experimenting Critical, Liberal, Analytical free thinking (Radicalism) The person is interested in intellectual matters and has doubts on the fundamental issues. He is skeptical and inquiring regarding ideas, either old or new. He tends to be more well informed less inclined to mobilize, more inclined to

experiment in life, and more tolerant of inconvenience and change. Table No. 22 value of $t = 1.5119$ which is insignificant.

The subjects have got raw score of 16 for factor Q2 with the score of 7. This shows that they have an average trait in between that of group dependent vs self sufficient type. Group dependent A “Joiner” and sound Follower (Group adherence) This indicates a preference to work and make decision with other people likes and depends on social approvals and admiration. He tends to go along with the group and may be locking in individual resolution. He is not necessarily gregarious by choice, rather he needs group support. Vs. Self Sufficient Prefers own decisions Resourceful (Self-Sufficient) The person is temperamentally independent, accustomed to going his own way making decision and taking action on his own. He discounts public opinion but is not necessarily dominant in his relations with other. He does not dislike people simply does not need their agreement or support. Table No. 23 value of $t = 1.9311$ which is insignificant.

The subjects have got a raw score of 16 for factor Q3 with a score of 7. This shows that the subjects have an average trait in between that of undisciplined self conflict vs controlled trait. Undisciplined Self- conflict Careless of protocol. Follows own urges (Low integration) The person will not be bothered with will control and regard for social demands. He is not oversell considerate, careful or pains taking. He may feel mattered gusted, and may males adjustment shows Q3 Vs. Controlled socially precise Following self-image (High self concept control) The person tends to have strong control of his emotion and general behaviors, is inclined to be socially aware and careful, and evidence what is commonly termed self-respect and regards for social repulsions Table No. 24 value of $t = .1011$ which is insignificant.

The subjects have got a raw score of 8 for factor Q4 with a score of 4 this shows that the subjects have an average trait in between that of relaxed vs tense type. Relaxed Tranquil, Torpid, Unfrustrated (Low Ergic Tension) The person tends to be sedate, relaxed, composed and satisfied. In some situation his over satisfaction can lead to laziness and low performance in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance. Vs. Tense Frustrated, Drives, Over worked (High ergic Tension) The person is tense, excitable, restless, fretful, impatient. He is often fatigued but unable to remain inactive. In groups he takes a poor view of the degree of units,

orderliness and leadership. His frustration represents an excess of stimulated, but undischarged drives. Table No. 25 value of $t = 2.5882$ which is insignificant.

The results of Cattell's 16 PF test conducted on male and females before and after the open heart surgery in the group of CHD, RHD, IHD for operation ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3 in the age group 36 – 50 of is as follows:-

The subjects have got raw score of 9 for factor A with sten score of 4 this shows, that the subjects have got an average trait on the reserved vs outgoing trait. Reserved . detached, critical cool (Sizothymia) The person who scores low (sten of 1 to 3) tends to be stiff cool skeptical and aloof. He likes things rather than people working alone and avoiding compromise of view points. He is likely to be precise and rigid in his way of doing things and in personal standards and in many occupations. These are desirable traits. He may tend at times to be critical obstructive or hard. Vs. Out going- Warmhearted Easy going participating (Affectothymia) The person score high (sten of 8 to 10) tends to be good natured, easy going, emotionally expressive, ready to co-operative, attentive to people, soft hearted, kindly adaptable. He likes occupations dealing with people and socially impressive situation. He readily forms active groups. He is generous in personal relations less afraid of criticism better able to remember names of people. Table No. 26 t value = 1.5119 which is insignificant.

They possess both detached and easy going personality. The subjects have got a raw score of 6 for factor B with sten score of 5. This shows that the subjects have got an average degree on intelligence. LESS INTELLIGENT Concrete thinking (Lower Scholastic mental capacity) The person scoring low tends to be slow to learn and grasp, dull, given to concrete and literal Interpretation. His dullness may be simply a reflection of low intelligence. or it may represent poor functioning due to psychopathology. Vs. More Intelligent Abstract thinking, Bright (Higher Scholastic mental capacity) The person is quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture and some with alertness. High scores contra indicates deterioration of mental functions in pathological functions. Table No. 27 t value = 1.9757 which is insignificant.

The subject have got raw score of 12 for factor C with sten score of 6. This shows that the subjects have got an average trait in between that of effected by feeling vs. emotionally stable type. Affected By Feelings Emotionally less stable easily up set (Lower ego strength) The person is low in frustration tolerance for unsatisfactory condition changeable and plastic, evading necessary reality demands, neurotically fatigued easily emotional and annoyed,

active in dissatisfaction having neurotic symptoms (Phobias, sleep disturbances, psychosomatic complaints etc.). Vs. Emotionally Stable Faces reality, calm, mature (Higher ego strength) The person is emotional mature, stable, realistic about life, unruffled, possessing ego, strength, better able to maintain solid group moral. Sometimes he may be a person making a resigned adjustment to unsolved emotional problems. Table No. 28 value of $t = 3.3567$ which is insignificant.

The subjects have got a raw score of 16 for factor E with score of 7. This shows that the subjects have got an average trait in between that of humble vs. assertiveness type. Humble Accommodating, Conforming (Submissiveness) The person tends to give way to others, to be docile and to conform. He is often dependent, confessing, anxious for obsessional correctness. This passivity is part of many neurotic. Vs. Assertive Independent, aggressive, competitive, stubborn (Dominance) The person is assertive, self assured and independent minded. He tends to be a law to himself, hostile or extra punitive, authoritarian and disregards authority. Table No. 29 value of $t = 1.0787$ which is insignificant.

The subjects have got a raw score of 14 for factor F with sten score of 6 this shows that the subjects have got an average trait in between that of sober vs happy go lucky type. Sober Prudent, Serious, Taciturn (Desurgency) The person is retained, introspective. He is sometimes, pessimistic unduly deliberates, and considered by observers. He tends to be a sober, dependable person. Vs. Happy go Lucky Impulsively lively, Enthusiastic (Surgery). The person tends to be cheerful active talkative, frank expressive often carefree. He is frequently chosen as an elected leader. He may be impulsive and merciful. Table No. 30 value of $t = 1.2318$ is insignificant.

The subjects have got a raw score of 16 for factor G with sten score of 7. This shows that the subjects have an average degree on conscientious trait with an average degree on super ego strength. Expedient Evades rules feels few obligations (weaker super ego strength). The person tends to be un study in purpose. He is often casual and lacking in effort for group undertaking and cultural demands. His freedom from group influence may lead to anti social acts but at times makes his refusal to be bound by rules. Vs Conscientious Persevering, Rule bonds (stronger supergo strength) The person is exaggerating in character dominated by sense of duty persevering responsible painful. He is usually conscientious and moralistic prefers hard working people to witty companions. The inner categorical imperative of this essential

supergo should be distinguished from superfiscally similar social ideal self of Q3. Table No. 31 value of $t = .812$ which is insignificant.

The subjects have got a raw score of 12 for factor H with sten score of 7. This shows that the subjects have an average trait in between that of shy vs venture some type. Shy Restrained Diffident, Timid (Thretia) The person is shy withdrawing, cautions. He has usually has inferiority feeling. He tends to be slow and impeded in speech and in expressing himself dislikes occupations with personal contacts prefers one or few close friends to large groups and is not given to keeping in contact with all that is going on around him. Vs. VENTURESOME Socially bold uninhibited, spontaneous (Parmia) The high scorer on this factor is sociable, bold ready to try new things, spontaneous and abroubt in emotional response. His thick kindness enables him to face wear and tear in dealing with people and quarreling emotional situations without fatigue. However he can be careless of detail, ignores danger, signals and consumes much time in talking. He tends to be pushy and actively interested in the opposite sex. Table No. 32 value $t = .7365$ which is insignificant.

The subjects have got a raw score of 12 for factor I with sten score of 7 this shows that the subjects have an average trait in between that of tender minded vs tough minded. Tough Minded Self-reliant Realistic No Nonsense (Harria) The low score in this factor is practical, realistic, masculine, independent, responsible but skeptical of subjective cultural, elaboration. He is sometimes unmoved, hard, cynical and snug. He tends to keep a group, operating on a practical and realistic no-nonsense basis. Vs Tender Minded Dependent, over-protected, sensitive (premsia). The persons tends to be tender-minded, day dreaming, artistic, fast and is feminine. He is sometimes demanding of attention and help, impatient, dependent, impracticable. He dislikes crude people and rough occupation. He tends to slow up group performance and to upset group morality unrealistic confusion. Table No. 33 value of $t = 1.5711$ which is insignificant.

The subjects have got a raw score of 9 for factor L with the score of 7 this shows that the subjects have an average trait in between that of trusting vs suspicious type. Trusting Adaptable free of jealousy easy to get on with (Alaxia) The person tends to be free of jealous tendencies, adaptable cheerful, uncompetitive, concerned about other people, a good team worker. Vs. Suspicious Self opinionated Hard to fool (protension) The person is mistrusting and doubtful. He is often involved in his own ego, is self opinionated and interested in

internal mental life. He is usually deliberate in his actions unconcerned about other people a poor team member. Table No. 34 value of $t = 3.0227$ which is insignificant.

The subjects have got a raw score of 14 for factor M with the score of 6. This shows that the subjects have an average trait in between that of practical vs imaginative type. Practical Careful conventional Regulated by external Realities, Proper (Praxernia). The person is anxious to the right things attentive to practical matters and subject of the dictation of what is obviously possible. He is obviously possible. He is concerned over detail, able to keep his head in emergencies but sometimes unimaginative. Vs Imaginative Wrapped up in inner urgencies careless of practical matters Absent-minded (Autia). The Person is unconventional unconcerned over every day matters, self motivated imaginatively creative, concerned with essentials and obvious of particular people and physical realities. His inner- directed interest sometimes lead to the unrealistic situations accompanied by expressive out trusts. They individuals tend to cause him to be rejected in group activities. Table No. 35 value $t = .2291$ which is insignificant.

The subjects have got a raw score of 8 for factor N with the score of 5. This shows that the subjects have got an average trait in between that of forthright vs shrewed type. Forthright Natural, artless, sentimental (Artlessness) The low scores here is unsophisticated, sentimental and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous. Vs. Shrewd Calculating, worldly, Penetrating (Shrewdness) The high scores is polished experienced, worldly shrewd. He is often hardheaded and analytical. He has an intellectual approach to situations, an approach a kin to cynicism. Table No. 36 value of $t = 1.5119$ which is insignificant.

