CHAPTER VI
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Any one of us may breakdown if the going gets tough. But if we see a life of a soldier, it is full of conditions of overwhelming stress and anxiety for example war situations, emergency, military combat and even daily routines. After these conditions either soldiers recover, or there is a residual damage to self-structure. There are also chances of increased vulnerability to certain types of stress and anxiety/neuroticism. All these conditions along with depression and adjustment problems bring traumatic reactions like physical fatigue, ever present threat/fear of death, severe psychological shocks, narrow escapes, etc. Some cases are complicated by memories of killing enemy soldiers or civilians tingled with feelings of guilt and anxiety (Karpe & Schnap, 1952; Polner, 1968; Van Putten & Emory, 1973).

Battle conditions are notoriously destructive to health. Frequently men go for days without adequate sleep and rest. Nearby blasts are also one of the factors. Other factors are severe climatic conditions, malnutrition and disease. Results of all these factors are lowering the individual's resistance to stress anxiety/neuroticism and depression.

Number of psychological and interpersonal factors contribute to the overall stress and anxiety experiences by soldiers and predispose the soldier to break down under the increased burden of stress and anxiety. Such factors include a reduction in personal freedom, frustrations of all sorts, separation from home and loved ones. Strangeness and unpredictability can be a source of severe threat and stress and anxiety/neuroticism. There are also usually increasingly severe feelings of threat and anxiety as one sees his buddies killed or wounded and
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experiences narrow escapes himself. Hypersensitivity is shown in
startle reactions followed directly from this continuous fear and
anxiety.

Common symptoms seen among combat troops are
dejuctions, weariness hypersensitivity, sleep disturbances and
tremors, anxiety, depression, irritability, tension, startle
reactions. Many people who have been involved in the turmoil of
war experiences devastating psychological problems for months
or even years afterward (Berrett, Resnick, Foy & Dansk, 1996)

There was a front page article in “The Times of India” by
Deeptiman (2012), that highlighted the plight of soldiers in Indian
paramilitary forces, and how attrition has risen and suicide levels
reached unacceptable and unforeseen levels. Apparently it took a
study by IIMA to conclude and find the reasons behind this-
continuous posting in difficult areas, long working hours, sleep
deprivation, denial of leave, lack of health care facilities and
delay in promotions and pay parity were cited as reasons for
unbearable distress among the personnel.

Most common disorder found in army people is Post
Traumatic Stress Disorder (PTSD). It is a disorder that occurs
following an extreme traumatic stress or in which a person shows
symptoms of trauma, and of persistent symptoms of increased
arousal. In a study by Julian (1999), Post Traumatic Stress
Disorder was found to be comorbid but distinct among military
veterans seeking post-traumatic stress disorder treatment. Its
diagnosis was associated with elevated levels of war zone
trauma, exposure and witnessing atrocities.

Current and former soldiers who seek treatment for post-
traumatic stress disorder (PTSD) should be screened closely for
major depression since the disorder is the single strongest driver
of suicidal thinking, says author of a new Canadian study.
Researcher evaluated 250 active duty Canadian Forces, RCMP
members and veterans. The study comes at a time when record numbers of suicides are being reported among American troops returning from Afghanistan and Iraq, and the number of suicides reported among Canadian forces last year reached its highest point since 1995. In veterans suffering from post-traumatic stress disorder, about half also have symptoms of major depressive disorder during their lifetime, said the researchers (Pedersen, 2012).

Adjustment too becomes a major issue for the soldiers who are in job as well as who come back home for leave or retire. These adjustments become all the more difficult if they suffer from some chronic illness, some accident or if they return from war or war like situation.

In a study by Diamond & Ross (1945), one hundred and fifty newly blinded soldiers were given a thorough psychiatric evaluation of their previous civilian and military background and their emotional response to their disability. Of this number, 59% were found to be well adjusted to their blindness; 18% were definitely mal-adjusted; and 23% showed mild or borderline symptoms. The criteria for an adequate adjustment in the newly blinded soldier were a complete freedom from anxiety, depression, or undesirable aggressive behavior, or other psychiatric symptoms; a realistic acceptance of their disability; an appreciation of the need to undergo orientation and rehabilitation procedures; and a definite motivation towards the reestablishment of themselves as useful and productive citizens. Maladjustment appeared in the form of anxiety symptoms, mood disturbances, aggressive behavior, excessive dependency and apathy, unrealistic attitudes, guilt reactions, and mental confusion with memory difficulty. These abnormal responses were determined by preexisting neurotic and psychopathic traits; by blindness occurring as the result of non-combat injury and disease; by partial blindness of a degree too slight to be useful; by false
prognoses and incomplete understanding by the patient of his disability; by brain trauma; and in a few cases, by attitudes of relatives. Blindness, as a mental stress does not appear of itself alone to be capable of producing abnormal mental or emotional reactions. If additional factors, such as those mentioned, be present, then pathological mental and emotional behavior will result in most cases.

In an article, researchers report findings from a 1-year longitudinal study examining the impact of change in posttraumatic stress disorder (PTSD) symptoms following combat deployment on National Guard soldiers' perceived parenting and couple adjustment 1 year following return from Iraq. Structural equation modeling analyses showed that increases in PTSD symptoms were associated with poorer couple adjustment and greater perceived parenting challenges at Time 2 (both at $p < .001$). Furthermore, PTSD symptoms predicted parenting challenges independent of their impact on couple adjustment (Gewirtz, Polusny, DeGarmo, Khaylis & Erbes, 2010).

In another article written by Hall (2011), she states that soldiers face many adjustment problems specially when they return back home from a combat situation. She listed three of the Psychological and Social dilemmas faced by Veterans returning to society.

Psychologically, these Veterans are faced with numerous issues. Three of these issues include:

Post Traumatic Stress Disorder (PTSD) affects many of the soldiers returning from war. This is the number one psychological problem.

Panic attacks can be set off by any reminder of the trauma the soldier endured during their line of duty. Firework displays may be beautiful to the general public, but to a soldier, this sounds like gunfire and Javelin tank missile.
Flashbacks are the "trademark" of PTSD. The terror of war can return months, years, or decades later at the drop of a dime. A stressful experience can bring back the flashback.

Socially, Veterans who are returning to civilian life have a challenging time adjusting, as well. Three of the issues they face are:

Veterans cannot talk with the normal civilian when they are troubled.

Hypervigilance is both psychological (a pattern under PTSD) and a social problem for the warrior upon returning home. The Veteran is constantly hypervigilant to the point of noticing all smells, scoping out a crowd for the one who appears to dressed differently, when they do close their eyes, a soldier's ears begin working overtime because this is what they have been trained to do, and a soldier is always searching for the nearest door and exit route in every room. A soldier has been trained to be "on guard" at all times. so letting down his or her guard, just because they are back in society, does not mean this will come easy for them.

Acceptance and integrating, in general, will be difficult for the Veteran upon returning home.

So from all the above points we can see that life of a soldier is very different from civilians. So keeping all these things in mind it is very important for a soldier to keep himself healthy, physically as well mentally. It is because a Soldier's level of physical fitness has a direct impact on his or her combat readiness.

A Center for Disease Control report (2007-2010), indicates that a third of males who have served report one or more chronic health problems as opposed to one fourth of men who have never served in the military. It actually makes sense for both men and women in the military. Young men and women embarking into a
realm of high stress service can lead to exposures to substances and lifestyle choices that could cause harm later in life. Type 2 diabetes and high blood pressure are two chronic diseases that can be controlled or stopped entirely with lifestyle choices. In the service, personnel often cannot make or do not choose the healthiest foods among the options available. Also while deployed on active duty, the amount of calories needed to get through the day are usually much greater than what a service member will burn in civilian life. The food choices and high calorie content often follow service members into civilian life where weight gain begins almost immediately. Weight gain leads to insulin resistance, which leads to high blood glucose levels. Excess weight also can lead to high blood pressure.

Keeping all the above factors in mind the present endeavor was designed to fulfill certain aims. The first and most important aim was to compare the score on Neuroticism/Anxiety of the patients of Diabetes, Hypertension and other Psychosomatic problems with the normals. The reason being that the person will become more neurotic with the onset of the various psychosomatic problems and vice versa. Another aim was to see that how the test scores which are related to the daily life hassles and family matters affect the soldier, to know the effect of all the variables on the adjustment of the soldier in the various areas of the life, to see if the diabetics in comparison to the hypertensive and patients suffering from other psychosomatic problems have high scores in neuroticism, depression and stress because of its greater complication and lastly, to see if normal score high in adjustment.

Apart from the aims mentioned above there was another very important point that was kept in mind while proceeding in the study and that was that as we all know, stress, anxiety, depression plays a very important role in the onset of the disease but various studies have also proved that after the onset of
disease, the level of stress, anxiety, and depression increases and the adjustment of individual is affected adversely in various spheres of life (Parmar, 2007).

So, the present study proceeded in the direction of achieving these aims and as the obtained results show was successful to a great extent. As stated earlier, the sample consisted of total 200 army persons, 50 psychosomatics, 50 diabetics, 50 hypertensives and 50 normals. The tools used for the study were Maudsley Personality Inventory (MPI)-Hindi Version: (Jalota and Kapoor, 1965), ICMR Psychological Stress Questionnaire - (Srivastava, ICMR, Forth Advisory Committee, 1991-1992), The Adjustment Inventory: Adult Form - (Hugh M. Bell, 1938) and Beck's Depression Inventory (BDI) - (Beck, Ward, Mendelson, Mock & Erbaugh, 1961).

The data were analysed first of all through One Way Analysis of Variance (ANOVA) followed by Duncan's New Multiple Range Test, Correlation Analysis and Regression Analysis for the ten different variables, that is, Neuroticism, Depression, Home Adjustment, Health Adjustment, Social Adjustment, Emotional Adjustment, Occupational Adjustment, Stress(a)-Daily Life hassles, Stress(b)-(Life Events) and Stress (Total). The results have been presented in the previous chapter of Results (CHAPTER-V).

Through One Way Analysis of Variance (ANOVA), the means were calculated, compared and it was seen whether any of those means were significantly different from each other for all the four groups. After ANOVA, Post-Hoc Comparison was done and Duncan's New Multiple Range Test was applied to get clearer view of the results obtained. An ANOVA (without the post-hoc analysis) can only show if or not a significant difference exists between the four groups. If a significant difference is found, the analysis does not show which groups are significantly different. So to see which groups are significantly different, we carried out
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post-hoc test. The correlation analysis was conducted to see the relationship among all the ten variables.

And lastly, regression analysis was done and depression was taken as dependent variable. The relationship of depression was calculated with other variables. Depression is basic and is bipolar and it leads to psychosomatic diseases. It also changes the perception of an individual in every sphere of life altogether. Depression leads to restlessness and this leads to negative thoughts which further leads to anxiety and psychosomatic problems. Hence, the effect is not bipolar but also circular.

We shall discuss the results in two parts:

First part deals with One Way Analysis of Variance (ANOVA) and Post-hoc Comparison, Duncan's New Multiple Range Test (6.1), under this section we shall take all the ten variables that is, Neuroticism, Depression, Adjustment- Home, Health, Social, Emotional and Occupational, and lastly Stress-Stress(a)-Daily Life Hassles, Stress(b)- (Life Events) and Stress (Total), one by one and discuss.

Second part deals with Regression Analysis (6.2) and under this we shall take the three patient groups, that is, Psychosomatics, Diabetics and Hypertensives, taking Depression as the dependent variable.

6.1 ONE WAY ANALYSIS OF VARIANCE (ANOVA) AND POST-HOC COMPARISON, DUNCAN'S NEW MULTIPLE RANGE TEST

6.1.1 Neuroticism

After applying One Way Analysis of Variance (ANOVA), on the variable of Neuroticism, Diabetics have scored the highest Mean= 38.46, in comparison to Psychosomatics, Hypertensives and Normals, 28.90, 25.95 and 20.30, respectively (See Table 5.1). The F-ratio for Neuroticism is 11.73**, p<.01(See Table 5.2). It indicates that subjects belonging to these three groups differ
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significantly in their mean score on Neuroticism. Further, for the clear picture of the differences among the groups on Neuroticism variable, Post-hoc Comparison, Duncan's New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons, the results show significant differences between five of them, the highest being between Diabetics and Normals, that is $q_r = 18.16^{**}$, $p<.01$, then it was between Diabetes and Hypertensives, $q_r = 12.51^{**}$, $p<.01$, third between Diabetes and Psychosomatics, $q_r = 9.56^{**}$, $p<.01$, after that between Normals and Psychosomatics, $q_r = 8.60^{**}$, $p<.01$, and lastly between Normals and Hypertensives, $q_r = 5.65^{**}$, $p<.01$. Among the six comparisons, for one no significant difference was found, that was between Hypertensives and Psychosomatics (See Table 5.3; Figure 6.1).

**Figure 6.1**

General Means and Post Hoc Comparison on Neuroticism

![Graph showing mean scores of different groups on Neuroticism with significant differences indicated by stars and p-values.](image-url)
Neuroticism is a fundamental personality trait in the study of psychology, manifested by characteristics of anxiety, moodiness, worry, envy and jealousy (Thompson, 2008). Individuals who score high on neuroticism are more likely than the average to experience such feelings as anxiety, anger, envy, guilt, and depressed mood (Matthews & Deary, 1998). They respond more poorly to environmental stress, and are more likely to interpret ordinary situations as threatening, and minor frustrations as hopelessly difficult. They are often self-conscious and shy, and they may have trouble controlling urges and delaying gratification. Neuroticism is a risk factor for the "internalizing" mental disorders such as phobia, depression, panic disorder, and other anxiety disorders (traditionally called neuroses) (Hettema, Neale, Myers, Prescott, & Kendler, 2006).

So, for the variable of Neuroticism mostly significant results are observed amongst the four groups. Neuroticism has been found to be highest amongst the diabetic group and its highest significance difference was found with Normals as compared to the other groups. The Neuroticism has increased due to physical problems which have serious ramifications.

Diabetics are shy, nervous, inhibited and self-conscious etc. Emotional persons have worse glycemic control while self-controlling persons have better glycemic control (Peyrot, McMurry & Kruger, 1998). Halford, Cudding & Mortimer, (1990) once reported that diabetics experience high level of anxiety, show poor blood glucose control than Normals.

Diabetes being one of the psychosomatic disorder, disturbs the chemical balance in the body that can affect a number of different organs in the body. It is a disorder of metabolism and a vascular system manifested by a disturbance of the body's handling of the glucose, lipid and protein. There are two conditions in diabetes, one is hyperglycaemia - in which the sugar
level rises; and the second condition is hypoglycaemia – in which the sugar level in blood falls tremendously.

Lower average blood glucose values at baseline were associated with higher scores for the personality domain of neuroticism and several specific traits including anxiety, angry hostility, depression, self-consciousness, and vulnerability but were associated with lower scores for the trait of altruism (Lane, McCaskill, Williams, Parekh, Feinglos & Surwit, 2000).