The subjects have got a raw score of 10 for factor O with sten score of 6. This shows that the subjects have got an average trait in between that of placid vs apprehensive type. Placid Self assured, confident, Serene (Untroubled adequacy) The person tends to be placid, with unshakable nerve. He has a nature unconscious confidence in himself and his capacity to deal with things. He is relitent and seems but to the point of being insensitive of when a group is not going along with him, so that he makes, antipathies and distrust. Vs. Apprehensive Worrying Depressive troubled (Guild Pronessness) The person tends to be depressed, melodies worries full of foreboding and boring. He has a child like tendency to anxiety in difficulties. He does not feel accepted in groups or free to participate. Table No. 37 value $t = 1.7889$ which is insignificant.

The subjects have got a raw score of 11 for factor Q1 with a score of 7. This shows that the subjects have got an average trait in between that of conservative vs experimenting type. Conservative Respecting, established ideas, tolerant of traditional difficulties (Conservatism) The low scores in confident in what he has been thought to believe, and accepts the “tried and true” despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas. Thus he tends to oppose and postpone changes, is indicated to go along with tradition is more conservative in religion and politics, and tends not to be interested in analytical “Intellectual” thought. Vs. Experimenting Critical, Liberal, Analytical free thinking (Radicalism) The person is interested in intellectual matters and has doubts on the fundamental issues. He is skeptical and inquiring regarding ideas, either old or new. He tends to be more well informed less inclined to mobilize, more inclined to experiment in life, and more tolerant of inconvenience and change. Table No. 38 value of $t = 1.5119$ which is insignificant.

The subjects have got raw score of 16 for factor Q2 with the score of 7. This shows that they have an average trait in between that of group dependent vs self sufficient type. Group dependent A “Joiner” and sound Follower (Group adherence) This indicates a preference to work and make decision with other people likes and depends on social approvals and admiration. He tends to go along with the group and may be locking in individual resolution. He is not necessarily gregarious by choice, rather he needs group support. Vs. Self Sufficient Prefers own decisions Resourceful (Self-Sufficient) The person is temperamentally independent, accustomed to going his own way making decision and taking action on his own. He discounts public opinion but is not necessarily dominant in his relations with other. He does not dislike people simply does not need their agreement or support. Table No. 39 value of $t = 1.9311$ which is insignificant.

The subjects have got a raw score of 16 for factor Q3 with a score of 7. This shows that the subjects have an average trait in between that of undisciplined self conflict vs controlled trait. Undisciplined Self- conflict Careless of protocol. Follows own urges (Low integration) The person will not be bothered with will control and regard for social demands. He is not oversell considerate, careful or pains taking. He may feel mattered gusted, and may males adjustment shows Q3 Vs. Controlled socially precise Following self-image (High self concept control) The person tends to have strong control of his emotion and general behaviors, is inclined to be socially aware and careful, and evidence what is commonly

termed self-respect and regards for social repulsions Table No. 40 value of $t = .1011$ which is insignificant.

The subjects have got a raw score of 8 for factor Q4 with a score of 4 this shows that the subjects have an average trait in between that of relaxed vs tense type. Relaxed Tranquil, Torpid, Unfrustrated (Low Ergic Tension) The person tends to be sedate, relaxed, composed and satisfied. In some situation his over satisfaction can lead to laziness and low performance in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance. Vs. Tense Frustrated, Drives, Over worked (High ergic Tension) The person is tense, excitable, restless, fretful, impatient. He is often fatigued but unable to remain inactive. In groups he takes a poor view of the degree of units, orderliness and leadership. His frustration represents an excess of stimulated, but undischarged drives. Table No. 41 value of $t = 2.5882$ which is insignificant.

The results of Cattels 16 PF test conducted on male and females before and after the open heart surgery in the group of CHD, RHD, IHD for operation ASD, VSD, TOF, AVR, MVR, DVR, CABG 1, CABG 2, CABG 3 in the age group 51 – 65 of is as follows:-

The subjects have got raw score of 9 for factor A with sten score of 4 this shows, that the subjects have got an average trait on the reserved vs outgoing trait. Reserved . detached, critical cool (Sizothymia) The person who scores low (sten of 1 to 3) tends to be stiff cool skeptical and aloof. He likes things rather than people working alone and avoiding compromise of view points. He is likely to be precise and rigid in his way of doing things and in personal standards and in many occupations. These are desirable traits. He may tend at times to be critical obstructive or hard. Vs. Out going- Warmhearted Easy going participating (Affectothymia) The person score high (sten of 8 to 10) tends to be good natured, easy going, emotionally expressive, ready to co-operative, attentive to people, soft hearted, kindly adaptable. He likes occupations dealing with people and socially impressive situation. He readily forms active groups. He is generous in personal relations less afraid of criticism better able to remember names of people. Table No. 42 t value = 1.0787 which is insignificant.

They posses both detached and easy going personality. The subjects have got a raw score of 6 for factor B with sten score of 5. This shows that the subjects have got an average degree on intelligence. LESS INTELLIGENT Concrete thinking (Lower Scholastic mental capacity) The person scoring low tends to be slow to learn and grasp, dull, given to concrete and literal Interpretation. His dullness may be simply a reflection of low intelligence. or it may represent

poor functioning due to psychopathology. Vs. More Intelligent Abstract thinking, Bright (Higher Scholastic mental capacity) The person is quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture and some with alertness. High scores contra indicates deterioration of mental functions in pathological functions. Table No. 43 t value = 1.078 which is insignificant.

The subject have got raw score of 12 for factor C with sten score of 6. This shows that the subjects have got an average trait in between that of effected by feeling vs. emotionally stable type. Affected By Feelings Emotionally less stable easily up set (Lower ego strength) The person is low in frustration tolerance for unsatisfactory condition changeable and plastic, evading necessary reality demands, neurotically fatigued easily emotional and annoyed, active in dissatisfaction having neurotic symptoms (Phobias, sleep disturbances, psychosomatic complaints etc.). Vs. Emotionally Stable Faces reality, calm, mature (Higher ego strength) The person is emotional mature, stable, realistic about life, unruffled, possessing ego, strength, better able to maintain solid group moral. Sometimes he may be a person making a resigned adjustment to unsolved emotional problems. Table No. 44 value of $t = 3.3567$ which is insignificant.

The subjects have got a raw score of 16 for factor E with score of 7. This shows that the subjects have got an average trait in between that of humble vs. assertiveness type. Humble Accommodating, Conforming (Submissiveness) The person tends to give way to others, to be docile and to conform. He is often dependent, confessing, anxious for obsessional correctness. This passivity is part of many neurotic. Vs. Assertive Independent, aggressive, competitive, stubborn (Dominance) The person is assertive, self assured and independent minded. He tends to be a law to himself, hostile or extra punitive, authoritarian and disregards authority. Table No. 45 value of $t = 1.0787$ which is insignificant.

The subjects have got a raw score of 14 for factor F with sten score of 6 this shows that the subjects have got an average trait in between that of sober vs happy go lucky type. Sober Prudent, Serious, Taciturn (Desurgency) The person is retained, introspective. He is sometimes, pessimistic unduly deliberates, and considered by observers. He tends to be a sober, dependable person. Vs. Happy go Lucky Impulsively lively, Enthusiastic (Surgery). The person tends to be cheerful active talkative, frank expressive often carefree. He is frequently chosen as an elected leader. He may be impulsive and merciful. Table No. 46 value of $t = 1.2318$ which is insignificant.

The subjects have got a raw score of 16 for factor G with sten score of 7. This shows that the subjects have an average degree on conscientious trait with an average degree on super ego strength. Expedient Evades rules feels few obligations (weaker super ego strength). The person tends to be un study in purpose. He is often casual and lacking in effort for group undertaking and cultural demands. His freedom from group influence may lead to anti social acts but at times makes his refusal to be bound by rules. Vs Conscientious Persevering, Rule bonds (stronger supergo strength) The person is exaggerating in character dominated by sense of duty persevering responsible painful. He is usually conscientious and moralistic prefers hard working people to witty companions. The inner categorical imperative of this essential supergo should be distinguished from superfiscally similar social ideal self of Q3. Table No. 47 value of $t = .812$ which is insignificant.

The subjects have got a raw score of 12 for factor H with sten score of 7. This shows that the subjects have an average trait in between that of shy vs venture some type. Shy Restrained Diffident, Timid (Thretia) The person is shy withdrawing, cautions. He has usually has inferiority feeling. He tends to be slow and impeded in speech and in expressing himself dislikes occupations with personal contacts prefers one or few close friends to large groups and is not given to keeping in contact with all that is going on around him. Vs. VENTURESOME Socially bold uninhibited, spontaneous (Parmia) The high scorer on this factor in sociable, bold ready to try new things, spontaneous and abroubt in emotional response. His thick kindness enables him to face wear and tear in dealing with people and quarreling emotional situations without fatigue. However he can be careless of detail, ignores danger, signals and consumes much time in talking. He tends to be pushy and actively interested in the opposite sex. Table No. 48 value $t = .7365$ which is insignificant.

The subjects have got a raw score of 12 for factor I with sten score of 7 this shows that the subjects have an average trait in between that of tender minded vs tough minded. Tough Minded Self-reliant Realistic No Nonsense (Harria) The low score in this factor is practical, realistic, masculine, independent, responsible but skeptical of subjective cultural, elaboration. He is sometimes unmoved, hard, cynical and snug. He tends to keep a group, operating on a practical and realistic no-nonsense basis. Vs Tender Minded Dependent, over-protected, sensitive (premsia). The persons tends to be tender-minded, day dreaming, artistic, fast and is feminine. He is sometimes demanding of attention and help, impatient, dependent, impracticable. He dislikes crude people and rough occupation. He tends to slow up group

performance and to upset group morality unrealistic confusion. Table No. 49 value of $t = 1.5711$ which is insignificant.