There was a similar study by Charman (2000) and Gentile, Bioise, Duria, Coronel & Paolantonio (2001) who also found that diabetics have depression, hostility and self-consciousness. They have more passive-aggressive behavior, avoidant and low level of altruism traits in comparison to their normal counterparts which lead to poor adjustment.

Personality characteristics may influence a diabetic patient's ability and willingness to follow a prescribed regimen to achieve glycemic control. This study investigated the relationship of two personality factors to renal deterioration time (from initiation of insulin therapy to renal failure) in 85 patients with IDDM and end-stage renal disease. Persons moderate in the personality trait of neuroticism and high in conscientiousness had renal deterioration times that were 12 years longer than persons with either high or low neuroticism and low conscientiousness, presumably because of better self-care (Brickman, Yount, Blaney, Rothberg & De-Nour, 1996).

A study by Talley, Bytzer, Hamme, Young, Jones & Horowitz (2001) reported that increased levels of state anxiety, depression and neuroticism are associated with upper and lower Gastrointestinal symptoms in diabetes mellitus.

Praveen & Singh (1994) found that psychological states such as anxiety, frustration are also associated with diabetes and
found that in comparison to normals diabetics are more frustrated and anxious as they are deprived of certain amenities of life.

Hence the hypothesis “Diabetics will score high in neuroticism and depression as compared to the other groups because of its greater complication” is accepted.

Mean results also show that for the groups of patients, that is, Psychosomatic as well the Hypertensive group, Neuroticism was higher as compared to the Normals.

Perhaps because negative emotions are frequently expressed in physiological reactions, psychosomatic theories have often identified Neuroticism and its component traits (including anxiety, anger, and depression) as causal influences on the development of disease. These views are apparently supported by correlations between physical symptom reports and measures of Neuroticism in males Data from 347 adult women in the Baltimore Longitudinal Study of Aging replicate this finding for total physical complaints and for most body systems (Costa & McCrae, 1987).

In a study by Robertson, Ray, Diamond & Edwards (1989), found that high neuroticism and introversion scores were more prevalent in the patients with inflammatory bowel disease than controls and these characteristics were as prominent in patients before diagnosis as in established cases. Introversion scores increased with the duration of disease. Patients believed there was a close link between personality, stress and disease activity.

An article by Friedman & Booth-Kewley (1987), examined the notion that personality plays a causal role in the development of disease. In particular, this article developed the heuristic strategy of simultaneously comparing several emotional aspects of personality and several diseases, with close attention to the strength of the links between personality and disease. The published literature on personality correlates of five diseases with
so-called "psychosomatic" components-asthma, arthritis, ulcers, headaches, and coronary heart disease-was reviewed and discussed, with a focus on construct validity. The statistical technique of meta-analysis was used to provide an easily viewed comparative summary. The results point to the probable existence of a generic "disease-prone" personality that involves depression, anger/hostility, anxiety, and possibly other aspects of personality. However, except in the case of coronary heart disease, the evidence was weak. Nevertheless, there was sufficient evidence to argue for a key role for psychological research on the prevention and treatment of disease.

Among psychiatrically normal individuals, the personality dimension of neuroticism is systematically related to the number of medical symptoms reported and that neuroticism-related complaints are best viewed as exaggerations of bodily concerns rather than as signs of organic disease (Costa & McCrae, 1985)

Personality had an impact on Hypertension as well. A study by Roy & Arora (2012), attempted to explore the personality variables of hypertension. A sample consisted of sixty hypertensive and sixty normal male subjects selected from Ranchi Medical College Hospital and private clinics of Ranchi town. Cattell’s 16 Personality Factor Questionnaire and Eysenck Personality Inventory were used to collect data. Result revealed that hypertensives were more detached, sober, shy, sensitive, shrewd, over protected as compared to normal control group.

Hence the hypothesis “Neuroticism / Anxiety scores will be higher in patients as compared to the normal” is accepted.

6.1.2 Depression

After applying One Way Analysis of Variance (ANOVA) on the variable of Depression, Diabetics have scored the highest Mean = 15.39, in comparison to Psychosomatics, Hypertensives and Normals, 12.21, 10.84 and 6.76, respectively (See Table 5.4).
The F-ratio for Depression is 13.45**, p<.01 (See Table 5.5). It indicates that subjects belonging to these three groups differ significantly in their mean score on Depression. Further, for the clear picture of the differences among the groups on Depression variable, Post-Hoc Comparison, Duncan's New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons the results show significant difference between five of them, the highest being between Diabetics and Normals, that is $q_r = 8.63**$, p<.01, then it was between Normals and Psychosomatics, $q_r = 5.45**$, p<.01, third between Diabetes and Hypertensives, $q_r = 4.55**$, p<.01, after that between Normals and Hypertensives, $q_r = 4.08**$, p<.01, and lastly between Diabetics and Psychosomatics, $q_r = 3.18**$, p<.01. Among the six comparisons, for one no significant difference was found, that was between Hypertensives and Psychosomatics (See Table 5.6; Figure 6.2).

**Figure 6.2**
General Means and Post Hoc Comparison on Depression

![Graph showing general means and post hoc comparison on depression](image-url)

- P (Psychosomatics) — Significant
- D (Diabetics) — Non-Significant
- H (Hypertensive) — (**)=p<.01
- N (Normals)
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Depression is a state of low mood and aversion to activity that can have a negative effect on a person's thoughts, behavior, feelings, world view and physical well-being (Salmans, 1997). Depressed people may feel sad, anxious, empty, hopeless, worried, helpless, worthless, guilty, irritable, hurt or restless. They may lose interest in activities that once were pleasurable, experience loss of appetite or overeating, have problems concentrating, remembering details, or making decisions and may contemplate or attempt suicide. Insomnia, excessive sleeping, fatigue, loss of energy, or aches, pains or digestive problems that are resistant to treatment may also be present (NIMH, 2012). Depressed mood is not necessarily a psychiatric disorder. It is a normal reaction to certain life events, a symptom of some medical conditions and a side effect of some medical treatments. Depressed mood is also a primary or associated feature of certain psychiatric syndromes such as clinical depression.

We can see that for the variable of Depression mostly significant results are observed amongst the four groups. Depression has been found to be highest amongst the Diabetic group and highest significance difference was found with Normals as compared to the other groups.

Agitation, unexplained irritability, inattention, extreme lethargy, or confusion can all be signs of very high blood sugar, ketoacidosis, hyperosmolar hyperglycemia nonketotic syndrome, or hypoglycemia (low sugar). As already stated above that Diabetics are shy, nervous, inhibited and self-conscious etc. Emotional persons have worse glycemic control while self-controlling persons have better glycemic control (Peyrot, McMurry & Kruger, 1998). Lower average blood glucose values at baseline were associated with higher scores for the personality domain of neuroticism and several specific traits including anxiety, angry hostility depression, self-consciousness, and vulnerability.
Praveen & Singh (1994) found that psychological states such as anxiety, frustration are also associated with diabetes and found that in comparison to normal, diabetics are more frustrated and anxious as they are deprived of certain amenities of life. So, all these traits in diabetics are symptoms of depression as well.

Depression is not only one of the worst illnesses known to humankind, it is also implicated in another one of the worst illnesses known to humankind - diabetes. For someone with a severe case of diabetes, the disease can amount to a slow and painful execution extending over years and decades. For many years it was thought that depression was a complication of diabetes, which may well be the case. More recent research, however, points to depression as a possible cause or trigger.

A Kaiser Permanente study (Nichols & Brown, 2003) of some 16,180 subjects found that those with diabetes were more likely to have been treated for depression within six months before their diabetes diagnosis. About 84 percent of diabetics also reported a higher rate of earlier depressive episodes.

A Johns Hopkins and other centers study (Golden, Williams, Ford, Yeh, Sanford, Nieto & Brancati, 2004) tracking 11,615 initially nondiabetic adults aged 48-67 over six years found that "depressive symptoms predicted incident type 2 diabetes."

Studies show that depression and diabetes are linked, but scientists do not yet know whether depression increases the risk of diabetes or diabetes increases the risk of depression. Current research suggests that both cases are possible. In addition to possibly increasing the risk for depression, diabetes may make symptoms of depression worse. The stress of managing diabetes every day and the effects of diabetes on the brain may contribute to depression (Golden, Lazo, Carnethon, Bertoni, Schreiner, Roux, Lee & Lyketsos, 2008). In the United States, people with
diabetes are twice as likely as the average person to have depression (Egede, Zheng & Simpson, 2002).

At the same time, some symptoms of depression may reduce overall physical and mental health, not only increasing your risk for diabetes but making diabetes symptoms worse. For example, overeating may cause weight gain, a major risk factor for diabetes. Fatigue or feelings of worthlessness may cause one to ignore a special diet or medication plan needed to control your diabetes, worsening your diabetes symptoms. Studies have shown that people with diabetes and depression have more severe diabetes symptoms than people who have diabetes alone (Egede, Zheng & Simpson, 2002).

According to American Diabetes Association, people with diabetes have a greater risk of depression than people without diabetes. Patients may feel alone or set apart from their friends and family because of all this extra work. If they face diabetes complications such as nerve damage, or if they are having trouble keeping blood sugar levels where they like, they may feel like losing control of their diabetes. Even tension between them and their doctor may make them feel frustrated and sad. Just like denial, depression can get them into a vicious cycle. It can block good diabetes self-care. If they feel depressed and have no energy, chances are that they will find such tasks as regular blood sugar testing too much. If they feel so anxious that they can't think straight, it will be hard to keep up with a good diet. They may not feel like eating at all. Of course, this will affect their blood sugar levels.

According to National Institute for Health and Clinical Excellence (NICE, 2009), people who are diagnosed with a chronic physical health problem such as diabetes are 3 times more likely to be diagnosed with depression than people without it. Depression can have a serious impact on a person's well-being and their ability and motivation to self-manage their condition.
Depression is the most common psychiatric disorder witnessed in the diabetes community. People with diabetes suffering from depression are at greater risk of suffering from an episode of diabetic burnout which collectively can have adverse effects on physical health and potentially instigate more long term complications both to do with diabetes and independent from the condition.

Depression can affect a patient's capacity to deal with their diabetes, including managing blood glucose levels appropriately. Research has found that people who suffer from both diabetes and depression have poorer metabolic and glycemic control which has, in turn, been found to intensify symptoms of depression. Additionally, anti-depressants have been found to have hypoglycaemic effects causing serious problems for self-management. It has previously been reported that depressed people with diabetes are less likely to adherence to medication and diet regimens and subsequently have a reduction in quality of life and increased health care expenditure. Research has shown by addressing depression, glycemic control is enhanced, mood and quality of life is significantly improved (Lustman & Clouse, 2005).

Hence the hypothesis “Diabetics will score high in neuroticism and depression as compared to the other groups because of its greater complication” is accepted.

Apart from Diabetes, the other two groups, that is, Psychosomatics and Hypertensives also scored high in Depression as compared to the Normals. So, we can say that the patients suffering from chronic illness suffer from depression or we can also say the other way round that the chronic illness aggravates depression in patients.

In an article chronic medical illness is consistently associated with an increased prevalence of depressive symptoms
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and disorders (Anderson, Freedland, Clouse & Lustman, 2001). In some cases, depression appears to result from specific biologic effects of chronic medical illness. Examples of this relationship include central nervous system disorders—such as Parkinson's disease, cerebrovascular disease, or multiple sclerosis—as well as endocrine disorders—such as hypothyroidism. In other cases, the association between depression and chronic medical illness appears to be mediated by behavioral mechanisms; the limitations on activity imposed by the illness lead to gradual withdrawal from rewarding activities (Prince, Harwood, Thomas & Mann, 1998).

Depression significantly increases the overall burden of illness in patients with chronic medical conditions. Compared with those without depression, medical outpatients with depressive symptoms or disorders experienced decrements in quality of life (Spitzer, Kroenke & Linzer, 1995) and had almost twice as many days of restricted activity or missed work because of illness (Ormel, VonKorff, Ustun, Pini, Korten & Oldehinkel, 1994). Similarly, depression is associated with a 50% to 100% increase in health services use and costs (Simon, VonKorff & Barlow, 1995).

Depression has also been linked to increased disease-related morbidity and mortality. Results of population-based studies have shown a modest association between depression and all-cause mortality and a stronger association between depression and mortality resulting from cardiovascular disease (Unutzer, Patrick, Marmon, Simon & Katon, 2002). Depression is clearly associated with a poorer prognosis and more rapid progression of chronic illnesses, including ischemic heart disease (Glassman & Shapiro, 1998) and diabetes (de Groot, Anderson, Freedland, Clouse & Lustman, 2001).

During the past few decades, a substantial body of evidence has established a link between depression, cardiovascular
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disease and mortality (Glassman & Shapiro, 1998). Two large community epidemiologic studies (Murphy, Monson, Olivier, Sobol & Leighton, 1987; Bruce, Leaf, Rozal, Florio & Hoff, 1994) demonstrated a significant relationship between depression and mortality in patients with myocardial infarction.

Results from another study (Andra, Williamson, Jones, Macera, Eaker & Glassman, 1993; Bruce, Leaf, Rozal, Florio & Hoff, 1994) showed that depression contributes to a greater chance of developing or dying of heart disease in persons who were initially healthy, even after controlling for smoking status, gender, weight, activity, blood pressure and cholesterol levels.

Results from additional studies (Glassman & Shapiro, 1998) have supported the contribution of depression as an independent risk factor for cardiovascular disease in persons who were initially free of the disease. Other studies (Frasure-Smith, Lesperance & Talajic, 1993; Lesperance, Frasure-Smith & Talajic, 1996) have shown that persons who are depressed and have preexisting cardiovascular disease have a 3.5 times greater risk of dying of a myocardial infarction than patients with cardiac disease who are not depressed.

In a recent study (Ferketich, Schwartzbaum, Frid & Moeschberger, 2000) depression was shown to be associated with an increased risk of developing coronary heart disease in men and women.

Depression and Hypertension are two of the most serious conditions one person could face. Depression is usually accompanied by feelings of anxiety, guilt and hopelessness, not to mention insomnia and other problems that directly affect stress levels. Elevated stress levels have a direct impact on HBP and in most cases will elevate it to the point where damage to blood vessels is caused (Samuda, 2012).
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Hence, the hypothesis is proved here that “the Depression scores will be higher in patients with various diseases than the normal.”

6.1.3 Adjustment

Bell in 1938 gave, The Adjustment Inventory: Adult Form, which covered the five areas of life of an individual, that is, Home, Health, Social, Emotional and Occupational. It was to test an individual’s adjustment in these five specific areas. In our study we took these areas as separate variables to see the individual’s adjustment in these areas separately. We shall discuss them later. First of all let us discuss the Adjustment in total as the results show that patients have scored low in almost all areas of adjustment as compared to the normals.