The subjects have got a raw score of 9 for factor L with the score of 7 this shows that the subjects have an average trait in between that of trusting vs suspicious type. Trusting Adaptable free of jealousy easy to get on with (Alaxia) The person tends to be free of jealous tendencies, adaptable cheerful, uncompetitive, concerned about other people, a good team worker. Vs. Suspicious Self opinionated Hard to fool (protension) The person is mistrusting and doubtful. He is often involved in his own ego, is self opinionated and interested in internal mental life. He is usually deliberate in his actions unconcerned about other people a poor team member. Table No. 50 value of $t = 3.0227$ which is insignificant.

The subjects have got a raw score of 14 for factor M with the score of 6. This shows that the subjects have an average trait in between that of practical vs imaginative type. Practical Careful conventional Regulated by external Realities, Proper (Praxernia). The person is anxious to the right things attentive to practical matters and subject of the dictation of what is obviously possible. He is obviously possible. He is concerned over detail, able to keep his head in emergencies but sometimes unimaginative. Vs Imaginative Wrapped up in inner urgencies careless of practical matters Absent-minded (Autia). The Person is unconventional unconcerned over every day matters, self motivated imaginatively creative, concerned with essentials and obvious of particular people and physical realities. His inner- directed interest sometimes lead to the unrealistic situations accompanied by expressive out trusts. They individuals tend to cause him to be rejected in group activities. Table No. 51 value $t = .2291$ which is insignificant.

The subjects have got a raw score of 8 for factor N with the score of 5. This shows that the subjects have got an average trait in between that of forthright vs shrewed type. Forthright Natural, artless, sentimental (Artlessness) The low scores here is unsophisticated, sentimental and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous. Vs. Shrewd Calculating, worldly, Penetrating (Shrewdness) The high scores is polished experienced, worldly shrewd. He is often hardheaded and analytical. He has an intellectual approach to situations, an approach a kin to cynicism. Table No. 52 value of $t = 1.5119$ which is insignificant.

The subjects have got a raw score of 10 for factor O with sten score of 6. This shows that the subjects have got an average trait in between that of placid vs apprehensive type. Placid Self

assured, confident, Serene (Untroubled adequacy) The person tends to be placid, with unshakable nerve. He has a nature unconscious confidence in himself and his capacity to deal with things. He is relucant and seems but to the point of being insensitive of when a group is not going along with him, so that he makes, antipathies and distrust. Vs. Apprehensive Worrying Depressive troubled (Guild Pronessness) The person tends to be depressed, melodies worries full of foreboding and boring. He has a child like tendency to anxiety in difficulties. He does not feel accepted in groups or free to participate. Table No. 53 value $t = 1.7889$ which is insignificant.

The subjects have got a raw score of 11 for factor Q1 with a score of 7. This shows that the subjects have got an average trait in between that of conservative vs experimenting type. Conservative Respecting, established ideas, tolerant of traditional difficulties (Conservatism) The low scores in confident in what he has been thought to believe, and accepts the “tried and true” despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas. Thus he tends to oppose and postpone changes, is indicated to go along with tradition is more conservative in religion and politics, and tends not to be interested in analytical “Intellectual” thought. Vs. Experimenting Critical, Liberal, Analytical free thinking (Radicalism) The person is interested in intellectual matters and has doubts on the fundamental issues. He is skeptical and inquiring regarding ideas, either old or new. He tends to be more well informed less inclined to mobilize, more inclined to experiment in life, and more tolerant of inconvenience and change. Table No. 54 value of $t = 1.5119$ which is insignificant.

The subjects have got raw score of 16 for factor Q2 with the score of 7. This shows that they have an average trait in between that of group dependent vs self sufficient type. Group dependent A “Joiner” and sound Follower (Group adherence) This indicates a preference to work and make decision with other people likes and depends on social approvals and admiration. He tends to go along with the group and may be locking in individual resolution. He is not necessarily gregarious by choice, rather he needs group support. Vs. Self Sufficient Prefers own decisions Resourceful (Self-Sufficient) The person is temperamentally independent, accustomed to going his own way making decision and taking action on his own. He discounts public opinion but is not necessarily dominant in his relations with other. He does not dislike people simply does not need their agreement or support. Table No. 55 value of $t = 1.9311$ which is insignificant.

The subjects have got a raw score of 16 for factor Q3 with a score of 7. This shows that the subjects have an average trait in between that of undisciplined self conflict vs controlled trait. Undisciplined Self- conflict Careless of protocol. Follows own urges (Low integration) The person will not be bothered with will control and regard for social demands. He is not oversell considerate, careful or pains taking. He may feel mattered gusted, and may males adjustment shows Q3 Vs. Controlled socially precise Following self-image (High self concept control) The person tends to have strong control of his emotion and general behaviors, is inclined to be socially aware and careful, and evidence what is commonly termed self-respect and regards for social repulsions Table No. 56 value of $t = .1011$ which is insignificant.

The subjects have got a raw score of 8 for factor Q4 with a score of 4 this shows that the subjects have an average trait in between that of relaxed vs tense type. Relaxed Tranquil, Torpid, Unfrustrated (Low Ergic Tension) The person tends to be sedate, relaxed, composed and satisfied. In some situation his over satisfaction can lead to laziness and low performance in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance. Vs. Tense Frustrated, Drives, Over worked (High ergic Tension) The person is tense, excitable, restless, fretful, impatient. He is often fatigued but unable to remain inactive. In groups he takes a poor view of the degree of units, orderliness and leadership. His frustration represents an excess of stimulated, but undischarged drives. Table No. 57 value of $t = 2.5882$ which is insignificant.

There is no personality change before and surgery, same is the case with locus of control internal, external and others and anxiety.

CHAPTER VI

SUMMARY AND CONCLUSION

In analysing the rise in cardiac disease consisting of congenital heart disease, rheumatic heart disease and ischemic heart disease, epidemiologists have estimated that at least half of the variance in this disease remain unexplained, after accounting for the socio-psychological and risk factors. In recent years attentions have been directed toward socio-economic and behavioural factors. The importance of emotional and behavioural factors have been suggested by many scientists in case of ischemic heart disease. The purpose of the present study was to study the socio-psychological factors of the patients undergoing open heart surgery. The psycho-social profile has been based on three variables namely personality, locus of control (internal, external, others) and anxiety. All these variables were selected keeping in view the findings of previous studies.

In the Hiland (1939) study the ischemic heart disease patient scored significantly higher in anxiety level than did a control group matched with socio-economic status. In general these patients tend to be relatively higher in socio-economic status which is inversely related to trait anxiety (Spielberger 1983)

In the western electric company study in Chicago, Ostfeld et al (1964) found over a 4.5 year follow-up that men subsequently developing angina pectoris differed significantly from men subsequently developing ischemic heart disease infection. Before disease developed, the former had a greater tendency to complain about somatic symptoms of all sorts and to be worried about their health even in the absence of their positive findings. Men subsequently developing the problem of heart disease complain about their health no more than an average citizen. In a study of 10,000 in Israel men anxiety level was found to be high with the case of Ischemic heart disease (Medalies et al 1973).

There are also many contradictory findings Floderus (1974) provided some evidence that angina, hypertension and tachycardia may be related to high anxiety. In our study we are observing that the anxiety level before surgery in congenital, rheumatic and ischemic heart disease was higher than expected level. This was also the case with the women.

The results of several studies have been remarkably consistent in showing that the people with heart disease for surgery but no CARTH (abgiographically documented patients of

ischemic heart disease scored higher on state on anxiety than did person with both conditions. Elias Robkink, Blow, Rice and Edgecomb 1982; Green 1988, Schocken et al (1987) and Greene (1988) have reported higher anxiety level trait in younger males. But in our study the females have also have a high anxiety level. So we can say the anxiety level in both young males and young females have high anxiety level. In the case of middle age the anxiety level is also showed the same i.e. equally in both the males and female groups. In the older age group the anxiety is also high in both the groups of male and female.

The personality associated with coronary heart disease may be described as an exaggeration of certain otherwise rather normal behaviour patterns found in today's culture. There is a quantitative difference in behaviour between these patients and other. The person with ischemic heart disease are more active and their aggression finds its main outlet in working activities and daily life, they tend to work harder and longer hours than others. Work is also their main principal means by which these persons attempt. To climb the social ladder, they channelize their aggression into hard work more than others, especially during middle age. The striving for power also demonstrates in the family setting as a tendency to dominate spouse and children. The desire to provide well for one's families often drives these individuals to go into ventures which are beyond their capacities. Individuals who are engaged in a chronic struggle to achieve more and more in less and less time and who are in competitions against other exhibits set of behaviour is of type A. The males and females in age group 16 to 51 years suffering from ischemic heart disease in our study mostly have behaviour patterns to that of type A personality. The other persons who are relaxed, and are less provoked by to challenges in the environment are of type B personality. The Congenitals, Rheumatics heart disease patients are of type B personality. Strictly speaking, the type A pattern is not considered to be a trait, rather it is a set of overt behaviors that is elicited from susceptible individuals by the appropriately challenging environments. Neither the type A pattern is considered to be a typology. Rather it is thought to be continuum of behaviors ranging from extreme type A to type B. The influence of one individual variable might therefore counteract the effect of the other. Waldron et al (1977) have shown that those with higher educational qualifications score higher on measures of type A but educational status is negatively correlated with symptoms of psychological ill-health (Fletcher and Payne 1950)

The confounding role of trait anxiety appears again in attempts to relate locus of control to symptoms of psychological strain. Spector (1982) reviews studies using locus of control as a variable in organisational settings. In discussing the validity of the construct Spector notes

that locus of control is negatively related to trait anxiety (Joe 1971, Archer 1979) i.e. externals are more anxious. More recently Hoehn-Saric and McLeod (1985) showed that even within a sample of 112 adults diagnosed as having chronic anxiety disorders, those higher on externally scored higher on anxiety. The fact that locus of control and anxiety correlate within such a homogenous population is impressive evidence for overlap between operational measures of the two constructs. However, the inevitable exceptions that prove the case but raise doubts rather than disprove must also be noted. Ray and Katarh (1968) did not find relationship between locus of control and job tensions. It is well established that externals report of higher level of depression and since anxiety correlated strongly with depression, there is almost certainly some overlap between these two variables could be due to third variable stress.