Adjustment in general is a principle that is closely associated with the individuals' mental health. Adjustment to the environment and resistance against its difficulties is the first capability of a living being (Weizmann, 1989). It is difficult to adjust in a complex society that is changing rapidly. Traditionally, psychologists pay attention to the individual’s adjustment to the environment. They consider the personal traits as normal when the traits help the individual adjust to the environment, live a peaceful life with others and obtain a social position.

Adjustment in psychology is the behavioural process of balancing conflicting needs, or needs against obstacles in the environment. Humans and animals regularly do this, for example, when they are stimulated by their physiological state to seek food, they eat (if possible) to reduce their hunger and thus adjust to the hunger stimulus. Adjustment problems occurs when there is an inability to make a normal adjustment to some need or stress in the environment, we can also call this as Adjustment Disorder. It occurs when an individual is unable to adjust to or cope with a particular stressor, like a major life event. Since people with this
disorder normally have symptoms that depressed people do, such as general loss of interest, feelings of hopelessness and crying. This disorder is also sometimes known as situational depression. Unlike major depression however, the disorder is caused by an outside stressor and generally resolves once the individual is able to adapt to the situation (An Introduction to Adjustment Disorder).

When an individual is suffering from chronic illness, he or she find hard to make these adjustment. The basic reason being that they are making adjustments with their illness or we can also say that they are under pressure all the time to make adjustments to their illness.

Sprangers, de Regt, Andries, et.al (2000), state that chronic illnesses are disorders that persist for an extended period and affect a person's ability to function normally. Some chronic diseases (eg, rheumatoid arthritis) need long-term pharmacological treatment and are often characterised by progressive physical disability and pain. Others (eg, diabetes) can be medically controlled, but only at the cost of strict adherence to disease management regimens. Thus, a chronic illness has the potential to induce profound changes in a person's life, resulting in negative effects on quality of life and wellbeing.

After the medical diagnosis of chronic illness, patients are confronted with new situations that challenge their habitual coping strategies. As a result, they must find new ways of coping to adjust to their altered condition. The terms adjustment and psychological adjustment are used interchangeably to refer to the healthy rebalancing by patients to their new circumstances. Most patients eventually reach a state of good psychological adjustment, but for about 30% of patients, the adjustment phase is prolonged and sometimes unsuccessful (Taylor & Aspinwall, 1996).
Patients with a chronic illness must continuously revise their lifestyle, adapting it to the behavioural limitations imposed by their state of health. These incessant adjustments of behaviour dictated by the patients’ need to adapt to their clinical condition also cause profound psychological changes. The experience of a patient with a chronic illness often leads to a reformulation of self, which the patient may or may not be aware of, but which helps to facilitate successful behavioural adaptation (Antonia, Anna, Simona & Giuseppina, 2011).

Following a careful analysis of the literature, Stanton, Revenson & Tennen (2007), drew the following conclusions concerning adjustments to a chronic illness, describing them as a process that:

- Is transversal to many areas of life,
- Alters over time,
- Is heterogeneous.

Chronic diseases carry important psychological and social consequences that demand significant psychological adjustment. The literature is providing increasingly nuanced conceptualizations of adjustment, demonstrating that the experience of chronic disease necessitates adaptation in multiple life domains. Heterogeneity in adjustment is apparent between individuals and across the course of the disease trajectory. Focusing on cancer, cardiovascular disease, and rheumatic diseases, we review longitudinal investigations of distal (socioeconomic variables, culture/ethnicity, and gender-related processes) and proximal (interpersonal relationships, personality attributes, cognitive appraisals, and coping processes) risk and protective factors for adjustment across time. As observed that the past decade has seen a surge in research that is longitudinal in design, involves adequately characterized samples of sufficient size, and includes statistical control for initial values on dependent variables. A progressively convincing characterization
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of risk and protective factors for favorable adjustment to chronic illness has emerged (Stanton, Revenson & Tennen, 2007).

A Review by de Ridder, Geenen, Kuijer & Middendorp (2008), discuss physiological, emotional, behavioural, and cognitive aspects of psychological adjustment to chronic illness. Reviewing the reports of the past decade, they identify four innovative and promising themes that are relevant for understanding and explaining psychological adjustment. In particular, the emphasis on the reasons why people fail to achieve a healthy adjustment has shifted to the identification of factors that help patients make that adjustment. To promote psychological adjustment, patients should remain as active as is reasonably possible, acknowledge and express their emotions in a way that allows them to take control of their lives, engage in self-management, and try to focus on potential positive outcomes of their illness. Patients who can use these strategies have the best chance of successfully adjusting to the challenges posed by a chronic illness.

Then if we talk about Diabetes, its self-management is a complex regimen. The focal tasks of daily diabetics making adjustments like self-care which include medication adherence, self-monitoring blood glucose, nutrition adjustment, exercise, foot care, coping with the illness, and monitoring the disease symptoms and its progression (Siminerio, 2009; Funnell, Brown, Childs, Haas, Hosey & Jensen, 2009).

Regardless of age, persons with diabetes face issues related to intensive disease management, lifestyle modifications, potential complications, and psychological adjustment (Worthington, 2008).

A study by Coffey, Gallagher, Horgan, Desmond & MacLachlan (2009), examines psychosocial adjustment in persons with lower limb amputations related to diabetes.
Significant relationships were also observed between body image disturbance and psychosocial adjustment, social adjustment and adjustment to limitations. Individuals with diabetes-related amputations may be at elevated risk for psychological distress as a result of their co-morbid medical condition.

The diagnosis of chronic illness such as diabetes initiates a process of continuous appraisal and reappraisal through which the individual adjusts to the requirements and limitations imposed by the illness. Successful adjustment allows the individual to deal with illness related changes in ways that facilitate health (Michael, 1996). Because research has shown a relationship between the individual’s adjustment to diabetes and improved metabolic control, it is important to explore factors that may affect adjustment to diabetes. For people with diabetes, better adjustment is associated with better metabolic control (Pollock, Christian & Sands, 1990).

Health beliefs influencing compliance and psychosocial adjustment to illness were compared in two groups of hypertensive patients. Based upon clinical judgments of physicians, 15 controlled and 15 uncontrolled hypertensives made up the study group. Significant differences were found in several domains related to psychosocial adjustment to illness. Uncontrolled hypertensives showed less illness-related adjustment. They reported significantly greater difficulties in their domestic environments, more disturbances in extended family relationships, and more psychological distress. Less adjustment to illness was significantly correlated with less compliance and with a more complex medication regimen (Devon & Powers, 1984).

Now let us take up the five areas of Adjustment, that is, Home, Health, Social Emotional and Occupational, separately and discuss the results:
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6.1.3.1 Home Adjustment

After applying **One Way Analysis of Variance (ANOVA)** on the variable of Home Adjustment, Diabetics have scored the highest Mean = 10.65, in comparison to Psychosomatics, Hypertensives and Normals, 6.92, 6.71 and 3.05, respectively (See Table 5.7). The F-ratio for Home Adjustment is 7.18**, p<.01 (See Table 5.8). It indicates that subjects belonging to these three groups differ significantly in their mean scores on Home Adjustment. Further, for the clearer picture of the differences among the groups on Home Adjustment variable **Post-hoc comparison**, **Duncan’s New Multiple Range Test** was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons the results show significant difference between five of them, the highest significant difference was seen between Diabetics and Normals, qr = 7.60**, p<.01, then it was between Diabetics and Hypertensives, qr = 3.94**, p<.01, third, Normals and Psychosomatics, qr = 3.87**, p<.01, after that Diabetics and Psychosomatics, qr = 3.73**, p<.01, and lastly, between Normals and Hypertensives, qr = 3.66**, p<.01. Among the six comparisons, for one no significant difference was found, that was for Hypertensives and Psychosomatics (See Table 5.9; Figure 6.3).
A **Home** is a place of residence or refuge. Apart from being a physical structure, location or a building, etc., it is a place where an individual seeks comfort, relax, stays with family members, etc. Since it can be said that humans are generally creatures of habit, the state of a person's home has been known to physiologically influence their behavior, emotions, and overall mental health. Some people may become homesick when they leave their home over an extended period of time. Sometimes homesickness can cause a person to feel actual symptoms of illness (Boutruche, Bourgeois & Lyamouri-Bajja, 2008). This goes with our sample group--army personnel as they stay away from home and family for long periods of time.

It has been argued that psychologically "The strongest sense of home commonly coincides geographically with a
dwellings. Usually the sense of home attenuates as one moves away from that point, but it does not do so in a fixed or regular way (Terkenli, 1995). Furthermore, places like homes can trigger self-reflection, thoughts about who someone is or used to be or who they might become.

So, **Home Adjustment** is expressed in terms of satisfaction or dissatisfaction with home life, family members, etc. A high score tends to show unsatisfactory home adjustment to home surroundings. A low score indicates satisfactory home adjustment.

We can see that for the variable of **Home Adjustment** mostly significant results are observed amongst the four groups. As the Diabetic group scored highest, the Home Adjustment is lowest amongst them. Hence, the highest significance difference was found between Diabetics and Normals as compared to the other groups.

For Diabetics it is often difficult to make adjustments in home and with family members because as stated earlier that Diabetics are shy, nervous, inhibited and self-conscious etc. (Peyrot, McMurry & Kruger, 1998) and also have some specific traits like anxiety, self-consciousness, and vulnerability (Lane, McCaskill, Williams, Parekh, Feinglos & Surwit, 2000). Along with Neuroticism, Depression is also present in Diabetics. (Nichols & Brown, 2003; Golden, Williams, Ford, Yeh, Sanford, Nieto & Brancati, 2004).

In addition Diabetics also need to monitor their blood glucose, so they have to alter their daily routine to some extent. They need to check on their food intake and also need to include some physical activity or exercise. So it demands a lot of adjustment in home environment and with family members.

Diseases like diabetes can be medically controlled, but only at the cost of strict adherence to disease management regimens.
Thus, a chronic illness like Diabetes has the potential to induce profound changes in a person's life, resulting in negative effects on quality of life and wellbeing (Sprangers, de Regt, Andies, et al., 2000).

A diagnosis of diabetes can lead to changes in parental, sibling and peer relationships, changes in the way others relate to the child or adolescent, for example, teachers and relatives, changes in self-concept and in overall psychological well-being. Studies have reported the development of psychological problems (Gowers, Jones, Kiana, North & Price, 1995; Cameron, Smidts, Hesketh, Wake & Northam, 2003), more difficult family relationships, and poorer child adjustment according to parents' and teachers' perceptions (Merydith, 2000) following a diagnosis of diabetes.

Having Type 2 diabetes changes the life and can certainly affect interpersonal relationships as well, whether one is dating or married. Diabetes management requires a lot of attention and focus, which may be hard for a partner unfamiliar with the disease to understand. One has to carefully monitor what he or she eats and check blood sugar frequently throughout the day. And if one is not always so careful about managing diabetes, partner may also be affected (Rodriguez, 2011).

In this electronic diary study, researchers examined how a diabetic partner's symptoms and distress are associated with relationship interactions over 24 days. Using dyadic multilevel models, they examined the effects of patients' daily diabetes symptom severity and diabetes-specific distress on each partner's evaluations of their daily interaction enjoyment and tension. For both patients and spouses, diabetes symptoms were associated with a decrease in enjoyment and an increase in tension. For spouses, but not for patients, daily diabetes distress was marginally associated with an increase in tension. Among spouses whose patients' diabetes was of longer duration, the
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A negative association of symptoms and spouses' enjoyment was stronger. These findings suggest that the stress of patients' disease and distress affect both partners on a daily basis (Iida, Stephens, Franks & Rook, 2012).

Diabetes can also cause impotency in men which can affect the interpersonal relationship of the couples making home adjustment difficult. Within the context of a large, nationwide outcomes research program in type 2 diabetes, researchers assess the prevalence of self-reported erectile dysfunction and evaluate its impact on quality of life. The study involved 1,460 patients enrolled by 114 diabetes outpatient clinics and 112 general practitioners. Overall, 34% of the patients reported frequent erectile problems, 24% reported occasional problems, and 42% reported no erectile problems. After adjusting for patient characteristics, erectile dysfunction was associated with higher levels of diabetes-specific health distress and worse psychological adaptation to diabetes, which were, in turn, related to worse metabolic control. Erectile problems were also associated with a dramatic increase in the prevalence of severe depressive symptoms, lower scores in the mental components, and a less satisfactory sexual life (De Berardis, Franciosi, Belfiglio, Di Nardo, Greenfield, Kaplan, Pellegrini, Sacco, Tognoni, Valentini, Antonio & Nicolucci, 2002).

Not only men but women with diabetes also suffer from sexual dysfunction. A result of the impact of diabetes on multiple body systems show that women may suffer from medical and psychological problems, including sexual dysfunction. It is difficult to separate sexual response from the many emotional and other contributing factors that may influence a relationship (Grandjean & Moran, 2007).

Apart from Diabetes, the other two groups, that is, Psychosomatics and Hypertensives also scored high in Home Adjustment as compared to the Normals. So, we can say that
the patients suffering from chronic illness show low Home Adjustment.

The increase in chronic disease with shortened hospitalizations has led to an increase in home care, with added adjustment problems for patients and their families. The majority of families cope satisfactorily, although most have periods of instability or difficulties which require appropriate support. In considering the impact of chronic illness, cognizance must be taken of the patient, the illness, the caregiving system, the medical care system, the interrelationship between them and the effect of the environment on all of them. The adjustment to chronic illness depends on the complementary meshing of the life and time cycles of the above factors during the alternating periods of crises and chronic maintenance (Medalie, 1997).

The patients' process of adjustment is closely intertwined with that of their family support system. Following the onset of the injury or illness, interactions and relationship dynamics within the family (significant others) often drastically change as particular members assume a caregiver role. These circumstances can include a child becoming a caregiver for a parent, a wife or husband caring for their spouse, and parents caring for an adult child who had previously left home and established independence. Thus, significant role adjustments are often made and family members and/or significant others commonly experience caregiver strain (Marsh, Kersel, Havill & Sleigh, 2002). Further, the individual's own emotional and behavioural function appears to be related to the caregiver's mental health, suggesting that there are reciprocal effects between self and other adjustment (Ownsworth & Gracey, 2009).

A study by Arpin, Fitch, Browne & Corey (1990), estimated the prevalence of poor adjustment and family dysfunction among three chronically ill clinic patient populations and assessed the biological, situational, social and psychological variables which
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most explained poor adjustment. The proportion of subjects with family dysfunction was 30% and with poor adjustment to illness was 36%, high by community standards. Nevertheless, healthy family functioning and high levels of positive adjustment to chronic illness prevailed and were remarkably similar across clinical settings.