Orimel, Johan, Stewart Roy, Sandmann (1988) present a structural equation model of the way in which personality factors may modify the response to changes in life situation based on two wave panel data from a sample of 296 Dutch adults (22-65 years) Three definitions of vulnerability were studied, high anxiety low self esteem and locus of control (external). The analysis led to the following previous symptoms level was strongly regulated to current symptom level. The strength of this relationship was independent of self esteem and locus of control (external) but modified by anxiety Secondly the impact of life situation changes on distress level was moderately strong and similar to what others have reported. Thirdly, a marked modifies effect was found for anxiety, responsiveness significantly increased with anxiety level. For self esteem and locus of control (external) authors observed reduced responsiveness among low vulnerability subjects but the difference did not reach statistical significance.

Numerous studies cite that an external locus of control is more closely associated with anxiety than with extroversion. It does appear that there may be some complex link between the impulsivity components of extroversion and locus of control, because of the extrovert reacts impulsively to the changing environment.

Our study comprised from the lower economic to the higher economic groups consisting of businessmen, government servant, private sector undertaking personnels, banking executives, lawyers, doctors and engineers.

The present research was planned to study the background of patients undergoing open heart surgery. The open heart surgery is broadly divided into 3 main type of surgery i.e. Congenital heart surgery. Rheumatic heart surgery. , Ischemic heart surgery.

In this study we again sub divided each type of patients into 3 age groups of the following range of male and female patients.

16 to 35 years. , 36 to 50 years. , 51 to 65 years.

One hundred sixty two patients were interviewed and asked to fill the Questionnaires at the time of admission to the ward on the very first day of the admission for surgery. The data was collected for a period of three years as each patient had to match with age, education & working conditions.

There different scales/tests were used to measure different personality characteristics of the subject, They were : (16 PF) Cattells test designed by R.B. Cattell It is a comprehensive coverage of personality test. It was first commercial publication of list was in 1949. The second test used was the adapted version of locus of control scale by J.B. Rotter measuring internal versus external control of reinforcement (1966) and the third test was, Sinha Comprehensive anxiety test (SCAT). During the last three decade the concept of anxiety has figured in psychology literature.

Sinha & Sinha found that test in existence (both Indian & Foreign) found that they were not covering certain facets of anxiety. Further, there existed a good deal of disagreement and confusion concerning the concept of anxiety. Several aspects of anxiety appeared to be ignored. All this led to the development of Sinha's Comprehensive Anxiety test.

The locus of control scale which has been used is an adaptation of J.B. Rotter's scale, "generalized expectancies for internal versus external control of Reinforcement." It is referred to Levenson's Internal, powerful others and chance scale (1974). However, the items are mixed up. The Internal External locus of Control is related to a number of constructs of behaviour involving attitudinal changes with references to values, sentiments, social rules and regulations, etc. Hence keeping in view the complex nature of locus of control items related to need for achievement, striving for superiority, competence, personal causation have been selected. This self report measure for assessing locus of control (Internal, powerful others and chance) The data were analyzed by using the Anova and T test, and obtained results were interpreted and mentioned. The profile which emerged is that the anxiety level before surgery

in all the groups i.e. ischemic, rheumatic and congenital heart disease is higher as compared to after surgery. In the case of female the anxiety levels is also of the same pattern. In the case of personality pattern the trait observed before surgery and after surgery in all the case were more or less the same there is no change in personality trait.

In the case of locus of control (external) and locus control (internal) as to there is no change before and after surgery in all the three groups. So we can say that in order to know the better understanding of the patient for the management of surgery. Anxiety level of the patients and personality, should be looked for the better understanding of these patients under going open heart surgery.

The findings emerged from our study are that out of 3 variables, anxiety, locus of control and personality. Studied two variable which are prominent are anxiety and personality.

The education pattern of CHD, RHD, IHD is as follows :-

In the case of Rheumatic heart disease patient the education status of all the patients were 90 percent was graduate and 5 percent post graduate and 5 percent PhD. In case of RHD, the education status of all the patients were 90 percent was graduate and 5 percent post graduate and 5 percent PhD. In case of IHD the education status was that 80 percent of them were graduate 10 percent of them were post graduate and 10 percent were PhD.

In the case of CHD, RHD, IHD marital status was that all of them are married.

Income status of these three cases of CHD, RHD and IHD is as follows :- Rs. 7000 for CHD, Rs. 8000 for RHD and Rs. 10000 for IHD.

The job pattern of these three types i.e. CHD, RHD and IHD is as follows :-

1. CHD – 70% have own business. 2. 20% in public sector 3. Govt. 10%
2. RHD – 80% have own business. 2. 10% in public sector 3. Govt. 10%
3. IHD – 70% have own business. 2. 20% in public sector 3. Govt. 10%

The height and weight of these three types CHD, RHD and IHD is as follows :-

1. CHD -165 cms height and weight 70 Kgs
2. RHD -160 cms height and weight 58 Kgs

3. CHD -169 cms height and weight 80 Kgs

The smoking pattern in these types CHD, RHD and IHD is as follows

The female patients did not smoke and was not studied only the male patients were studied

1. CHD - 20% smoke and 80% did not smoke

Cigarette (Numbers Per day smoked 5)

2. RHD - 20% smoke and 80% did not smoke

Cigarette (Numbers Per day smoked 2)

3. IHD - 100% smoke

Cigarette (Numbers Per day smoked 20)

Drinking pattern of patients CHD, RHD, IHD is as follows :-

1. CHD - 20% Drink and 80% did not Drink

Whiskey 20%, Rum 20%, Beer 60% (Number of pegs 5)

2. RHD - 80% Drink and 20% did not Drink

Whiskey 60%, Rum 30%, Beer 10% (Number of pegs 8)

3. IHD - 100% Drink

Whiskey 90%, Rum 05%, Beer 05% (Number of pegs 10)

The diet pattern of patients CHD, RHD and IHD is as follows :-

1. CHD - Non Veg. 20% Veg 80%

(Egg consumption. 1 egg in a week)

(Meat Consumption, 3 days in a week)

(Oil consumption is 1 litre per month)

(Salt intake is ½ Kg per month)

2. RHD - Non Veg. 20% Veg 80%

(Egg consumption. 2 egg in a week)

(Meat Consumption, 4 days in a week)

(Oil consumption is 1.5 litres per month)

(Salt intake is ½ Kg per month)

3. IHD - Non Veg. 100%

(Egg consumption. 2 egg daily)

(Meat Consumption, 6 days in a week)

(Oil consumption is 2 litre per month)

(Salt intake is 1 Kg per month)

The blood group of these patients of CHD, RHD and IHD is as follows

1. CHD -80% B group, RH factor +tive, 20% O Group RH factor +ive

2. RHD -20% B group, RH factor +tive, 80% O Group RH factor +ive

3. IHD -80% B group, RH factor +tive, 20% O Group RH factor +ive

It is therefore very important and vital for us to list more subject for those variables in order to help in early identification of case of high anxiety patients for open heart surgery and control then before surgery.

In the country like India were large number of patients are there waiting for open heart surgery and it is very important for us to know them about the disease and also strengthen our own data base by knowing more about other cases. Since the sample group selected was from an exclusive hospital and therefore, the subject were more or less well settled in their life and education. But in the case of congenital heart disease ASD and VSD pattern after their surgery patients they feel normal in their day to days life. But in the case of RHD, IHD with case like AVR, MVR AND DVR and CABG, single vessel, two vessel and three vessel the interview with researcher these patients seen to had been through a crisis. The crisis was either related to job, business or family or financial.

The study help us to find theseproblem of anxiety and personality traits as early and give guidance and counseling to the patients before surgery may help us to lower the anxiety level and make the personality changes. So that their anxiety and personality is changes. They should be free from the anxiety they face. This study is very important to know the problems of anxiety and personality, of these patients. The anxiety and personality may be changed after the surgery so that the rest of the life they do not face the problem and lead a normal life after surgery.

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APPENDIX

16 PF

WHAT TO DO: Inside this booklet are some questions to see what attitudes and interests you have. There are no "right" and "wrong" answers because everyone has the right to his own views. To be able to get the best advice from your results, you will want to answer them exactly and truly.

If a separate "Answer Sheet" has not been given to you, turn this booklet over and tear off the Answer Sheet on the back page.

Write your name and all other information asked for on the top line of the Answer Sheet.

First you should answer the four sample questions below so that you can see whether you need to ask anything before starting. Although you are to read the questions in this booklet, you must record your answers on the answer sheet (alongside the same number as in the booklet).

There are three possible answers to each question. Read the following examples and mark your answers at the top of your answer sheet where it says "Examples." Fill in the left-hand box if your answer choice is the "a" answer, in the middle box if your answer choice is the "b" answer, and in the right-hand box if you choose the "c" answer.

EXAMPLES:

- | | |
|---|--|
| 1. I like to watch team games.
a. yes, b. occasionally, c. no. | 3. Money cannot bring happiness.
a. yes (true), b. in between, c. no (false). |
| 2. I prefer people who:
a. are reserved,
b. (are) in between,
c. make friends quickly. | 4. Woman is to child as cat is to:
a. kitten, b. dog, c. boy. |

In the last example there is a right answer—kitten. But there are very few such reasoning items.

Ask now if anything is not clear. The examiner will tell you in a moment to turn the page and start.

When you answer, keep these four points in mind:

1. You are asked not to spend time pondering. Give the first, natural answer as it comes to you. Of course, the questions are too short to give you all the particulars you would sometimes like to have. For instance, the above question asks you about "team games" and you might be fonder of football than basketball. But you are to reply "for the average game," or to strike an average in situations of the kind stated. Give the best answer you can at a rate not slower than five or six a minute. You should finish in a little more than half an hour.
2. Try not to fall back on the middle, "uncertain" answers except when the answer at either end is really impossible for you—perhaps once every four or five questions.
3. Be sure not to skip anything, but answer every question, somehow. Some may not apply to you very well, but give your best guess. Some may seem personal; but remember that the answer sheets are kept confidential and cannot be scored without a special stencil key. Answers to particular questions are not inspected.
4. Answer as honestly as possible what is true of you. Do not merely mark what seems "the right thing to say" to impress the examiner.

ve the instructions for this test clearly in

es, b. uncertain, c. no.

am ready to answer each question as truth-
fully as possible.

es, b. in between, c. no.

a vacation I would rather go to:

a busy holiday town,
something in between a. and c.,
a quiet cottage off the beaten track.

hen I'm in a small, cramped space (as on
crowded elevator), I have an uncomfortable
feeling of being "shut in."

never, b. rarely, c. occasionally.

and myself thinking over quite trivial trou-
bles again and again and have to make a real
effort to put them out of my mind.

yes (true),
occasionally,
no (false).

I know that another person's line of reason-
ing is in error, I tend to:

keep quiet,
in between,
speak out.

ideas appear to be:

ahead of the times,
uncertain,
with the times.

am not much given to cracking jokes and
telling amusing stories.

true, b. in between, c. false.

is better to live to a ripe old age than to
be worn out with good services for one's com-
munity.

true, b. in between, c. false.

have been active in organizing a club, team,
or similar social group.

yes, often, b. occasionally, c. never.

just can't help feeling sentimental.

very rarely, b. sometimes, c. often.

would rather read a book on:

Great Religious Teachings,
uncertain,
Our National Political Organization.

13. The topics on which I am "touchy" or easily
annoyed are very few.

a. true, b. uncertain, c. false.

14. The abilities and characteristics inherited from
the parents are more important than many
people are ready to admit.

a. true, b. in between, c. false.

15. I feel that routine jobs should always be com-
pleted, even when a bit of imagination shows
it is not necessary.

a. true, b. uncertain, c. false.

16. Jokes about death are all right and normally in
good taste.

a. yes, b. in between, c. no.

17. I like to be told the best way to do things
instead of finding out for myself.

a. yes, b. uncertain, c. no.

18. In the midst of social groups, I am nevertheless
sometimes overcome by feelings of loneliness
and worthlessness.

a. yes, b. in between, c. no.

19. My memory does not change much from day to
day.

a. true, b. sometimes, c. false.

20. I believe in complaining to the waiter or man-
ager if I am served poor food in a restaurant.

a. yes, b. uncertain, c. no.

21. For relaxation I prefer:

a. sports or games,
b. uncertain,
c. debates and intellectual games.

22. I have, compared with others, participated in:

a. many community and social activities,
b. several,
c. only a few community and social activities.

23. When I make plans, I often like to leave things
to chance.

a. true, b. uncertain, c. false.

24. In going places, eating, working, etc., I:

a. seem to rush from one thing to another,
b. in between,
c. go on in a deliberate, methodical way.

25. I feel restless as if I want something but do
not know what.

a. very rarely, b. occasionally, c. often.

(End, column 1 on answer sheet.)

factory, it would be more interesting to be
charge of:
mechanical matters,
uncertain,
interviewing and hiring people.

would prefer to read a book on:
travel in outer space,
uncertain,
education within the family.

Which of the following words is not the same
and as the others?
dog, b. bird, c. cow.

If I had my life to live over again, I would:
plan it differently,
uncertain,
want it much the same.

When making decisions in my life and work, I was
ever troubled by lack of understanding on the
part of my family.
true, b. in between, c. false.

I would like to avoid saying unusual things that
embarrass people.
true, b. in between, c. false.

If I had a gun in my hand that I knew was
loaded, I would feel nervous until I unloaded it.
yes, b. in between, c. no.

I do not greatly enjoy playing practical jokes with no
malice in them.
true, b. in between, c. false.

People use up too much of their leisure in
neighborly duties and helping with local
affairs.
a. yes, b. uncertain, c. no.

Sometimes I feel that I don't do so well as I
should socially, because I'm unsure of myself.
a. true, b. in between, c. false.

I do not enjoy getting into conversation, and I rarely
let a chance go by to speak to a stranger.
a. true, b. in between, c. false.

The newspaper headline that would interest me
more is:
a. "Religious Leaders Discuss a Unified Creed,
b. uncertain,
c. "Improvements in Production and Market-
ing."

I do not doubt the honesty of people who are more
friendly than I would expect them to be.
a. true, b. in between, c. false.

39. My advice for people is:
a. go ahead and try; it won't hurt!
b. in between,
c. think it over first; don't make a fool of
yourself!
40. It is more important for me:
a. to express myself freely,
b. in between,
c. to have good relations with other people.
41. I enjoy daydreaming.
a. yes, b. uncertain, c. no.
42. I like a job that presents me with some subtle
decisions rather than one with quick, routine
answers.
a. true, b. uncertain, c. false.
43. I have a feeling that my friends don't need me
so much as I need them.
a. true, b. uncertain, c. false.
44. If somebody thought badly of me, I would
worry about this:
a. hardly ever,
b. occasionally,
c. quite often.
45. I have had accidents because I was deep in
thought.
a. hardly ever,
b. in between,
c. several times.
46. In my newspaper, I like to see:
a. discussion of basic social issues in the mod-
ern world,
b. in between,
c. good coverage of all local news.
47. I find books more entertaining than compan-
ions.
a. yes, b. in between, c. no.
48. However difficult and unpleasant the obstacles,
I always persevere and stick to my original
intentions.
a. yes, b. in between, c. no.
49. My nerves get on edge, so that certain sounds,
for example, a screechy hinge, are unbearable
and give me the "shivers."
a. often, b. sometimes, c. never.
50. I often feel quite tired when I get up in the
morning.
a. yes, b. in between, c. no.

(End, column 2 on answer sheet.)

- With equal salary, I would enjoy more being:
- a research chemist,
 - uncertain,
 - a hotel manager (or manageress).
- Going around selling things, or asking for funds to help a cause I believe in, is, for me:
- quite enjoyable,
 - in between,
 - an unpleasant job.
- Which one of the following three numbers does not belong with the others?
- 7, b. 9, c. 13.
- "Dog" is to "bone" as "cow" is to:
- milk, b. grass, c. salt,
- Changes in weather don't usually affect my efficiency and mood.
- true, b. in between, c. false.
- In a strange city, I would:
- walk wherever I liked,
 - uncertain,
 - avoid the parts of the town said to be dangerous.
- It is more important to:
- get along smoothly with people,
 - in between,
 - get your own ideas put into practice.
- I believe in:
- the motto "laugh and be merry" on most occasions,
 - in between,
 - being properly serious in everyday business.
- When given a set of rules, I follow them when personally convenient, rather than exactly to the letter.
- true, b. uncertain, c. false.
- In my social relations, I am sometimes troubled by a sense of inferiority, for which there is no real cause.
- true, b. in between, c. false.
- I feel a bit awkward in company and don't show up quite so well as I should.
- yes, b. sometimes, c. no.
- I would rather:
- work with several people under me,
 - uncertain,
 - work with a committee.
63. Even when the blame can be put on others, most people don't mind admitting their guilt.
- true, b. uncertain, c. false.
64. No one would really like to see me in trouble.
- true, b. uncertain, c. false.
65. It is more important for a man to be concerned about:
- the basic meaning of life,
 - uncertain,
 - making a good income for his family.
66. Being indoors long, away from the fresh outdoors, makes me feel stale.
- always, b. sometimes, c. hardly ever.
67. I get unusual ideas about all sorts of things — too many to put into practice.
- true, b. sometimes, c. false.
68. My spirits generally stay high, no matter how much trouble I meet.
- true, b. in between, c. false.
69. I have difficulty falling asleep at night through worrying about an unfortunate incident.
- often, b. occasionally, c. seldom.
70. I would rather see:
- a clever movie farce or skit on the society of the future,
 - in between,
 - a good movie of hardy, pioneering days.
71. My friends probably think it is hard to get to know me really well.
- yes, b. in between, c. no.
72. I solve a problem better by:
- studying it alone,
 - in between,
 - discussing it with others.
73. When quick decisions must be made, I:
- rely on calm, logical, and objective reasoning,
 - in between,
 - become tense and excitable, unable to think clearly.
74. I sometimes find quite useless thoughts and memories straying through my mind.
- yes, b. in between, c. no.
75. I never find myself so annoyed in discussion that I can't control my voice.
- true, b. uncertain, c. false.

(End, column 3 on answer sheet.)

When traveling, I would rather look at the scenery than talk to people.

a. true, b. uncertain, c. false.

“lose” a better opposite to “reveal” than “hide”?

a. yes, b. uncertain, c. no.

“Black” is to “gray” as “pain” is to:

a. sprain, b. ache, c. itch.

Do you find it hard to “take ‘no’ for an answer,” even when I know I’m asking the impossible.

a. true, b. in between, c. false.

I am often hurt more by the way people say things than by what they say.

a. true, b. in between, c. false.

It embarrasses me to have servants waiting on me.

a. yes, b. in between, c. no.

When friends are in a lively conversation, I prefer sometimes to be a shrewd listener, in between,

a. get more remarks in than most people.

I like being in the middle of a great deal of excitement and bustle.

a. yes, b. in between, c. no.

At work it is really more important to be popular with the right people than to do a first-rate job.

a. true, b. in between, c. false.

When people in the street, or in a store, watch me, I feel slightly embarrassed.

a. yes, b. in between, c. no.

My ideas can't always be easily put into words. I don't cut into a conversation as readily as most people do.

a. true, b. in between, c. false.

I am always interested in mechanical matters, for example, in cars or airplanes.

a. yes, b. in between, c. no.

It is mainly the fear of being caught that keeps most people from dishonest or criminal acts.

a. yes, b. in between, c. no.

There are really more nice people than objectionable people in the world.

a. yes, b. uncertain, c. no.

90. Careless folks who say “the best things in life are free” usually haven't worked to get rich.
a. true, b. in between, c. false.

91. In a committee, if people just talk without coming to the point, I:
a. urge them to get to the point,
b. uncertain,
c. do what's practical to keep harmony.

92. A person whose ambitions hurt and damage a close friend may still be considered an ordinary, decent citizen.
a. yes, b. in between, c. no.

93. When one small thing after another goes wrong, I:
a. go on as usual,
b. in between,
c. feel overcome.

94. I am troubled by feelings of guilt or remorse over quite small matters.
a. yes, often, b. sometimes, c. no.

95. It would be better if everyone got together in public worship regularly.
a. true, b. in between, c. false.

96. In planning social outings, I:
a. am always happy to commit myself entirely,
b. in between,
c. like to reserve the right to cancel my going.

97. Many people talk over their problems and ask advice of me when they need someone to talk to.
a. yes, b. in between, c. no.

98. If my friends leave me out of something they are doing, I:
a. make a fuss,
b. in between,
c. take it calmly, thinking they have some reason.