Manne & Zautra (1989), examined whether psychological adjustment of women with rheumatoid arthritis would be related to the support and criticism the patient received from the husband. Path analyses revealed that patients adjustment was significantly related to the attitude of the spouse. Patients with a highly critical spouse engaged in more maladaptive coping behaviors and reported a poorer psychological adjustment. Independent of spousal criticism, patients who perceived their spouse as being supportive engaged in more adaptive coping. A path model was fit to the data that suggested that the spouse may affect adjustment indirectly through influencing the patient’s selection of adaptive or maladaptive coping responses.

Research with osteoarthritis patients and their spouses showed that patients felt they managed their arthritis more effectively if they received a couples-oriented education and support intervention than if they received education and support with other patients only (Martire, Schulz, Keefe, Starz, Osial, Dew & Reynolds, 2003).

In a study by Baker, Szalai, Paquette & Tobe (2003), stated that marital support, a construct of both the quality and quantity of contact between spouses, was related to improved 3-year outcome in mild hypertension.

Whereas, there is also a study which states that stress arising from marital relationships is manifested in chronic disorders such as depression, insomnia and hypertension (Weiten, 1986).
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Twenty-five men and twenty-six women with essential hypertension, and their spouses, were compared with normotensive control couples on a questionnaire measure of marital adjustment. The marriages of the hypertensive men showed significantly raised levels of marital dissatisfaction in the spouses, and an abnormal degree of reciprocal dissatisfaction between spouses. The marriages of the female patients showed an abnormal lack of reciprocity between spouses' scores. These findings support anecdotal reports of a relationship between marital disharmony and communication problems and elevated blood pressure (Hafner, Chalmers, Swift, Graham, West & Wing, 1983).

6.1.3.2 Health Adjustment

After applying One Way Analysis of Variance (ANOVA) on the variable of Health Adjustment, Diabetics have scored the Highest Mean = 11.96, in comparison to Psychosomatics, Hypertensives and Normals, 6.05, 4.46 and 4.08, respectively (See Table 5.10). The F-ratio for Health Adjustment is 11.69**, p<.01 (See Table 5.11). It indicates that subjects belonging to these three groups differ significantly in their mean scores on Health Adjustment. Further, for the clear picture of the differences among the groups on Health Adjustment variable Post-hoc Comparison, Duncan's New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons, the results show significant differences between five of them, the highest significant difference has been found between Diabetics and Normals, qr = 7.88**, p<.01, then it was between Diabetics and Hypertensives, qr = 7.50**, p<.01, third, for Diabetics and Psychosomatics, qr = 5.91**, p<.01, after that for Normals and Psychosomatics, qr = 1.97**, p<.01, and lastly between Hypertensives and Psychosomatics, qr = 1.59*, p<.05. Among the six comparisons, for one no significant difference was found, that
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was between Normals and Hypertensives (See Table 5.12; Figure 6.4).

**Figure 6.4**

General Means and Post Hoc Comparison on Health Adjustment

Health Adjustment is defined in terms of shyness, submissiveness, introversion, illness, disease, etc. It is referred to both physical as well as mental health. A low score indicates unsatisfactory health adjustment while high score indicates satisfactory adjustment.

We can see that for the variable of Health Adjustment, mostly significant results are observed amongst the four groups. Health Adjustment is found to be lowest amongst the Diabetic group and highest was found amongst the Normals. Hence, the highest significance difference was found between Diabetics and Normals as compared to the other groups.
Quality of life is a concept increasingly appreciated as an outcome variable in bio-behavioural research. It is viewed as a multidimensional, dynamic concept related to but distinct from, well-being, health status, life satisfaction and hope (King, 1998). The expression health related quality of life, refers to quality of life associated with health conditions. Health related quality of life is the value assigned to duration of life as modified by the impairments, functional states, perceptions and social opportunities influenced by disease, injury, treatment or policy (Shumaker & Naughton, 1995).

As we have stated earlier, Diabetics face lot of complexities and often find difficult to adjust with their own illness. The constant pressure of regulating their blood pressure is one of the major issues. Gradually they develop symptoms of Anxiety and Depression. Therefore, they find it very difficult to make adjustments with environment and their own health as well specially, if they are taking insulin injections to regulate their blood glucose level.

The article by Rubin & Peyrot (2001), examined psychological issues and their treatment among people with diabetes. The paper contains two main sections, one dealing with diagnosable clinical disorders, and the other with more mundane but nevertheless important subclinical problems in living with diabetes. They reviewed the published literature on prevalence, manifestation, consequences, and treatment of psychological disorders in persons with diabetes, primarily depression, anxiety, and eating disorders. In describing everyday problems in living with diabetes we expand our sources beyond the published literature to include our own clinical and consulting experiences as well as our unpublished qualitative research. These problems include dietary restrictions, self-monitoring of blood glucose, taking insulin injections, and lack of support from family and health care professionals. They described methods for dealing
with such problems and discuss the tension between focusing on emotional distress versus practical issues of disease management.

Another very important aspect of diabetes is the complications which are the negative effects of having a condition or illness, and there are a range of complications that may develop and then aggravate with diabetes. Many of the complications are much more likely to occur if one has high blood glucose levels or high blood pressure over long periods of time. Remember that every improvement a person makes to his/her blood glucose level or blood pressure will reduce the risk of developing complications. A person should not be in the target range to reduce the risks; although they will get the best improvement the closer their blood pressure and blood glucose are to target levels (Diabetes, New Zealand). A constant worry about maintaining these complications is also a major issue for a Diabetic. These complications are stated below.

One of the complications is that Diabetes has been the leading cause of people developing blindness. Diabetic retinopathy, particularly in the more advanced stages, poses many difficult psychosocial problems and demands major adjustments by the patient. The review of this literature has identified specific problems relevant to patient care, future research, and public policy. For example, proliferative retinopathy often leads to at least partial visual impairment, psychiatric symptoms, and difficulties with glycemic control. Partial visual impairment appears to cause as much psychosocial disruption as severe blindness (Wulsin, Jacobson & Rand, 1986).

Another is that people with diabetes are more likely to develop foot problems. Problems are very often in the form of nerve damage and / or damage to your blood vessels. The aim was to evaluate over 18 months whether depression was associated with mortality in people with their first foot ulcer. One-
third of people with their first diabetic foot ulcer suffer from clinical depression, and this is associated with increased mortality (Ismail, Winkley, Stahl, Chalder & Edmonds, 2007).

The results of a large UK and US prospective study indicate that the majority of people who are diagnosed with diabetes neuropathy believe that the development of a foot ulcer will be accompanied by pain (Vileikyte, Rubin & Leventhal, 2004). Furthermore, they anticipate that the foot damage from diabetes will be vascular and that this vascular damage will be reflected in poor circulation and 'cold feet'.

One research also stated that limited mobility due to foot ulcers in diabetic patients cause problems with interpersonal relationships. People commonly suffer perceptions of diminished self-worth due to an inability to perform family roles. Changes in a person's self-perception (the 'self' being perceived as a family burden), in turn, leads to reduced quality of life (Vileikyte, Peyrot, Bundy, Rubin, Leventhal, Mora & Boulton, 2003).

At times people with diabetes also develop kidney disease. The kidneys are an organ containing many very fine blood vessels. Diabetes can cause these vessels to become thickened and damaged. Eventually, they become leaky and instead of filtering your blood properly to get rid of waste products (into your urine), they start to leak very important things such as protein out into your urine. Our bodies need our protein and it is not a good thing to lose it. If this damage to the blood vessels in the kidney gets worse and the body isn't able to properly get rid of its wastes, toxins begin to build up in the body and cause further damage and generalised poor health. Sometimes other problems can occur in diabetes that can make kidney disease worse. Some people with diabetes are troubled with frequent urine infections. Over time this can worsen kidney damage. Also some people with diabetes may develop problems emptying their bladder. This can cause a backlog pressure on the
kidney and increase kidney damage. Diabetes is now the major cause of end stage kidney failure throughout the world in both developed and emerging nations (Reutens, Prentice & Atkins, 2008). Depression was significantly associated with a variety of diabetes complications such as nephropathy (de Groot, Anderson, Freedland, Clouse & Lustman, 2001).

Impotence is another side effect of diabetes for many men. Impotence is when a man isn’t able to have an erection firm enough, nor can he maintain it for long enough, to have satisfying sexual intercourse. There are two types of impotence:

**Physical impotence:** This may result from damage to the nerves or blood vessels that control blood flow to the penis. Hormone problems also can cause physical impotence. Occasionally, impotence is a side effect of medication, particularly medication for high blood pressure or depression.

**Psychological impotence:** This can be caused by fear, stress, worry, anger or frustration. Often this type of impotence develops from “performance anxiety” — a man’s fear that he won’t perform well during sexual intercourse. Stress caused by problems at work, by strains in a marriage or relationship, by loss or bereavement or by financial difficulties also can lead to this type of impotence.

Things are made more complicated because the two types of impotence can happen in the same person at the same time (in fact, it’s quite common). In brief, erectile dysfunction is one of the most common complications of diabetes and also one of the most underdiagnosed (Penson, Latini, Lubeck, Wallace, Henning & Lue, 2003).

Diabetes-related sexual problems occur in women as well (Donders, 2002). Some of the things that are known are:

- Decreased vaginal lubrication (leading to discomfort during intercourse) is commonly reported by women with diabetes.
Women with diabetes may also experience more frequent bouts of vaginitis and yeast infections.

Contraceptive pills are safe for women with diabetes but may very slightly increase blood glucose levels in some women. This is usually very manageable by making slight adjustments to your diabetes medication.

Women with diabetes may have a risk of infection with intrauterine device, IUDs.

Then another complication is that there are certain skin problems that happen mostly or only to people with diabetes. Though, some of these problems are very rare. These are: Dermopathy of diabetes, Necrobiosis Lipoidica Diabeticorum (NLD), Atherosclerosis, Blisters of diabetes (Bullosis Diabeticorum), Eruptive Xanthomatosis, Digital Sclerosis, Disseminated Granuloma Annulare and Acanthosis Nigricans (Diabetes, New Zealand). There are also some general skin conditions. Skin problems are more likely to become infected especially if your blood glucose levels are high. These are fungal infections, bacterial infections, dry skin, itching and allergic reaction (Habif, 2009; Grandinetti & Tomecki, 2010).

People with diabetes are prone to get problems affecting their gums, teeth and mouth. Gum disease is the most common mouth problem for people with diabetes.

Damaged nerves are another very common complication of diabetes (diabetic neuropathy). Diabetic neuropathy is actually a range of disorders that can affect three types of nerves (sensory nerves, motor nerves and autonomic nerves). Some nerve damage causes pain. Other nerve damage removes the sensation of pain and causes numbness. Some people have both types of symptoms happening at the same time. It’s not known for sure what causes diabetic neuropathy. Having high glucose levels over long periods of time seems likely to play a big role.
Heart or blood vessel problems for example cardiovascular disease and thyroid are other diseases that diabetics develop. All these complications make a Diabetics adjustment with health very difficult.

Stress can induce indirectly alterations in health care practices. This last aspect is very important because diabetes is a largely self-managed disease and stress, depression and psychological status may have a significant impact on self-management and health outcomes (Sultan & Heurtier-Hartemann, 2001; Ciechanowski, Katon, Russo & Hirsch, 2003).

**Apart from Diabetes, Psychosomatics also show low Health Adjustment as compared to the Normals.**

For all the chronic illnesses patient's perceptions play a vital role. Patients' perceptions of their illness are the central concepts of the Common Sense Model (CSM; Leventhal, Nerenz & Steele, 1984), which is a self-regulation model of health threat. According to this model, people make sense of a health threat by developing their own cognitive and emotional representations of that threat. These representations or perceptions develop from exposure to a variety of social and cultural sources of information – news stories, education in schools, personal experiences of illness, witnessing illness experiences of others, portrayals of illness in books and movies, and other experiences (Cameron & Moss-Morris, 2004). CSM postulates that both cognitive and emotional representations determine how patients cope with their illness and adapt to their illness. The representations generally consist of the following components:

- **Identity** - patients’ beliefs about the label of the illness and associated symptoms;
- **Cause** - patients’ beliefs about factors or conditions that have caused the illness;
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- Timeline - patients' beliefs about the expected duration of the illness;
- Personal control - patients' beliefs about how much their own actions will help to control the illness;
- Treatment control - patients' beliefs about how much their prescribed treatment will be effective in controlling or curing the condition;
- Consequences - patients' beliefs about the impact of the illness on their physical, social and psychological well-being;
- Coherence - patients' beliefs about how well they understand the illness;
- Representation of emotional reaction - patients' beliefs about how much they are emotionally affected by the illness, e.g. whether they experience fear or worry.

The purpose of the study by Powers & Jalowiec, (1987), was to identify discriminant predictors of blood pressure control and adjustment to chronic illness in 450 hypertensive patients. Hypertension control was determined by physician judgment, and adjustment was assessed by Derogatis' Psychosocial Adjustment to Illness Scale. Potential predictors of the outcome variables were measured by structured interview, formal instruments, and chart review. Well-controlled hypertensive patients had better health adjustment scores, reported more illness-related job problems and less illness-related sexual problems, were more satisfied with health care, knew what to do about medication side effects, were on medications longer, and had lower blood pressure readings on chart review. Well-adjusted hypertensive patients had fewer hypertension-related problems; had their blood pressure under control; were less likely to eat, smoke, or use drugs to handle tension; had no recent weight gain; knew what to do about medication side effects and that there is no cure for hypertension; were less pessimistic and less likely to worry; rated
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their stress level lower and their quality of life higher; felt that their health was under their own control; tried to problem solve when coping with stress; were on hypertensive medications a shorter time and on fewer medications overall; did not like to be alone when feeling stressed; and ate fewer high sodium foods.

6.1.3.3 Social Adjustment

After applying One Way Analysis of Variance (ANOVA) on the variable of Social Adjustment, Psychosomatics have scored the highest Mean=11.54, in comparison to Hypertensives, Diabetics and Normals, 7.22, 7.00 and 6.12, respectively (See Table 5.13). The F-ratio for Social Adjustment is 11.34**, p<.01 (See Table 5.14). It indicates that subjects belonging to these three groups differ significantly in their mean score on Social Adjustment. Further, for the clear picture of the differences among the groups on Social Adjustment variable Post-hoc Comparison, Duncan's New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetics, Hypertensives and Normals. For the total six comparisons, the results show significant difference between three of them, the highest significant difference was between Psychosomatics and Normals, qₐ = 5.42**, p<.01, then it was between Psychosomatics and Diabetics, qₐ = 4.54**, p<.01, and lastly, between Psychosomatics and Hypertensives, qₐ = 4.32**, p<.05. Among the six comparisons, for three no significant difference was found, these were Normals and Diabetics, Normals and Hypertensives and Diabetics and Hypertensives (See Table 5.15; Figure 6.5).
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Figure 6.5
General Means and Post Hoc Comparison on Social Adjustment

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<tr>
<th>Psychosomatics</th>
<th>Normals</th>
<th>Diabetics</th>
<th>Hypertensives</th>
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<td>P (Psychosomatics)</td>
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<td>D (Diabetics)</td>
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<td>N (Normals)</td>
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- Significant
- Non-Significant

Social Adjustment is an effort made by an individual to cope with standards, values and needs of a society in order to be accepted. It can be defined as a psychological process. It involves coping with new standard and value. In the technical language of psychology "getting along with the members of society as best one can" is called adjustment. Psychologists use the term adjustment of varying conditions of social and interpersonal relation in the society. Thus, adjustment can be called the reaction to the demands and pressures of the social environment imposed upon the individual.