99. In some moods I'm easily kept from working by distractions and daydreams.
a. yes, b. in between, c. no.

100. I don't form immediate likes and dislikes for people I have just met.
a. true, b. uncertain, c. false.

(End, column 4 on answer sheet.)

I'd enjoy more being:

- a. a business office manager,
- b. uncertain,
- c. an architect.

"April" is to "March" as "Tuesday" is to:

- a. Wednesday, b. Friday, c. Monday.

Which of the following words does not belong with the others?

- a. wise, b. lovely, c. kind.

I cross the street to avoid meeting people I don't feel like seeing.

- a. never, b. seldom, c. sometimes.

In an average day, the number of problems I meet that I can't solve on my own is:

- a. hardly one,
- b. in between,
- c. more than half a dozen.

If I disagree with a superior on his views, I usually:

- a. keep my opinion to myself,
- b. uncertain,
- c. tell him that my opinion differs.

I avoid any embarrassing topic in talking with members of the opposite sex.

- a. true, b. in between, c. false.

I am not really successful in dealing with people.

- a. true, b. uncertain, c. false.

I enjoy giving my best time and energy to:

- a. my home and the real needs of my friends,
- b. in between,
- c. social activities and personal hobbies.

When I wish to impress people favorably with my personality, I:

- a. nearly always succeed,
- b. sometimes succeed,
- c. am generally uncertain of success.

I prefer to have:

- a. a large circle of acquaintances,
- b. uncertain,
- c. just a few, well-trying friends.

It would be more interesting to be a philosopher than a mechanical engineer.

- a. true, b. uncertain, c. false.

I tend to be critical of other people's work.

- a. often, b. occasionally, c. no.

114. I enjoy planning carefully to influence my associates so that they will help me in achieving my goals.

- a. true, b. in between, c. false.

115. I think I am more sensitive than most people to the artistic quality of my surroundings.

- a. yes, b. uncertain, c. no.

116. My friends think I am slightly absent-minded and impractical.

- a. yes, b. uncertain, c. no.

117. With acquaintances I prefer to:

- a. keep to matter-of-fact, impersonal things,
- b. in between,
- c. chat about people and their feelings.

118. I am sometimes so very happy that I get afraid my happiness cannot last.

- a. true, b. in between, c. false.

119. I occasionally have periods of feeling depressed, miserable, and in low spirits for no sufficient reason.

- a. yes, b. in between, c. no.

120. In my work more troubles arise from people who:

- a. are constantly changing methods that are already O.K.,
- b. uncertain,
- c. refuse to employ up-to-date methods.

121. I like my acquaintances to think of me as one of the group.

- a. true, b. in between, c. false.

122. When looking for a place in a strange city, I would:

- a. just ask people where places are,
- b. in between,
- c. take a map with me.

123. I sometimes stir up friends to go out when they say they really want to stay home.

- a. yes, b. uncertain, c. no.

124. When pushed and overworked, I suffer from indigestion or constipation.

- a. occasionally, b. hardly ever, c. never.

125. If someone annoys me, I:

- a. can keep it to myself,
- b. in between,
- c. must speak to someone else "to let off steam."

(End, column 5 on answer sheet.)

It would be more interesting to be an insurance salesman than a farmer.

- a. yes, b. in between, c. no.

"Statue" is to "shape" as "song" is to:

- a. beauty, b. notes, c. tune.

Which of the following words does not belong with the others?

- a. hum, b. speak, c. whistle.

Modern life has too many annoying frustrations and restrictions.

- a. true, b. in between, c. false.

I feel ready for life and its demands.

- a. always, b. sometimes, c. hardly ever.

I honestly think I am more planful, energetic, and ambitious than many perhaps equally successful people.

- a. yes, b. occasionally, c. no.

Nearly always I have a craving for more excitement.

- a. true, b. in between, c. false.

It would be more interesting to be:

- a. an actor,
b. uncertain,
c. a house builder.

I find it desirable to make plans to avoid waste of time between jobs.

- a. yes, b. in between, c. no.

In a group I am usually:

- a. well in touch with all that goes on around me,
b. in between,
c. wrapped up in my own thoughts or immediate business.

In joining a new group, I seem to fit in immediately.

- a. yes, b. uncertain, c. no.

I greatly enjoy the racy and slap-stick humor of some television shows.

- a. yes, b. in between, c. no.

I would rather read about:

- a. the discovery of very old Indian paintings,
b. uncertain,
c. Indian murders.

139. In ordinary difficulties, I generally keep up hope.

- a. yes, b. uncertain, c. no.

140. I am less interested in being practically and financially successful than in seeking artistic and spiritual truths.

- a. true, b. in between, c. false.

141. I would rather read:

- a. a good historical novel,
b. in between,
c. an essay by a scientist on harnessing world resources.

142. In discussing art, religion, or politics, I seldom get so involved or excited that I forget politeness and human relations.

- a. true, b. uncertain, c. false.

143. When I am going to catch a train, I get a little hurried, tense, or anxious, though I know I have time.

- a. yes, b. sometimes, c. no.

144. I like to tackle problems that other people have made a mess of.

- a. yes, b. in between, c. no.

145. Society should be guided more by logical thinking and less by sentimental, traditional beliefs.

- a. yes, b. in between, c. no.

146. When I do what I want, I find I'm generally:

- a. understood only by close friends,
b. in between,
c. doing what most people think is O.K.

147. I tend to get over-excited and "rattled" in upsetting situations.

- a. yes, b. in between, c. no.

148. I make a point of not being absent-minded, or forgetful of details.

- a. yes, b. in between, c. no.

149. A near-accident, or even a lively argument, sometimes leaves me shaky and exhausted, so that I can't settle down to what I was doing.

- a. true, b. in between, c. false.

150. I find my feelings boiling up inside:

- a. rarely, b. occasionally, c. quite often.

(End, column 6 on answer sheet.)

For a pleasant hobby I would rather belong to:

- a. a photography club,
- b. uncertain,
- c. a debating society.

"Combine" is to "mix" as "team" is to:

- a. crowd, b. army, c. game.

"Clock" is to "time" as "tailor" is to:

- a. tape measure, b. scissors, c. cloth.

I have difficulty in following what some people are trying to say because of their odd use of common words.

- a. yes, b. in between, c. no.

Prosecuting lawyers are mainly interested in:

- a. making convictions, regardless of the person,
- b. uncertain,
- c. protecting the innocent.

People have sometimes called me a proud, "stuck-up" individual.

- a. yes, b. in between, c. no.

It would be more interesting to live the life of a master printer than that of an advertising man and promoter.

- a. true, b. uncertain, c. false.

I tend to speak rather slowly.

- a. yes, b. sometimes, c. no.

When I do something, my main concern is that:

- a. it is really what I want to do,
- b. uncertain,
- c. there will be no bad results for my associates.

I think most stories and movies should teach us a good moral.

- a. true, b. in between, c. false.

Starting conversations with strangers:

- a. is rather difficult for me,
- b. in between,
- c. never gives me the least trouble.

Upsetting the dignity of teachers, judges, and "cultured" people always amuses me.

- a. yes, b. in between, c. no.

On television, I would rather watch:

- a. a great concert artist,
- b. uncertain,
- c. a practical, informative program on new inventions.

164. I get irritated by people who adopt morally superior attitudes.

- a. yes, b. in between, c. no.

165. I would rather spend time enjoying:

- a. a game of cards with a congenial group,
- b. uncertain,
- c. the beautiful things in an art gallery.

166. I sometimes hesitate to use my own ideas, for fear they might be impractical.

- a. yes, b. in between, c. no.

167. I am always polite and diplomatic with unreasonable, unimaginative people and do not believe in showing up how narrow-minded they are.

- a. true, b. in between, c. false.

168. I would rather live in an up-and-coming town than in a quiet country village.

- a. true, b. uncertain, c. false.

169. When I differ with someone on social views, I like:

- a. to find out basically what our difference means,
- b. uncertain,
- c. just to reach some practical solution, satisfactory to both.

170. I think people should hesitate longer before they condemn the wisdom of the past.

- a. yes, b. uncertain, c. no.

171. I get as many ideas from reading a book myself as from discussing its topics with others.

- a. yes, b. in between, c. no.

172. Some people criticize my sense of responsibility.

- a. yes, b. uncertain, c. no.

173. I would rate myself:

- a. an alert, practical person,
- b. in between,
- c. more of a dreamer.

174. On occasions, my emotions and feelings "run away with me."

- a. true, b. uncertain, c. false.

175. I feel so furious I want to slam a door, and maybe break a window:

- a. very rarely,
- b. occasionally,
- c. fairly frequently.

(End, column 7 on answer sheet.)

176. I would enjoy better:
a. being in charge of children's games,
b. uncertain,
c. helping a watchmaker.
177. "Justice" is to "laws" as "idea" is to:
a. words, b. feelings, c. theories.
178. Which of the following words does not belong with the others?
a. second, b. once, c. alone.
179. I would prefer to lead:
a. the same kind of life I now lead,
b. uncertain,
c. a more sheltered life, with fewer difficulties to face.
180. I believe that the most important thing in life is to do what I like.
a. yes, b. uncertain, c. no.
181. My speaking voice is:
a. strong, b. in between, c. soft.
182. I like acting on impulses of the moment, even if they land me in later difficulties.
a. yes, b. in between, c. no.
183. I am well described as a happy-go-lucky, nonchalant person.
a. yes, b. in between, c. no.
184. I greatly dislike the sight of disorder.
a. true, b. uncertain, c. false.
185. I always check very carefully the condition in which borrowed property is returned, to me or by me to others.
a. yes, b. in between, c. no.
186. In social groups I am bothered by self-conscious shyness.
a. never, b. sometimes, c. often.
187. I am sure there are no questions that I have not answered properly.
a. yes, b. uncertain, c. no.

(End of test.)

5. Money cannot bring happiness.
 a. yes (true), b. in between, c. no (false).
 2. I prefer people who:
 a. are reserved, b. (are) in between, c. make friends quickly.
 3. Money cannot bring happiness.
 a. yes (true), b. in between, c. no (false).
 4. Woman is to child as cat is to:
 a. kitten, b. dog, c. boy.

NAME: _____
 SEX: Male Female
 AGE: _____ DATE: _____
 (Write M or F) (Nearest Year)

RAW SCORE	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
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FILL IN THE BOX COMPLETELY ERASE ENTIRELY ANY ANSWER YOU WISH TO CHANGE.