Patients suffering from chronic illness or diseases find hard to make adjustment with their social life. As the results show, Social Adjustment has been found to be lowest amongst the Psychosomatic group and was highest amongst
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the Normals. Hence, the highest significance difference was found between them as compared to the other groups.

Psychosocial issues are an understudied yet important concern in the overall health of patients. Stress is a concomitant of chronic illness and its treatment, and may have meaningful influences on psychological and medical outcomes. The article by Cukor, Cohen, Peterson & Kimmel (2007), reviewed the influences of psychopathology, social support, family issues, dialysis unit culture, and socioeconomic status on patients treated with center hemodialysis. Depressive affect and decreased perception of social support have been linked with mortality in several studies of end stage renal disease patients. Decreased marital satisfaction, disturbances in family dynamics, and lower socioeconomic status have been associated with poorer health outcomes and can affect patients' perception of social support and depressive affect. Chronically ill end stage renal disease patients who undergo treatment with constant interaction and observation by medical staff are potentially an ideal group for evaluation of the effects of stress and psychosocial factors on outcomes in those with chronic disease, as well as an excellent patient population for intervention to reduce morbidity and mortality.

Social and psychological aspects often affect adjustment to the illness and response to treatment. Epilepsy typifies some of the issues emerging when the diagnosis of a chronic disease is made. The type and severity of illness, patient and family reactions, coping abilities of family members, and the ongoing medical care are all important issues of management. Social and economic problems for the patient are exemplified by consideration of epilepsy. Awareness of community and national resources are important in guiding the patient and family. Stresses and feelings of the health professionals are also
Important to recognize, as their frustrations with the limitations of treatment become evident (Heisler & Friedman, 1981).

The purpose of the study by Yuet, Alexander & Chun (2002), was to examine the relationships between coping and psychosocial adjustment of Chinese patients with chronic obstructive pulmonary disease. The findings indicated that the participants adopted limited coping strategies and had poor psychosocial adjustment to their illness. Fatigue, older age, worse perception of current health status, and use of confrontive and emotive coping styles were predictors of worse psychosocial adjustment.

Purpose of another study was to ascertain the differential and independent impact of socio-demographic, medical, and psychological variables assessed at patients' hospital discharge on these patients' psychosocial adjustment in several domains of life 3 to 6 months later. Psychological variables, such as depression, sense of coherence, and social support, and the socio-demographic variable of educational level at discharge predicted a relatively substantial amount of variance in psychosocial adjustment. The results also raised the possibility that part of the impact of the medical variables at discharge on psychosocial adjustment 3 to 6 months later may have been mediated by the psychological variables. The centrality of the psychological and domestic life domains to psychosocial adjustment in post-acute myocardial infarction patients was also suggested by the results. Hence, both external and internal pathogenic (depression) and health proneness variables (sense of coherence and social support) at discharge predict psychosocial adjustment in most life domains 3 to 6 months after acute myocardial infarction (Yuet, Drory, Kravetz & Florian, 1999).

Social stigmas also play a major role in patient's adjustment to his social environment. The paper by Millen & Walker
addressed (2000), the concept of chronic illness as a socially constructed experience of stigma. The stigma of having a chronic illness affects the person's self-concept, capacity to adapt to the illness and the quality of his/her social networks. Social stigma is a de-legitimising social process derived from both popular and medical views of chronic illness.

Because of these social stigmas, Lupton (1995) points out that medical metaphors have borrowed a lot from the religious metaphors of past centuries where the 'sinner was described as a sick man' and 'the onset of illness stirred up anxiety, self-doubt and guilt' within the individual afflicted with illness by observers around him or her. The sufferers of long-term illness are seen to be in a perpetual state of 'gracelessness'. This specially happens in case of patients suffering from cancer and tuberculosis (Sontag, 1989). This makes a patient's social adjustment all the more difficult.

Recent reports have described many of the issues surrounding psychosocial adjustment to diabetes, including cognitive, behavioral, and emotional aspects (Mazze, Shamoon, Pasmanter, Lucido, Murphy, Hartman, Kuykendall & Lopatin, 1984; Anderson, 1986; Davis, Hess, Van & Hiss, 1987; Delamater, Kurtz, Bubb, White & Santiago, 1987; Nichols, 1989).

In research into the effects of foot ulceration on people's physical and psycho-social functioning and wellbeing, it has been found that foot ulcers can be a source of severe disability which, in turn, has a negative impact on quality of life. One study, for example, compared the psychological status of people with chronic diabetes foot ulcers, those with lower-limb amputations, and people with diabetes with no history of foot ulceration. It was reported that people with chronic foot ulcers and those with amputations made significantly poorer psycho-social adjustments to their situations in their domestic and social environment, and reported poorer overall quality of life, compared to the people
with no foot damage (Carrington, Mawdsley, Morley, Kincey & Boulton, 1996).

The aim of the study by Kaplan & Nunes (2003) was to present currently available evidence on the role that adverse psychosocial factors play in the pathogenesis of hypertension. The specific objectives of the review were to (1) provide a picture of what is known about the relationship between psychosocial factors and hypertension, (2) summarize the major methodological and conceptual pitfalls, and (3) identify gaps in the literature and suggest areas for future research. The scope of the literature review was adults and the literature published since 1990 (acknowledging that some articles published earlier would need to be taken into account). A number of journal searches were carried out. They included Medline, PsychInfo, and SocioFile, with keywords, such as hypertension, blood pressure, psychosocial, psychological, social, acculturation, occupation, socio-economic status, social class, education, depression, anger, and anxiety. The search included articles related to hypertension in developed countries and was limited to studies in the English language. A growing body of evidence supports the thesis that psychosocial factors play a role in the pathogenesis for hypertension.

Psychosocial factors play a role in the treatment and management of hypertension. The response to anti-hypertensive drugs may partly depend on psychosocial factors, although research is sparse on this topic and these factors are not usually considered in the choice of medications used to treat patients.

6.1.3.4 Emotional Adjustment

After applying One Way Analysis of Variance (ANOVA) on the variable of Emotional Adjustment, Psychosomatics have scored the highest Mean = 12.02, in comparison to, Hypertensives, Diabetics and Normals, 5.43, 5.07 and 4.30, respectively (See
Table 5.16). The F-ratio for Emotional Adjustment is 7.05**, p<.01 (See Table 5.17). It indicates that subjects belonging to these three groups differ significantly in their mean score on Emotional Adjustment. Further, for the clear picture of the differences among the groups on Emotional Adjustment variable **Post-hoc Comparison, Duncan’s New Multiple Range Test** was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons the results show significant difference between three of them, the highest significant difference was between Psychosomatics and Normals, that is $q_r = 7.72**$, p<.01, then it was between Psychosomatics and Diabetics, $q_r= 6.95**$, p<.01, lastly, between Psychosomatics and Hypertensives, $q_r= 6.59**$, p<.05. Among the six comparisons, for three no significant difference was found, these were Normals and Diabetics, Normals and Hypertensives and Diabetics and Hypertensives (See Table 5.18; Figure 6.6).

Figure 6.6
**General Means and Post Hoc Comparison on Emotional Adjustment**

![Graph showing general means and post hoc comparison on Emotional Adjustment](image-url)

- **Significant**
- **Non-Significant**

(**)=p<.01
Emotional adjustment (also referred to as personal adjustment or psychological adjustment) is the maintenance of emotional equilibrium in the face of internal and external stressors. This is facilitated by cognitive processes of acceptance and adaptation. An example would be maintaining emotional control and coping behavior in the face of an identity crisis. This capacity is an important aspect of mental health and where it is compromised, or not developed, psychopathology and mental disorder can result.

Emotional adjustment can also be explained in terms of depression, nervousness, etc. High scores tend to be stable emotionally. Persons with low scores tend to be emotionally unstable.

Emotional Adjustment has been found to be lowest amongst the Psychosomatic group and was highest amongst the Normals. Therefore highest significance difference was found between them as compared to the other groups.

Psychosomatic illness arises from a disturbed relationship between the body and mind. This results from the interchange that takes place between the body and mind. Whatever the mind finds meaningful or irrelevant is expressed one way or another by the body. Broadly speaking, understanding psychosomatic factors means understanding both health and sickness which arise from the interaction of somatic, mental and social factors. The term psychosomatic disturbance can be understood in both a broad and in a narrow sense. In the narrow sense, these are those illnesses with evidence of organic damage, for which psychological or psychosocial factors are thought to play a role in the etiology (e.g. ulcerative colitis). In the case of functional disorders (e.g. tachycardia), no organic disease can be found. Patients with these disorders are very frequently seen in clinical practice but often disliked as "no abnormalities are detected". Of course psychosocial factors play a role in every illness: "It is not
possible for the patient not to react psychosocially". The main characteristic of psychosomatic disorders is that emotions lie at their roots.

Patients with chronic illness typically have anxiety, depression, and other negative emotions (Taylor & Aspinwall, 1996), how these individuals cope with these emotions can affect how well they adjust to their illness. Emotion regulation is a term encompassing several conscious or unconscious styles of experiencing, processing, and modulating emotions (Gross, 1998). Two main categories of emotion regulation have been distinguished: avoidance and inhibition of emotions, and expression and acknowledgment of emotions. Although the first category—when generally applied—is associated with maladaptive outcomes such as an increase in disease occurrence and risk of disease progression, increasing evidence has shown that the habitual acknowledgment and expression of emotions can promote good adjustment (Austenfeld & Stanton, 2004).

In cross-sectional studies, maladjustment to chronic illness is commonly related to styles of emotion regulation characterised by avoidance and non-expression (Garsen, 2007). Although patients are often advised to face and express emotions, cross-sectional relations between adjustment and the acknowledgment and expression of emotions have been inconsistent (Solano, Montella & Salvati, 2001). However, these cross-sectional findings do not prove that emotion regulation affects adjustment, it is equally possible that the distressing emotions experienced during chronic illnesses affect emotion regulation. So it can be vice-verse as well.

Prospective studies examining which types of emotion regulation affect adjustment show that, at least in the North American and western European cultures, the regular use of avoidant non-expressive styles of emotion regulation is disadvantageous for psychological adjustment and survival. In
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less emotionally expressive Asian cultures, non-expressive emotion regulation styles have proven advantageous, suggesting that the congruence between one's general style to handle emotions and the style advocated in one's cultural system determines whether the emotion regulation style is adaptive or maladaptive (Hirokawa, Nagata, Takatsuka & Shimizu, 2004)

Acknowledgment and intense experience of emotions are suggested to be beneficial for adjustment as long as those emotions are expressed and processed; the mere uncontrolled expression of emotions without processing can be maladaptive. In other words we can say that rather than being Neurotic if one channelize his or her emotions, express themselves, and accept the situation, they can make better emotional adjustment during chronic illness or disease.

A study by Iwamitsu, Shimoda, Abe, Tani, Okawa and Buck (2005), stated that controlling of the emotions and not letting them out before diagnosis of breast cancer predicted increased psychological distress after diagnosis. Expression of emotion predicted reduced distress after diagnosis of breast cancer and 3 months after diagnosis (Stanton, Danoff-Burg & Cameron, 2000; Iwamitsu, Shimoda, Abe, Tani, Okawa & Buck, 2005).

Repression of emotions (Weihs, Enright, Simmons & Reiss, 2000) and emotional control (Reynolds, Hurley, Torres, Jackson, Boyd & Chen, 2000; Tijhuis, Elshout, Feskens, Janssen & Kromhout, 2000) predicted increased mortality in cancer.

Emotional expression resulted in improved self-perceived health status and reduced number of medical visits in breast cancer after 3 months (Stanton, Danoff -Burg and Cameron, 2000). In another study also emotional expression predicted survival in breast cancer (Reynolds, Hurley, Torres, Jackson, Boyd & Chen, 2000)
Emotional intensity predicted negative affect (Hamilton, Zautra & Reich, 2005) and increased distress in patients with breast cancer and rheumatoid arthritis after 3–15 months (Stanton, Danoff-Burg and Cameron, 2000; Van Middendorp, Geenen, Sorbi, Van Doornen & Bijlsma, 2005).

Mood repair and mood clarity predicted reduced pain-related psychological distress in rheumatoid arthritis and osteoarthritis (Zautra, Smith, Affleck, & Tennen, 2001; Hamilton, Zautra & Reich, 2005).

Alexithymia and ambivalence over expression of emotions predicted an increase in self-reported disease activity in rheumatoid arthritis after 15 months (Van Middendorp, Geenen, Sorbi, Van Doornen & Bijlsma, 2005).

Emotional expression in several chronic diseases led to decreased distress, mood improvement, or reduced intrusions up to several months after the intervention (Kelley, Lumley & Leisen, 1997; Stanton, Danoff-Burg & Sworowski, 2002; Zakowski, Ramat, Morton, Johnson & Flanagan, 2004; Wetherell, Byrne-Davis & Dieppe, 2005; Warner, Lumley & Casey, 2006).

Emotional expression in several chronic diseases led to a reduction in health-care use, improved physical functioning, fewer symptoms reported, or reduced self-perceived disease activity up to several months after the intervention (Kelley, et al., 1997; Stanton, et al., 2002; De Moor, Sterner & Hall, 2002; Rosenberg, Rosenberg & Ernstoff, 2002; Taylor, Wailander, Anderson, Beasley & Brown, 2003; Wetherell, et al., 2004; Warner, et al., 2006).

Expression of emotions is often a component of psychological interventions in chronically ill patients (Giese-Davis, Koopman & Butler, 2002). Emotional disclosure interventions (Pennebaker, 1997) have provided the most convincing evidence that expression can improve psychological
and physical adjustment, sometimes even on objective markers of disease activity.

Physiological and psychological mechanisms have been proposed to explain the negative effect of avoidant and non-expressive emotion regulation styles on adjustment. Although denial and non-expression of emotions can be a useful initial coping strategy to deal with the stress that accompanies the diagnosis of a chronic disease, failure to acknowledge and express emotions can leave these emotions unresolved (Wiebe & Korbe, 2003). These unresolved emotions can affect patients' health negatively by, for example, chronic raised activity of the sympathetic nervous system (Mauss & Gross, 2004).