Do not write here.
 NORMS USED:
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END OF TEST

SCAT

A. K. P. SINHA (Raipur)

&

L. N. K. SINHA (Patna)



निम्न सूचनायें परीक्षार्थी को भरनी हैं :-

नाम.....

कॉलेज.....

आयु.....

विभाग.....

पुरुष/स्त्री.....

निर्देश

आगे के पृष्ठों पर कुछ प्रश्न दिये हैं जिनका सम्बन्ध आपके व्यक्तित्व से है। प्रत्येक प्रश्न के सामने 'हाँ' और 'नहीं' लिखा है। इन दोनों में से आपको किसी एक पर ही गोल घेरा खींचना है। ध्यान रहे कि कोई उत्तर सही या गलत नहीं है। जो बात आपके सम्बन्ध में सही हो उसी पर गोल घेरे खींचें। यदि किसी प्रश्न के उत्तर में 'हाँ' आपके सम्बन्ध में लागू हो तो 'हाँ' को गोल घेरे से घेरें और यदि 'नहीं' लागू हो तो 'नहीं' को घेरें। आपका उत्तर पूर्ण रूप से शुद्ध रखा जायेगा। अतः आप निःसंकोच उत्तर दें। समय की पाबन्दी नहीं है, फिर भी यथाशीघ्र समाप्त करने का प्रयास करें।

फलांकन तालिका

पृष्ठ→	2	3	4	योग
मूल प्राप्तांक→				

Est. : 1971

Phone : 65780

नेशनल साइकलॉजिकल कारपोरेशन

4/230, कचहरी घाट, आगरा-282004 (उ० प्र०)

© 1973, सर्वाधिकार सुरक्षित। इसको या इसके किसी अंश को उद्धृत करना कानूनी जुर्म है।

क्या आप अनुभव करते हैं कि बिना किसी अपराध के ही आपको दण्ड दिया जाता है ?	हाँ	नहीं
परिस्थितियों के साधारण दबाव से भी क्या आप मानसिक संतुलन खो बैठते हैं ?	हाँ	नहीं
क्या आपका चित्त प्रायः अस्थिर बना रहता है ?	हाँ	नहीं
क्या आप प्रायः अनजान व्यक्तियों के सामने बोलने में हकलाते हैं ?	हाँ	नहीं
क्या कभी-कभी आपको ऐसा मालूम पड़ता है कि आपका जीवन बेकार है ?	हाँ	नहीं
क्या आप बहुत जल्दी रो देते हैं ?	हाँ	नहीं
क्या प्रायः आपके मन में पाप-पुण्य का द्वंद्व चलता रहता है ?	हाँ	नहीं
क्या आप जीवन के कटु अनुभवों के स्मरण मात्र से बहुत उत्तेजित हो जाते हैं ?	हाँ	नहीं
क्या आपको प्रायः ऐसा लगता है कि आप होश-हवास खो बैठेंगे ?	हाँ	नहीं
क्या आप इतने भयभीत हो जाते हैं कि आपकी जीभ सूखने लगती है ?	हाँ	नहीं
क्या आप अकारण अपने को पापी समझने लगते हैं ?	हाँ	नहीं
क्या आपकी माँस-पेशियों में तनाव रहता है ?	हाँ	नहीं
क्या कहीं बाहर जाने के समय आपको बहुधा डर बना रहता है कि आपकी गाड़ी छूट न जाय ?	हाँ	नहीं
क्या आप नींद की कमी सहस्र करते हैं ?	हाँ	नहीं
क्या आप प्रायः अपनी समस्या को भूलने के लिए सदा किसी में व्यस्त रहते हैं ?	हाँ	नहीं
क्या परेशानियों से ऊँचकर आप कहीं दूर भागना चाहते हैं ?	हाँ	नहीं
क्या आपसे प्रायः ऐसी भूलें होती हैं जिन्हें सुधारना कठिन मान्य पड़ता है ?	हाँ	नहीं
क्या आपसे कुछ गलती हो गई है जिसे लेकर आप बहुत परेशान रहते हैं ?	हाँ	नहीं
क्या ऊँची जगह पर जाने से आप घबड़ाते हैं ?	हाँ	नहीं
क्या आप प्रायः शारीरिक कमजोरी का अनुभव करते हैं ?	हाँ	नहीं
क्या आप प्रायः ऐसा सोचते हैं कि जीवन दुःखमय ही रहेगा ?	हाँ	नहीं
क्या विपत्तिकाल में दूसरों की थोड़ी सी सहानुभूति से आपकी आँखें डबडबा जाती हैं ?	हाँ	नहीं
क्या प्रायः आपको ऐसा लगता है कि आप असहाय हैं ?	हाँ	नहीं
क्या आप प्रायः अपने में ही खोये रहते हैं ?	हाँ	नहीं
क्या आप प्रायः तनाव की हालत में काम करते हैं ?	हाँ	नहीं
क्या आप प्रायः चिन्तित रहते हैं ?	हाँ	नहीं
क्या आपको प्रायः मानसिक उलझनें वनी रहती हैं ?	हाँ	नहीं
क्या आपका दम डर से प्रायः घुटने लगता है ?	हाँ	नहीं
क्या आप अपनी बातों के स्रण्डन से अधिक क्षुब्ध हो जाते हैं ?	हाँ	नहीं
क्या आपको अपना जीवन अन्धकारमय मालूम पड़ता है ?	हाँ	नहीं

- | | | |
|---|-----|------|
| 31. पूरी तैयारी के बाद भी क्या आपको असफल होने का डर बना रहता है ? | हाँ | नहीं |
| 32. क्या आपको प्रायः ऐसा लगता है कि आपका सत्यानाश होने वाला है ? | हाँ | नहीं |
| 33. ऐसी परिस्थिति आने पर जिसमें पहले आपकी बहुत बड़ी हानि हुई हो, क्या आप बहुत घबड़ा जाते हैं ? | हाँ | नहीं |
| 34. क्या आप ऐसा समझते हैं कि जीवन निराशाओं से पूर्ण है ? | हाँ | नहीं |
| 35. किसी को मूर्छित या बेहोशी की हालत में देखकर क्या आप बहुत घबड़ा जाते हैं । | हाँ | नहीं |
| 36. क्या आप प्रायः किसी न किसी संकट से परेशान रहते हैं ? | हाँ | नहीं |
| 37. क्या आप प्रायः बीती बातों का चिन्तन किया करते हैं ? | हाँ | नहीं |
| 38. अपने सम्बन्ध में दूसरों की गलत धारणायें देखकर क्या आप अशांत हो जाते हैं ? | हाँ | नहीं |
| 39. क्या आपका शरीर प्रायः थका रहता है ? | हाँ | नहीं |
| 40. छोटी-छोटी बातें भी क्या आपके लिए समस्या बन जाती हैं ? | हाँ | नहीं |
| 41. क्या आपको प्रायः छूत के रोगों का डर बना रहता है ? | हाँ | नहीं |
| 42. क्या आपसे प्रायः कोई ऐसा काम हो जाता है जिससे आपको बहुत पश्चाताप होता रहता है ? | हाँ | नहीं |
| 43. क्या आप असफलता की कल्पना मात्र से काँप उठते हैं ? | हाँ | नहीं |
| 44. क्या आप बहुधा बेकार बातों को लेकर परेशान रहते हैं ? | हाँ | नहीं |
| 45. अणकुन होने पर क्या आप प्रायः घबड़ा जाते हैं ? | हाँ | नहीं |
| 46. क्या आपको प्रायः कब्जियत की शिकायत रहती है ? | हाँ | नहीं |
| 47. क्या आप अनुभव करते हैं कि आपका भाग्य आपका साथ नहीं देता ? | हाँ | नहीं |
| 48. क्या आप प्रायः ऐसी बातों में तल्लीन होना चाहते हैं जिससे स्वयं को भूल सकें ? | हाँ | नहीं |
| 49. क्या आप चिड़चिड़े स्वभाव के हैं ? | हाँ | नहीं |
| 50. क्या आपको निर्णय लेने में प्रायः कठिनाई होती है ? | हाँ | नहीं |
| 51. क्या थोड़ी प्रतीक्षा भी आपको बहुत बुरी लगती है ? | हाँ | नहीं |
| 52. क्या आपको प्रायः भय बना रहता है कि लोगों के षड्यन्त्र के कारण कहीं आपका भविष्य अन्धकारमय न हो जाय ? | हाँ | नहीं |
| 53. क्या आपको प्रायः किसी न किसी बात का डर बना रहता है ? | हाँ | नहीं |
| 54. क्या आप अपने को दूसरे की अपेक्षा अधिक अभाग्य समझते हैं ? | हाँ | नहीं |
| 55. क्या आप अनुभव करते हैं कि लोग प्रायः आपको गलत समझते हैं ? | हाँ | नहीं |
| 56. क्या आप प्रायः इतने परेशान हो जाते हैं कि किसी एक जगह पर बैठना आपके लिए कठिन हो जाता है ? | हाँ | नहीं |
| 57. अपनी असफलताओं के कारण क्या आप प्रायः अपने को हीन समझते हैं ? | हाँ | नहीं |
| 58. क्या आपको प्रायः लाभ से अधिक क्षति की आशंका बनी रहती है ? | हाँ | नहीं |
| 59. क्या आप साधारण सी बुरी घटना से भी सुध-बुध खो बैठते हैं ? | हाँ | नहीं |
| 60. क्या आपको प्रायः हर काम में हड़बड़ी रहती है ? | हाँ | नहीं |