The inhibition of emotions can also delay help-seeking behaviour when it hampers symptom recognition and, when help is sought, compromise the communication with health-care providers. Such inhibition can also lead to patients failing to practice health-protective behaviours and adhere to treatment (Wiebe & Korbe, 2003). Alternatively, different mechanisms have been proposed to explain why acknowledgment and expression of emotions are beneficial for patients (Lutgendorf & Ullrich, 2002).

At the same time, the acknowledgment and experience of negative emotions can be adaptive because they focus attention toward threats, elicit action, and provide feedback on progress toward important goals repeated reflection on or rumination about negative feelings without expressing them is not deemed healthy (Manne, Ostroff, Winkel, Goldstein, Fox & Grana, 2004).

For those living with diabetes, illness related emotional distress may not be uncommon. In the face of unending and often burdensome self-care demands, many patients may become overwhelmed or burned out by the frustrations of the regimen and illness. Given the threat or impact of severe long-term complications and the potential influence of diabetes on life
expectancy, many patients may become unduly preoccupied or worried by the fear of such complications. Furthermore, in the complex adjustment to life with diabetes, many patients may feel defeated, becoming unmotivated to adhere to the diabetes regimen. A range of other emotional responses to diabetes have also been observed, including anger, guilt, frustration, denial, fear of hypoglycemia and loneliness (Cox, Irvine, Gonder-Frederick, Nowacek & Butterfield, 1987; Jacobson, Adler, Wolfsdorf, Anderson & Derby, 1990; Tattersall & Gale, 1990).

Emotional reactions to diagnosis were examined in a random sample of newly detected diabetic patients and compared with the indicators of glycemic control in a one-year-follow-up period. The social and emotional factors subscale of the diabetes care profile was used to determine the subjectively experienced burden, negative feelings and positive coping abilities. The initial struggle against the disease indicated three characteristic emotional patterns. Feelings of being able to cope with the disease predominated in group 1, negative emotional reactions, but with the ability to cope were observed in group 2 and negative feelings combined with weak coping abilities in group 3. The long-term indicators of glycemic control were shown to be worst in group 3 and best in group 1 (Pibernik-Okanović, Roglić, Prasek & Metelko, 1996).

The ATT39 scale was developed as a norm-referenced measure of emotional adjustment in diabetic patients. The results confirm that emotional adjustment in diabetes involves dynamic interactions among feelings that are relatively stable over periods up to 6 months and that relate meaningfully to other aspects of personality functioning (Dunn, Smartt, Beeney & Turtle, 1986).

People diagnosed with Type 2 diabetes may experience a wide range of emotions, including Fear, Anger, Depression, Denial & Guilt. Not only is the emotional aspect of diabetes a real rollercoaster, but there is also a physical impact on sexual
function. The emotional strain of dealing with diabetes can cause stress and anxiety, as well as communication difficulties that can lead to sexual dysfunction in relationships (Rodriguez, 2011).

Recent evidence suggests that emotional distress, as represented by the presence of affective disorders (Mazze, Shamoon, Pasmantier, Lucido, Murphy, Hartman, Kuykendall and Lopatin, 1984; Lustman, Griffith, Clouse & Cryer, 1986; Lustman, Griffith & Clouse, 1988) and/or poor coping skills, may be linked to poor adherence with the self-care regimen, especially among adolescents with insulin-dependent diabetes mellitus (IDDM) (Delamater, Kurtz, Bubb, White & Santiago, 1987). Apart from such examples of nonspecific emotional distress, it is presumed that diabetes-related emotional distress (e.g., feeling overwhelmed by the diabetes regimen) may be independently linked to poor adherence. Because of the lack of appropriate instruments, however, this has rarely been examined.

College women who are pre hypertensive and matched controls were exposed to emotion-provoking situations, psychologic tests, and psychiatric interviews. Patterns of response differentiating the groups were observed. The prehypertensives were less well controlled, more impulsive, more egocentric, and generally less adaptable in the stressful situations. In the psychiatric interviews, behavior similar to that of patients with hypertension was noted. The findings suggest that prehypertensives are more vulnerable in situations involving psychologic stress, and hence more subject to the autonomic concomitants of emotion, including repetitive rises of blood pressure (Harris, Sokolow, Carpenter, Freedman & Hunt, 1955).

6.1.3.5 Occupational Adjustment

After applying One Way Analysis of Variance (ANOVA) on the variable of Occupational Adjustment, Hypertensives have scored the highest Mean = 12.40, in comparison to
Psychosomatics, Diabetics, and Normals, 9.67, 8.26 and 6.85, respectively (See Table 5.19). The F-ratio for Occupational Adjustment is 9.89**, \( p<.01 \) (See Table 5.20). It indicates that subjects belonging to these three groups differ significantly in their mean score on Occupational Adjustment. Further, for the clearer picture of the differences among the groups on Occupational Adjustment variable Post-Hoc Comparison, Duncan’s New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons, the results show significant difference between all six of them, the highest significant difference was seen between Hypertensives and Normals, \( q_r = 5.55^{**} \), \( p<.01 \), then it was between Hypertensives and Diabetics, \( q_r = 4.14^{**} \), \( p<.01 \), third, between Normals and Psychosomatics, \( q_r = 2.82^{**} \), \( p<.01 \), fourth, between Hypertensives and Psychosomatics, \( q_r = 2.73^{**} \), \( p<.01 \), then between Hypertensives and Diabetics, \( q_r = 1.41^* \), \( p<.05 \) and lastly between Diabetics and Psychosomatics, \( q_r = 1.41^* \), \( p<.05 \) (See Table 5.21; Figure 6.7).

**Figure 6.7**
General Means and Post Hoc Comparison on Occupational Adjustment

![Diagram showing occupational adjustment means and post hoc comparisons]

- P (Psychosomatics)  
- D (Diabetics)  
- H (Hypertensive)  
- N (Normals)

Significant: \( (**)=p<.01 \)  
Non-Significant: \( (*)=p<.05 \)  
--- Non-Significant  
--- Non-Significant
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**Occupational or Work adjustment** conveys a broader meaning than the adjustment of an individual to his specific job tasks. It is the adjustment of the individual to his world of work. It includes the adjustment of the individual to the variety of environmental factors that surround him in his work, his adjustment to changes in these factors over periods of time, and his adjustment to his own characteristics. Thus, the adjustment of the individual to his employer, his supervisor, his co-workers, as well as to the demands of the job itself, his adjustment to changing job market condition, and his adjustment to his own aptitudes, interests, and temperament are all encompassed in the concept of work adjustment.

As we can see that for the variable of Occupational Adjustment, mostly significant results are observed amongst the four groups. Occupational Adjustment has been found to be lowest amongst the Hypertensive group and highest was found amongst the Normals. Therefore the highest significance difference was found between these two as compared to the other groups.

Problems at work are more strongly associated with health complaints than are any other life stressor—more so than even financial problems or family problems (St. Paul Fire and Marine insurance Company, 1992). Many studies suggest that psychologically demanding jobs that allow employees little control over the work process increase the risk of cardiovascular disease. On the basis of research by the National Institute for Occupational Safety and Health and many other organizations, it is widely believed that job stress increases the risk for development of back and upper-extremity musculoskeletal disorders (Sauter, Hurrell, Murphy & Levi, 1997).

**Hypertension** is the term used to describe high blood pressure. Blood pressure is a measurement of the force against the walls of the arteries as the heart pumps blood through the
body. Though there have been many medical reasons for hypertension, but the evidence that link hypertension with personality or psychological characteristics, such as anger, anxiety, or depression, cannot be ignored.

Like Diabetics, Hypertensives also need to keep a check on their blood pressure. Make changes in their eating habits, check their salt intake, low fat diet, avoid saturated fat, no alcohol, etc., therefore, for hypertensives as well it is difficult to make adjustments with their health.

Hypertension also needs to be checked because it increases the risk of heart disease, stroke, and other medical problems. If left untreated, hypertension can lead to the long-term complications like, atherosclerosis, also called arteriosclerosis, peripheral vascular disease, heart attack, stroke, enlarged heart and heart failure, kidney damage or kidney failure and retinopathy or blindness (Cleveland Clinic, Topol, & Eisner, 2000; Moore, 2001; McGoon & Gersh, 2002; Trout, Darrell & Welch, 2002).

Hypertension management comprises drug and/or non-drug therapeutic approaches. Although there is clear evidence that antihypertensive medications are useful in controlling hypertension and reducing the incidence of stroke and infarction (Chobanian, Bakris, Black, Cushman, Green & Izzo, 2003), long-term drug treatment can be expensive and side-effects can threaten patients’ adherence to drug prescriptions.

The psychological factors most often implicated as being associated with hypertension. Alexander (1939) was the first to suggest that autonomic activation and elevated blood pressure in individuals with hypertension resulted from repressed hostility or "anger-in." One early study supporting this notion showed that individuals with hypertension reported more restrained aggression and more inner tension than individuals with allergies but without
hypertension and hospitalized patients without hypertension (Wolf & Wolff, 1951). A more recent study comparing participants with borderline hypertension and those with normal blood pressure found that the group with hypertension exhibited less externalized aggression, more internalized aggression, and more submissiveness (Perini, Muller, Rauchfleisch, Battegay, Hobi & Buhler, 1990).

There is considerable evidence that work conditions play an important role in the etiology of essential hypertension. Hypertension is primarily a disease of industrial societies (Waldron, Nowatarski, Freimer, Henry, Post & Witten, 1982), machine-based work including computer-based (Schnall, Belkic, Landsbergis & Baker, 2000), lower occupational status (RouxDiez, Chambless, Merkin, Arnett, Eigenbrodt & Nieto, 2002), high workload (Karasek & Theorell, 1990), long work hours (Hayashi, Kobayashi, Yamaoka & Yano, 1996), job strain (Schnall, Landsbergis, Schwartz, Warren & Pickering, 1998), low rewards (Vrijkotte, van Doornen & de Geus, 2000).

So one can be said that a person who is suffering from hypertension or high blood pressure finds it difficult to make his or her adjustment in the work environment because of the factors mentioned above. We can also say that these factors aggravate his or her hypertension. And it is prominent from the results that hypertension is highest for only one variable and that is, Occupational Adjustment.

In another study it was stated that blood pressure is higher at work than at home (on a workday) and lower yet on a nonworkday. Blood pressure measured during daily life, including work, has shown stronger associations with future CVD (cardiovascular disease) than blood pressure measured in a physician’s office, and it has shown strong associations with work stressors (Pieper, Schnall, Warren & Pickering, 1993).
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In a study of occupational stress in nurses, those nurses for whom both parents had hypertension and who were hostile, defensive, or anxious had elevated ambulatory blood pressure, which was highest during work days (Goldstein & Shapiro, 2000).

Comprehensive reviews conclude that job strain, a combination of low control over the job and high psychological demands, is related to the incidence and prevalence of cardiovascular diseases in western countries (Schnall, Landsbergis & Baker, 1994; Kristensen, 1995; Theorell & Karasek, 1996). It was postulated that one of the underlying mechanisms through which job strain leads to cardiovascular diseases is high blood pressure due to chronic physiological arousal (Schnall, Landsbergis & Baker, 1994). Several studies have been conducted to substantiate this hypothesis; and evidence has been accumulating to prove a cause-effect relation between job strain and high blood pressure (Schnall, Pieper & Schwartz, 1990; Schnall, Schwartz & Landsbergis, 1992; Kawakami, Haratani & Araki, 1998).

It might be expected that a clearer association between job strain and hypertension would emerge in some social strata. Occupational class and educational level are variables to be taken into consideration (Marmot & Theorell, 1988). Low occupational class has often been reported to be associated with high blood pressure (Syme, Oakes & Friedman, 1974; Marmot, Rose & Shipley, 1978).

Personality characteristics have long been associated with essential hypertension (Alexander, 1939). Reviews of the earlier empirical literature concluded that neuroticism, hostility, and difficulties in coping with anger were associated with hypertension (Davies, 1971).

The "hypertensive personality" is among the most enduring constructs in psychosomatic medicine. The construct implies that
there is an important relationship between psychological variables and the likelihood of developing high blood pressure (Shapiro, 1988). These personality traits present in hypertensives also affect his or her adjustment in work place.

The other two groups, Psychosomatics and Diabetes, also scored low in Occupational Adjustment.

Insulin-treated patients experience difficulty in coping with certain types of employment (for example those involving shift work). Studies have shown that, with improved management and treatment of the condition, people with diabetes may work for years before they experience complications that may cause them to take time off (Lavigne, Charles, Mushlin & Lednar, 2003).

In psychosomatic diseases as well, the job strain model, developed by Karasek &Theorell (1990), provides a framework for assessing psychosocial stress at work and posits that individuals working in jobs that are simultaneously characterized by high demands and low control are at risk of stress-related ill health and disease.

In one study it was reported that diabetics who were facing foot ulceration, approximately half of the people interviewed had either retired early or could not do work in time; and career opportunities were sometimes missed (Brod, 1998).

The iso-strain model is an extension of the job strain model, which hypothesizes that individuals experiencing job strain who are simultaneously socially isolated have an even higher risk for disease. Job strain and iso-strain have been associated previously with several disease outcomes including minor psychiatric disorders (Stansfeld, North, White & Marmot, 1995) and cognitive decline (Elovainio, Ferrie, Singh-Manoux, Gimeno, De Vogli, Shipley, Vahtera, Brunner, Marmot & Kivimäki, 2009), heart disease (Belkic, Landsbergis, Schnall & Baker, 2004),
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obesity (Brunner, Chandola & Marmot, 2007), and the metabolic syndrome (Chandola, Brunner & Marmot, 2006).

Hence, the hypothesis "adjustment level will be less in patients as compared to the Normals" is accepted.

6.1.4 Stress

In psychology, Stress is a feeling of strain and pressure. Symptoms may include a sense of being overwhelmed, feelings of anxiety, overall irritability, insecurity, nervousness, social withdrawal, loss of appetite, depression, panic attacks, exhaustion, high or low blood pressure, skin eruptions or rashes, insomnia, lack of sexual desire (sexual dysfunction), migraine, gastrointestinal difficulties (constipation or diarrhea), and for women, menstrual symptoms. It may also cause more serious conditions such as heart problems. Small amounts of stress may be desired, beneficial, and even healthy. Positive stress helps improve athletic performance. It also plays factor in motivation, adaptation, and reaction to the environment. Excessive amounts of stress may lead to many problems in the body that could be harmful. Stress could be something external and related to the environment, but also may not be directly created by external events, but instead by the internal perceptions that cause an individual to have anxiety/negative emotions surrounding a situation, such as pressure, discomfort, etc., which they then perceive as stressful (Jones, Bright & Clow, 2001).

A stressor is any event, experience or environmental stimulus that causes stress in an individual. These events or experiences are perceived as threats or challenges to the individual and can be either physical or psychological. Researchers have found that stressors can make individuals more prone to both physical and psychological problems, including heart disease and anxiety. Stressors are more likely to
affect an individual's health when they are "chronic, highly disruptive, or perceived as uncontrollable".