किसी काम में क्या आपको प्रायः इतनी कठिनाईयाँ आती हैं कि आपको उसे छोड़ देना पड़ता है ?	हाँ	नहीं
क्या कुछ ऐसी बातें जिनकी याद आते ही आप बहुत व्यग्र हो जाते हैं ?	हाँ	नहीं
क्या प्रायः आपका सिर भारी लगता है ?	हाँ	नहीं
क्या आपको ऐसा लगता है कि लोग आपकी बातों का उपहास करते हैं ?	हाँ	नहीं
क्या आप साधारण विरोध से भी खिन्न हो जाते हैं ?	हाँ	नहीं
क्या आप सोचते हैं कि मर जाते तो अच्छा होता ?	हाँ	नहीं
क्या आप प्रायः तुरन्त की बातें भी भूल जाते हैं ?	हाँ	नहीं
क्या आपको अपनी पशुजय का बसबस डर बना रहता है ?	हाँ	नहीं
क्या आप प्रायः अशान्त तथा उत्त जित रहते हैं ?	हाँ	नहीं
क्या आप प्रायः दिवा-स्वप्न में खाये रहते हैं ?	हाँ	नहीं
क्या आपको प्रायः अपने आप पर गुस्सा आता है ?	हाँ	नहीं
क्या प्रायः आपको हृदय की गति रुक जाने का डर बना रहता है ?	हाँ	नहीं
क्या भीड़ देखकर प्रायः आप घबड़ा जाते हैं ?	हाँ	नहीं
क्या किसी वस्तु पर दृष्टि केन्द्रित करने में आपको कठिनाई होती है ?	हाँ	नहीं
पूरी सावधानी से काम करने पर भी क्या आपको गलती रह जाने की सम्भावना बनी रहती है ?	हाँ	नहीं
क्या आपके मन में ऐसे विचार उठते हैं कि आपमें यौन शक्ति की कमी है ?	हाँ	नहीं
क्या आपकी भावनाओं में द्वन्द्व बना रहता है ?	हाँ	नहीं
क्या आप बहुत जल्दी ही आकुल हो जाते हैं ?	हाँ	नहीं
क्या आप अपनी असफलताओं के कारण प्रायः चिन्तित रहते हैं ?	हाँ	नहीं
अपनी साधारण सी आलोचना भी क्या आपको अशांत बना देती है ?	हाँ	नहीं
किसी आवश्यक काम के आने पर क्या आपको प्रायः पेशाब या पाखाना लग जाता है ?	हाँ	नहीं
क्या आप प्रायः बिना कारण दूसरों से कभी खुश और कभी नाराज हो जाते हैं ?	हाँ	नहीं
काम पूरा न करने पर क्या आप प्रायः अत्याधिक तनाव में रहते हैं ?	हाँ	नहीं
क्या आप प्रायः अज्ञात कारणों से दुःखी रहते हैं ?	हाँ	नहीं
क्या आप यौन सम्बन्धी बातों को लेकर चिन्तित रहते हैं ?	हाँ	नहीं
क्या आप प्रायः बेचैनी अनुभव करते हैं ?	हाँ	नहीं
क्या आपको औरों से अधिक चिंता रहती है ?	हाँ	नहीं
क्या कुछ ऐसी बातें हैं जो न चाहने पर भी आपके दिमाग में चक्कर काटा करती हैं ?	हाँ	नहीं
क्या आपको प्रायः साँस लेने में दिक्कत रहती है ?	हाँ	नहीं
क्या आप दुःख की कल्पना मात्र से घबड़ा जाते हैं ?	हाँ	नहीं

EXERCISE 11B

Determining Your Locus of Control

Read each statement carefully. Then indicate the extent to which you agree or disagree by circling the number following each statement. The numbers and their meanings are indicated below:

- If you agree strongly: circle +3
- If you agree somewhat: circle +2
- If you agree slightly: circle +1
- If you disagree slightly: circle -1
- If you disagree somewhat: circle -2
- If you disagree strongly: circle -3

First impressions are usually best. Read each statement, decide if you agree or disagree and the strength of your opinion, and then circle the appropriate number.

	STRONGLY DISAGREE	DISAGREE SOMEWHAT	SLIGHTLY DISAGREE	SLIGHTLY AGREE	AGREE SOMEWHAT	STRONGLY AGREE
1. Whether or not I get to be a leader depends mostly on my ability	-3	-2	-1	+1	+2	+3
2. To a great extent my life is controlled by accidental happenings	-3	-2	-1	+1	+2	+3
3. I feel like what happens in my life is mostly determined by powerful people	-3	-2	-1	+1	+2	+3
4. Whether or not I get into a car accident depends mostly on how good a driver I am.	-3	-2	-1	+1	+2	+3
5. When I make plans, I am almost certain to make them work.	-3	-2	-1	-1	+2	+3
6. Often there is no chance of protecting my personal interests from bad luck happenings.	-3	-2	-1	-1	+2	+3

7. When I get what I want, it's usually because I'm lucky.	-3	-2	-1	+1	+2	+3
8. Although I might have good ability, I will not be given leadership	-3	-2	-1	+1	+2	+3
9. How many friends I have depends on how nice a person I am.	-3	-2	-1	+1	+2	+3
10. I have often found that what is going to happen will happen.	-3	-2	-1	+1	+2	+3
11. My life is chiefly controlled by powerful others.	-3	-2	-1	+1	+2	+3
12. Whether or not I get into a car accident is mostly a matter of luck	-3	-2	-1	+1	+2	+3
13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.	-3	-2	-1	+1	+2	+3
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	-3	-2	-1	+1	+2	+3
15. Getting what I want requires pleasing those people above me.	-3	-2	-1	+1	+2	+3
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.	-3	-2	-1	+1	+2	+3
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.	-3	-2	-1	+1	+2	+3

18. I can pretty much determine what will happen in my life.	-3	-2	-1	+1	+2	+3
19. I am usually able to protect my personal interests.	-3	-2	-1	+1	+2	+3
20. Whether or not I get into a car accident depends mostly on the other driver.	-3	-2	-1	+1	+2	+3
21. When I get what I want, it's usually because I worked hard for it.	-3	-2	-1	+1	+2	+3
22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.	-3	-2	-1	+1	+2	+3
23. My life is determined by my own actions.	-3	-2	-1	+1	+2	+3
24. It's chiefly a matter of fate whether or not I have a few friends or many friends.	-3	-2	-1	+1	+2	+3

SOCIAL PSYCHOLOGICAL STUDY OF PATIENTS UNDERGOING OPEN HEART SURGERY

1 Name	By Soumen Acharya		
2 Age : (Years)			<u>Smoking Data</u>
3 Sex	Male/Female	20	Have you ever smoked?
4 Address			If no, go to Q. No. 28
5 Sr. No. from		21.	Do you smoke at present?
6 Study No.		22.	What did/do you smoke mostly : Cigarettes/Beedi/Pipe/Cigar/Chutta/Hukka
7 Date of Interview :		23.	How many years you have been smoking
8 Religion	HINDU MUSLIM SIKH CHRISTIAN OTHERS	24.	On an average how much do you smoke daily
9 Highest level of schooling attained :	(a) None (b) Primary (c) Middle (d) Secondary (e) College (f) Unknown	25.	Have you ever stopped smoking
10 Present Marital status	(a) Married (b) Divorced (c) Separated (d) Widowed (e) Single	26.	If yes, for how long
11 If any of (a to d) in Q. 10 is yes Consanguineous	Yes/No	27.	If stopped, why did you resume smoking (a) Strong Urge (b) For concentration in work (c) Any other reason (specify) (d) Do not know
12 Present occupation (write if retired)		<u>Consumption of Alcohol-Data</u>	
13 Duration of present occupation (years) (If retired, since when) :		28.	Have you ever taken drinks If no, go to Q. No. 37
14 Nature of present occupational physical activity (a) Sedentary (b) Light work (c) Moderate work (d) Heavy work		29.	Do you drink at present
15 What was your last occupation, if any		30.	How often do you drink (a) Daily (b) 2-3-4 times a week (c) Less than once a week
16 Duration of last occupation	..... Years	31.	What is your usual drink (a) Whisky (b) Rum (c) Brandy (d) C (e) Wine (f) Beer (g) Local drink
Height	..... Cm	32.	How many drinks do you usually have at a time One drink = Beer 12 Oz Wine 4 Oz other 2 Oz
Weight	..... Kg.	33.	How many years you have been drinking
Income (Monthly)	Rs.	34.	Have you ever stopped drinking
Native State	.....	35.	If yes, for how long
		36.	If stopped, why did you resume drinking (a) Strong Urge (b) Any other reason (specify) (c) Do not know
		<u>Physical Exercise Data</u>	
		37.	Do you currently have any regular Physical exercise/activity outside of your job

- b) 3-4 days a week
- c) 1-2 days a week
- d) Less than once a week

Please describe this physical exercise/activity

- (a) Sports (specify).....
- (b) Walking.....
- (c) Other (specify).....

What is the duration of this activityHr. Mts

How long have you been doing this activityYears

Have you done any regular exercise/activity in the past outside your job Yes/No

Reason for stopping this activity at present

- (a) On medical advice
- (b) Lack of time
- (c) Other reason (specify).....

How long is it since you stopped thisYears

Dietary Data

Are you a vegetarian Yes/No

If no, how many times you take meat per week

Do you take eggs Yes/No

If yes, how many eggs per week-----

What is the main cooking medium (fat) you use regularly :

- (a) Ghee (b) Vanaspati (c) Gingely (Til) Oil
- (d) Ground Nut Oil (e) Mustard Oil (f) Other (specify).....

What is total quantity of fats your household consumes each monthkg/lit

Per capita consumption of fats each monthgm/ml

What is total quantity of salt your household consumes each monthkg.

Per capita consumption of salt each monthgm

(Head of the house-hold to be asked Q. 50, 52)

Family History

If your mother alive Yes/No

If yes, does she suffer from heart disease Yes/No

56. nature of disease (specify).....

57. If not alive, what was cause of her death

58. Is your father alive

59. If yes, does he suffer from heart disease

60. If he suffers from heart disease, what is nature of disease (specify).....

61. If not alive, what was cause of his death

62. How many brothers/sisters have you who are alive now

- (a) No. of brothers alive
- (b) No. of sisters alive

63. Has any of your brothers/sisters had heart trouble

64. If yes, please give details as follows :

- (a) Brother/sister
- (b) Age in yrs when heart trouble started
- (c) Nature of illness

65. Did you have any brother/sister who died

66. If yes, please give the following information

- (a) Brother/sister
- (b) Age in yrs at death
- (c) Cause of death

67. Has any one in your family ever had high BP

68. If yes, which of your relations

- (a) Parent
- (b) Brother
- (c) Sister

69. Has any one in your family ever had diabetes (sugar disease)

70. If yes, which of your relations

- (a) Parent
- (b) Brother
- (c) Sister

71. If you are married does your wife/husband suffer from :

- (a) Heart trouble
 - (i) If yes (specify)
- (b) High blood pressure
- (c) Diabetes