In psychology, researchers generally classify the different types of stressors into two categories: daily life hassles and life events (Pastorino & Doyle-Portillo, 2009). For the present research ICMR Psychological Stress Questionnaire was used to measure stress among our sample groups. This ICMR has been divided into two sections: Section-A: Stress (a) – Daily Life Hassles and Section-B: Stress (b) – Life Events. We took these as separate variables and also took Stress (Total) as another variable. We shall discuss the results of these variables separately.

6.1.4.1 Stress-a (Daily Life Hassles)

After applying One Way Analysis of Variance (ANOVA) on the variable of Stress-a (Daily Life Hassles), Psychosomatics have scored the highest Mean = 23.25, in comparison to Diabetics, Hypertensives and Normals, 20.08, 17.26 and 12.08, respectively (See Table 5.22). The F-ratio for Stress-a (Daily Life Hassles) is 21.90**, p<.01 (See Table 5.23). It indicates that subjects belonging to these three groups differ significantly in their mean scores on Stress-a (Daily Life Hassles). Further, for the clear picture of the differences among the groups on Stress-a (Daily Life Hassles) variable, Post-Hoc Comparison, Duncan's New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons the results show significant difference between all six of them, the highest being for Psychosomatics and Normals, that is, qr = 11.17**, p<.01, then it was for Normals and Diabetics, qr = 8.00**, p<.01, third between Psychosomatics and Hypertensives, qr = 5.99**, p<.01, fourth for Normals and Hypertensives, qr = 5.18**, p<.01, then for Psychosomatics and Diabetics, qr = 3.17**, p<.01 and lastly between Diabetics and Hypertensives, qr = 2.82*, p<.05 (See Table 5.24; Figure 6.8).
Discussion of Results

Figure 6.8
General Means and Post Hoc Comparison on Stress-a (Daily Life Hassles)

<table>
<thead>
<tr>
<th>Psychosomatics</th>
<th>Normal</th>
<th>Diabetic</th>
<th>Hypertensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>P (Psychosomatics)</td>
<td>Significant</td>
<td></td>
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<tr>
<td>D (Diabetics)</td>
<td>Non-Significant</td>
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<td></td>
</tr>
<tr>
<td>H (Hypertensive)</td>
<td>(*)=p&lt;.05</td>
<td></td>
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</tr>
<tr>
<td>N (Normals)</td>
<td>(**)=p&lt;.01</td>
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Stress (a) – Daily Life Hassles: the most commonly occurring type of stressor in an individual's everyday life. This includes daily annoyances and minor hassles. Examples include: making decisions, meeting deadlines at work or school, traffic jams, encounters with irritating personalities, etc. Often, this type of stressor includes conflicts with other people. Daily stressors, however, are different for each individual, as not everyone perceives a certain event as stressful. For example, most people find public speaking to be stressful, nevertheless, a seasoned politician thinks otherwise.

There are three major psychological types of conflicts that can cause stress. First, the approach-approach conflict occurs when a person is choosing between two equally attractive options, i.e. whether to go see a movie or to go to see a concert. The second type is the avoidance-avoidance conflict, where a person has to choose between two equally unattractive options, for example, to take out a second loan with unappealing
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terms to pay off the mortgage or to face foreclosure on one's house. The third type is an approach-avoidance conflict. This occurs when a person is forced to choose whether or not to partake in something that has both attractive and unattractive traits—such as whether or not to attend an expensive college (meaning taking out loans now, but also meaning a quality education and employment after graduation) (Pastorino & Doyle-Portillo, 2009).

Daily Life Hassles are the irritating, frustrating, distressing demands that to some degree characterize everyday transactions with the environment. They include annoying practical problems such as losing things or traffic jams and fortuitous occurrences such as inclement weather, as well as arguments, disappointments, and financial and family concerns. Although hassles in general have been little studied, research has been done on what could be called hassles in particular life contexts. Examples in the social sphere include status incongruity between spouses (Pearlin, 1975b), sex role conflicts (Pearlin, 1975a), demands of children and aged parents (Levine & Scotch, 1970), work overload and underload (Frankenhaeuser & Gardell, 1976), and role ambiguity (Caplan & Jones, 1975; Kahn et al., 1964). Examples in the area of the physical environment include noise (Glass & Singer, 1972), pollution (Evans et al., 1980), residing in areas of marked social disorganization (James & Kleinbaum, 1976), and commuting to work in rush-hour traffic (Novaco, et al., 1979).

For the variable of Stress (a) – Daily Life Hassles mostly significant results are observed amongst the four groups. Stress (a) – Daily Life Hassles has been found to be the highest amongst the Psychosomatic group and highest significance difference was found between Psychosomatics and Normals as compared to the other groups.
As stated earlier, **psychosomatic illness** arises from a disturbed relationship between the body and mind. This results from the interchange that takes place between the body and mind. Whatever the mind finds meaningful or irrelevant is expressed one way or another by the body. Understanding psychosomatic factors means understanding both health and sickness which arise from the interaction of somatic, mental and social factors.

The term psychosomatic disturbance can be understood in both a broad and in a narrow sense. In the narrow sense, these are those illnesses with evidence of organic damage, for which psychological or psychosocial factors are thought to play a role in the etiology (e.g., ulcerative colitis). In the case of functional disorders (e.g., tachycardia), no organic disease can be found. Patients with these disorders are very frequently seen in clinical practice but often disliked, as "no abnormalities are detected". Of course psychosocial factors play a role in every illness: "It is not possible for the patient not to react psychosocially." The main characteristic of psychosomatic disorders is that emotions lie at their roots.

Patients with chronic illness typically have anxiety, depression, and other negative emotions (Taylor & Aspinwall, 1996), how these individuals cope with these emotions can affect how well they adjust to their illness. A characteristic feature of the psychosomatic patient is his inability to express his emotions ("emotional illiterate"). This inability to adequately perceive emotions and to be able to describe them, led to the introduction of the term "alexithymia" (inability to speak about feelings) by the American, Sifneos and his colleagues. This limitation of awareness of feelings coupled with the inability to describe them, are often taken fatalistically by the psychosomatic patient. The "somatic response" which develops from the conflict is used as the introductory symptom ("entrance ticket") for care.
from the doctor. Mechanical and concrete thought processes with limitation of imagination means that there are vast proportion of symptoms present in these patients as physical complaints or discomfort although it is the emotions that are disturbed. These patients are not able to take part in discussions with psychodynamic goals. They occasionally seem wooden, like a "puppet on a string", leading to the term "Pinocchio syndrome" based on the puppet in the tale of Carlo Lorenzini.

According to Geisler (1991), psychosomatic patient usually describes physical symptoms and neither allows nor finds ways of discussing hidden emotions or his reality, it is inevitable that "somatic function" will be investigated to the limit, but lead only to "normal findings". This assessment of normality will release shame and anxiety on the part of the patient. The result is a worsening of the doctor-patient relationship which can lead to the patient changing his doctor, even up to as many as 10 times. Typically the patient always says at the close of the discussion- "Nobody can help me." This immediately releases feelings of helplessness in the doctor with the desire to relinquish the patient into the "psycho-"area (or - in Germany - at least to send him on a cure) to be relieved of this patient for a bit.

So all these factors combine and a psychosomatic finds it hard to cope with daily life hassles. A constant health problem and daily hassles cause negative feelings, attitude and perception being most important.

Since probably no person leads a hassle-free life, the impact of hassles on physical and mental health, if any, must depend on factors such as a chronically high frequency of hassles, the heightening of hassles during a given period, as in crisis, or the presence of one or a few repeated hassles of compelling psychological importance. Such a formulation allows us to suggest a number of possibilities about how hassles might work in the overall psychological economy of a person's life.
Many hassles have their origin in the person's characteristic style, routine environment, or their interaction. As such, hassles might predict health outcomes quite independently. While some hassles are situationally determined (e.g., traffic jams, unexpected phone calls, broken shoelaces) and rare (e.g., dealing with a disturbed person), others are repeated, either because the person remains in the same context (e.g., work, marriage) with consistent and predictable demands (e.g., to be a competent employee or loving spouse) or because of the person's ineffective coping with common situations, such as those involving authority or members of the opposite sex.

Unfortunately, it's very easy to let the little aggravations and pleasures of the day get out of balance. When these minor aggravations take the lead, the body eventually may experience the same damaging physical effects that major chronic stressors can cause. Stress activates the nervous system, stimulating the secretion of certain hormones and increasing blood pressure, heart rate, breathing, metabolism, and blood flow to the muscles. Much of the time, this process is helpful. The boost in activity helps the body meet greater demands during crises -- for example, to run from a direct threat or to think and act quickly and efficiently when tackling a demanding task. But all of this extra physiological activity may take a toll. Normally, the body can recover when the stressful situation subsides. But when the stress response is turned on too often or for too long without time to recover, the body pays a price. Depending on the amount of stress, this price could be high. Several studies have indicated a link between elevated stress levels and deficiencies in immune system function. In fact, long-term, unrelieved stress may depress immune system function so much that the body becomes more vulnerable to colds, flu, and other infections. Research has
also linked excessive stress to chronic illnesses and diseases, including heart disease and cancer (Real Age, 2005).

Results show that Diabetics and Hypertensive also had problem in coping with Daily Life Hassles as compared to the Normals.

Polonsky (2002), stated in his article that patients with diabetes commonly feel overwhelmed, frustrated, or "burned out" by the daily hassles of disease management and by the unending, often burdensome self-care demands. Many report feeling angry, guilty, or frightened about the disease, and often are unmotivated to complete diabetes self-care tasks. The toll of short- and long-term complications can make the disease even more burdensome. Not surprisingly, it is a consistent finding across studies that diabetes is associated with impaired health-related quality of life (HRQOL), measured in a variety of different ways. Importantly, the relationship between HRQOL and diabetes appears to be bidirectional. Both medical and psychosocial aspects of diabetes may negatively affect HRQOL; in turn, impaired HRQOL may negatively influence diabetes self-management. In this article, a comprehensive multidimensional model of HRQOL in diabetes involving six major components is introduced and described. Representative self-report questionnaires that may be valuable in assessing these components are also presented. Once the patient's most important HRQOL issues have been identified and prioritized, appropriate intervention becomes possible.

A model of daily stress and metabolic control in diabetes was tested in which stress has dual effects on glycemic level: (1) direct, through psychophysiological mechanisms, and (2) mediated, through regimen adherence. Learned resourcefulness was postulated to moderate both effects. Two approaches to measuring daily stress were also compared: stress mean and variability. Stress had a direct association with metabolic control that was not mediated by adherence. Although learned
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resourcefulness failed to moderate this relationship, it did relate directly to metabolic control, in the unexpected direction. The variables combined to explain 37% of the variance in metabolic control. The utility of the intra individual approach to daily stress measurement was supported (Aikens, Wallander, Bell and Cole, 1992).

6.1.4.2 Stress-b (Life Events)

After applying One Way Analysis of Variance (ANOVA) on the variable of Stress-b (Life Events), Psychosomatics have scored the highest Mean = 10.92, in comparison to Diabetics, Hypertensives and Normals, 8.25, 7.56 and 3.56, respectively (See Table 5.25). The F-ratio for Stress-b (Life Events) is 27.98**, p<.01 (See Table 5.26). It indicates that subjects belonging to these three groups differ significantly in their mean score on Stress-b (Life Events). Further, for the clear picture of the differences among the groups on Stress-Stress-b (Life Events) variable, Post-Hoc Comparison, Duncan’s New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons, the results show significant differences between five of them, the highest being between Psychosomatics and Normals, that is qt =7.36**, p<.01, then it was between Normals and Diabetics, qt=4.69**, p<.01, third for Normals and Hypertensives, qt= 4.00**, p<.01, fourth for Psychosomatics and Hypertensives,qt = 3.36**, p<.01, then lastly between Psychosomatics and Diabetics,qt = 2.67**, p<.01. For Diabetics and Hypertensives, no significant difference was found (See Table 5.27; Figure 6.9).
Stress (a)-Life events are changes that occur suddenly in someone's life. They don't necessarily have to be bad, and so can be viewed as being either desirable or undesirable. Life events have been classified according to how stressful they are, as Holmes & Rahe suggested (1967).

Common examples of major life events include: marriage, going to college, death of a loved one, birth of a child, etc. These events can be either positive or negative. Research has found major life events are somewhat rare to be major causes of stress, due to its rare occurrences (Pastorino & Doyle-Portillo, 2009). The length of time since occurrence and whether or not it is a positive or negative event are factors in whether or not it causes stress and how much stress it causes. Researchers have found that events that have occurred within the past month generally are not linked to stress or illness, while chronic events that occurred more than several months ago are linked to stress and
illness. Additionally, positive life events are typically not linked to stress-and if so, generally only trivial stress-while negative life events can be linked to stress and the health problems that accompany it (Pastorino & Doyle-Portillo, 2009).

From the results, it has been seen that Psychosomatics reported the highest Stressful Life Events and a significant difference has been reported among the Psychosomatics and Normals. There have been many studies which state that stressful life events play a major role in the onset of the disease.

There's good evidence to link life events with the onset of both psychiatric illness and physical illness. Examples of such a link are when someone presents to their doctor with abdominal pain after a life event and a healthy appendix is then unnecessarily removed. Psychiatric illnesses, which can be associated with life events, include anxiety, depression and deliberate self-harm. It is, however, often difficult to decide whether life events are dependent or independent. Dependent life events may be secondary to depression - example, someone may lose their job because they are not working as efficiently due to deterioration in their attention and concentration as a result of depression. Independent life events, on the other hand, do not occur as a result of symptoms of an illness - example, losing the job as a result of cost saving measures and then becoming depressed as a consequence (Creed, 1981).

A review by Tosevski & Milovancevic (2006) summarizes the findings of recent researches from selected empirical and nonempirical publications focused on stressful life events and physical health. The findings can be divided into biological, psychological, and social issues concerning the important relationship between stressful life events and physical health. Growing evidence in the field of psychoneuroimmunology contributes to the understanding of the mechanisms by which
stressful events affect physical health. The interactions between behavior, central nervous system, and endocrine system that might cause immune suppression is the most fascinating finding in modern medicine, and its implications are important for the prevention and treatment of somatic illnesses. Trauma, abuse, and stressful events have been studied extensively, especially among vulnerable groups such as children, women, caregivers, and combatants. Risk factors and resilience were the focus of attention of some authors as well as the behavioral intervention for coping with stressful events. The findings support old observations and case reports of a close link between stressful life events and physical health.

These life events have a great impact on the people who are suffering from chronic illness or diseases. As the results show that for the variable Stress-b (Life Events) mostly significant results are observed amongst the four groups. Stress-b (Life Events) was found to be highest amongst the Psychosomatic group. Further highest significance difference was found between Psychosomastics and Normals as compared to the other groups.

Observational studies have established that stressful life events, often defined as an accumulation of ordinary life events or bereavement, increase the risks of mental disorders (Rahe, 1979; Kendler, Karkowski & Prescott, 1999), acute infections such as the common cold (Cohen, Tyrrell & Smith, 1991), and total and cause-specific mortality (Kaprio, Koskenvuo & Rita, 1987).

Life events have also been suggested to contribute to various other diseases, including cardiovascular diseases (Rahe, Bennett & Romo, 1973; Chorot & Sandín, 1994), cancer (Kune, Kune & Watson, 1991; Ginsberg, Price & Ingram, 1996; Levav, Kohn & Iscovich, 2000), asthma (Sandberg, Paton & Ahola, 2000), and rheumatoid arthritis (Baker, 1982).
Several case-control studies (Ginsberg, et al., 1996; Fox, Harper & Hyner, 1994; Chen, David & Nunneley, 1995) and one small prospective cohort study (Jacobs & Bovasso, 2000) have reported an increased risk of breast cancer among women with a high number of life events or women with one or more major life events such as bereavement.

In another study the authors Lillberg, Verkasalo, Kaprio, Teppo, Helenius & Koskenvuo (2002), prospectively investigated the relation between stressful life events and risk of breast cancer among 10,808 women from the Finnish Twin Cohort. Life events and breast cancer risk factors were assessed by self-administered questionnaire in 1981. This risk estimate rose when only major life events were taken into account. Independently of total life events, divorce/separation, death of a husband, and death of a close relative or friend were all associated with increased risk of breast cancer.

To quantify the association between stressful life events and exacerbations of multiple sclerosis a study by Mohr, Hart, Julian, Cox & Pelletier (2004) was conducted. Three investigators independently reviewed papers for inclusion/exclusion criteria and extracted the relevant data, including methods, sample statistics, and outcomes. Of 20 studies identified, 14 were included. The meta-analysis showed a significant increase in risk of exacerbation in multiple sclerosis after stressful life events.

As we have stated earlier that personality too plays an important role in the onset of the disease. Person’s perception of a person towards stressful life events depend a lot on his personality. Therefore, Personality was studied as a conditioner of the effects of stressful life events on illness onset. Two groups of middle and upper level executives had comparably high degrees of stressful life events in the previous 3 years, as measured by the Holmes and Rahe Schedule of Recent Life Events. Discriminant function analysis, run on half of the subjects.
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in each group and cross-validated on the remaining cases, supported the prediction that high stress/low illness executives show, by comparison with high stress/high illness executives, more hardiness, that is, have a stronger commitment to self, an attitude of vigorousness toward the environment, a sense of meaningfulness, and an internal locus of control (Kobasa, 1979).

Apart from Psychosomatic group, Diabetics and Hypertensives also reported high Stressful Life Events.

Several studies have reported that psychological stress can induce hyperglycemia in individuals with diabetes (Surwit, et.al., 1992; Wales, 1995). Moreover, in animal studies, stressful situations have been shown to induce hyperglycemia (Surwit, Schneider & Feinglos, 1992).

Mooy, deVries, Grootenhuis, Bouter & Heine (2000), conducted a study to test whether chronic psychological stress is positively associated 1) with the prevalence of type 2 diabetes; 2) with visceral adiposity; and to test whether 3) the relationship between stress and diabetes is mainly mediated by visceral adiposity. It was found that Diabetes was newly diagnosed among 5% of the subjects. The number of stressful events was positively associated with the prevalence of hitherto undetected diabetes. These cross-sectional findings are partially consistent with Björntorp’s theory that stressful life events, which indicate chronic psychological stress, are indeed associated with undetected type 2 diabetes and with visceral adiposity.

Pyykkönen, Räikkönen, Tuomi, Eriksson, Groop & Isomaa (2010), tested associations between stressful life events, their accumulation, and the metabolic syndrome in a large population-based cohort. They also tested associations between stress and the individual components related to the metabolic syndrome. In comparison with subjects not reporting any extremely stressful life events, those reporting work- or finance-related events had
an increased odds for having the metabolic syndrome. The risk was further increased according to accumulation of stressful finance-related events and to having at least three stressful life events in any of the life domains assessed. Accumulation of stressful life events was associated with insulin resistance, obesity, and triglycerides.

The evidence that life event stress, especially occupational stress, may contribute to persisting hypertension continues to accumulate. The findings in many studies remain significant after controlling possible confounders (Tennant, 2001).

Stressful life events have been long associated with hypertension (Nyklicek, Vingerhoets & Van Heck, 1996; Parati, Antonicelli, Guazzarotti, Paciaroni & Mancia, 2001; Schwartz, Gerin, Davidson, Pickering, Brosschot, Thayer, Christenfeld & Linden, 2003). Most evidence came from experiments in animal models (Bernatova & Csizmadiova, 2006), clinical experiments (Light, Girdler, Sherwood, Bragdon, Brownley, West & Hinderliter, 1999) and from the assessment of the association between exposure to stressors, such as job stress (Andren, Hansson, Bjorkman & Jonsson, 1980), catastrophes (Gerin, Chaplin, Schwartz, Holland, Alter, Wheeler, Duong & Pickering, 2005), and blood pressure measurement with blood pressure.

In a population survey in Canada, 44% of the participants believed that stress/worry was the major cause of cardiovascular disease (Kirkland, MacLean, Langille, Joffres, MacPherson & Andreou, 1999). Studies of the association between stress and hypertension have showed variable results. Most studies have identified positive trends (Everson, Kaplan, Goldberg & Salonen, 2000).

Based on psycho-physiological, clinical and epidemiological studies, essential arterial hypertension is considered to be a consequence of an inadequate 'person-environment fit',
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objectively, subjectively or both. Besides genetic predisposition, salt intake, obesity and physical inactivity, psychological factors--among them 'hyper-reactivity' of the sympathetic nervous system, predisposing behaviour patterns and stressful life-events--should be taken into account in reaching a better understanding of the causes, prediction and prevention of hypertension. It was demonstrated that a maladaptation in various functional systems, even to minor psycho-emotional stress, is an important pathogenetic link between environment, objectively defined stressors and blood pressure regulation from the earliest phases of the disease. Implications for further research and behavioural interventions, together with other lifestyle-related factors, are discussed for improving the population-based health care in cardiovascular disease in the German Democratic Republic (Heine & Weiss, 1987).

6.1.4.3 Stress Total

After applying One Way Analysis of Variance (ANOVA) on the variable of Stress (Total), Diabetics have scored the highest Mean = 35.17, in comparison to Psychosomatics, Hypertensives and Normals, 30.17, 22.27 and 13.96, respectively (See Table 5.28). The F-ratio for Stress (Total) is 61.38***, p<.001 (See Table 5.29). It indicates that subjects belonging to these three groups differ significantly in their mean scores on Stress (Total). Further, for the clear picture of the differences among the groups on Stress (Total) variable Post-hoc Comparison, Duncan's New Multiple Range Test was computed for the four groups, that is, Psychosomatics, Diabetes, Hypertensives and Normals. For the total six comparisons, the results show significant difference between all six of them, the highest being for Diabatics and Normals, that is qr = 21.21**, p<.01, then it was between Normals and Psychosomatics, qr= 16.21**, p<.01, third for Diabetics and Hypertensives, qr= 12.90**, p<.01, fourth between Normals and Hypertensives, qr = 8.31**, p<.01, then between Hypertensives and
Psychosomatics, \( q_{r} = 7.90^{**} \), \( p < .01 \) and lastly between Diabetics and Psychosomatics, \( q_{r} = 5.00^{**} \), \( p < .01 \) (See Table 5.30; Figure 6.10).

**Figure 6.10**

General Means and Post Hoc Comparison on Stress (Total)

As stated earlier, in psychology, **Stress** is a feeling of strain and pressure and a stressor is any event, experience or environmental stimulus that causes stress in an individual. These events or experiences are perceived as threats or challenges to the individual and can be either physical or psychological. Researchers have found that stressors can make individuals more prone to both physical and psychological problems, including heart disease and anxiety. Stressors are more likely to affect an individual's health when they are "chronic, highly disruptive, or perceived as uncontrollable".

As the results show that individually, the two parts of Stress, that is, Stress (a)-Daily life Hassles and Stress (b)-Life Events, had impact on the Psychosomatic group. But when the total Stress was calculated then the impact was
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more on the Diabetic group and the highest significant difference was found between Diabetics and Normals.

Quality of life is diversely compromised in diabetes mellitus as in other chronic diseases (di Corrado, di Nuovo, Iannetti, 2000; di Corrado, di Nuovo, Catalan, Squatrito, Sciacchitano & Trovato, 2001; Trovato, et al., 2004b) and has an important impact on patients' daily life (Westaway, Rheeder & Gumede, 2001; Hart, Bilo, Redekop, Stolk, Assink & Meyboom-de Jong, 2003; Maty, Fried, Volpato, Williamson, Brancati & Blaum, 2004; Evans & Pinzur 2005).

Quality of life in diabetes is like a formalized way of talking about the personal side of diabetes, the felt burden of living with the illness (Polonsky, 2000). Different clinical features of diabetic patients and type of complications can be critical components of the global individual perception of quality of life. However, diabetes can compromise not only physical function e.g. decreased energy, limitations and physical suffering, but also psychological status e.g. depression and stress (Musselman, Betan, Larsen & Phillips, 2003) as above and social relationships (Nouwen, Gingras, Talbot & Bouchard, 1997; Von Korff, Katon & Lin, 2005). All these components affect the Quality of life and the illness perception of diabetics. Certainly, stress, like other patients' psychological features and conditions, is a critical component of Quality of life.

Henry Maudsley, considered by many to be the founder of modern psychiatry, wrote, "This we know: that diabetes is sometimes caused in man by mental anxiety . . ." (Maudsley, 1899). Maudsley observed that diabetes often followed the occurrence of a sudden trauma. He reported the story of a military officer, who, upon discovering that his wife was having an affair, immediately developed the disease. No less a figure than the great William Osier also subscribed to the notion that stress was involved in the etiology of some types of diabetes. In his
landmark Textbook of Medicine, Osier differentiated between true diabetes and the less severe diabetes of obesity, probably analogous to what is called type II diabetes today: "In true diabetes, instances of cure are rare. On the other hand, the transient or intermittent glycosuria met with in stout over feeders, or in persons who have undergone a severe mental strain, is very amenable to treatment" (Osier, 1892).

Over the past 10 years, there has been speculation that the autonomic nervous system is involved in the pathophysiology of type II diabetes (Guillemin, 1978; Ipp, Dhorajiwala, Pugh, Moossa & Rubinstein, 1982; Giugliano, 1984; Feldberg, Pike &Stubbs, 1985; Surwit & Feinglos, 1988).

Several researchers have shown that hyperglycemia can be produced by chemical stimulation of the brain with morphine and by a variety of endogenous neuropeptides, and that it can be abolished by bilateral adrenalectomy (Guillemin, 1978; Van Loon & Appel, 1981).

Hyperglycemia also has been found to occur from a slow intravenous infusion of EPI (Lori, Lori & Buchwald, 1930) and from the type of stress that results in prolonged sympathetic discharge (Woods, Smith & Porte, 1981). Autonomic activity that leads to metabolic decompensation could be stimulated by stress (Surwit & Feinglos, 1988) or by the effects of dietary fat and carbohydrate on sympathetic outflow (Berne, Fagius & Niklasson, 1989; Kaufman, Peterson & Smith, 1991).

Diabetes itself is an important cause of stress in these patients. The diagnosis of diabetes usually comes as a shock and is certainly a stressful time (Wijenaike, 2002; ADA, 2007). Changes in lifestyle including stoppage of smoking, diet, drugs, learning to manage injections and serious complications may all contribute in addition to the worry regarding chronic illness. All
these components affect the quality of life of diabetics (Davis, Wagner & Groves, 1999).

There is strong evidence that psychological stress is related to a deterioration in glycaemic control in established diabetes, there is much less evidence that psychological stress can cause diabetes in humans de novo. It seems more likely that psychological stress produces deterioration in glycaemia in the non-symptomatic patient which in turn makes diabetic symptoms and the diagnosis evident (Wales, 1995).

Then there have been the other patient groups, that is, Psychosomatics and Hypertensives, as well who have scored high on stress as compared to the normals.

We can say that all the patients perceive stress as the same, the reason being that they all are making adjustments with their health and their environment as well and are all the time anxious and under stress.

Psychological stress has been implicated as a cause of several psychosomatic disorders even considering that stress is a component of daily life (Rose, Fliege, Hildebrant, Shirop & Klapp, 2002)

According to Shapiro (1967) and Shapiro (1973), psychological factors do not by themselves cause hypertension. Stress and strain cause hyperstimulation of the limbic cortex and hypothalamus. As a result there is a series of neurohumoral changes which ultimately lead to vaso-constriction and hypertension.

Stress in several guises is evident in individuals with hypertension and in those with the metabolic syndrome and may account, at least in part, for the extent and pattern of sympathetic nervous activation. Importantly, elevated activity of the sympathetic nervous system is related to the development of obesity-related illnesses including hypertension, insulin
resistance, and renal, cardiac, and vascular impairment. Notably, evidence of subclinical organ damage is evident even in young, normotensive, overweight persons (Lambert & Lambert, 2011).

A careful study reported by Lorimer and his colleagues (1971) from Glasgow Royal Infirmary merits close consideration. These authors examined a small series of 15 normal and 15 hypertensive persons of comparable age and subjected them to a standardized emotional stress. The hypertensive group showed a larger absolute and a larger relative rise of blood pressure during mental stress.

Hence the hypothesis “Stress scores will be higher in patients as compared to the normal” is accepted.

6.2 REGRESSION ANALYSIS

Dependent Variable: Depression

Regression analysis was used as to see how it brings change in the sample group, therefore, Depression was used as a dependent variable. Depression is basic and is bipolar and it leads to psychosomatic diseases. It also change the perception of an individual in every sphere of life altogether. Depression leads to restlessness and this leads to negative thoughts which further leads to anxiety and psychosomatic problems. Hence the effect is not bipolar but also circular.

1) For the first group of Psychosomatics, it was seen that though there were other variables too which predicted Depression but Neuroticism contributed significantly to the variance as it has explained 52% of variance as R square change=.52 and F-ratio being 54.75***, p<.001. The t-value, that reflects the significance level for regression coefficients, for Neuroticism is 7.40***, p<.001, beta weight being .73.

Stress-b (Life Events) being the second highest also contributed significantly to the variance in Depression as it has explained 3% of variance as R square change=.03 and F-ratio
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being 31.46***, p < .001. The t-value, that reflects the significance level for regression coefficients, for Stress-b (Life Events) is 2.10**, p < .01, with beta weight being .23.

Neuroticism and Stress-b (Life Events) taken together have explained 55% of variance in Depression (See Table 5.34).

2) For the second group of Diabetics also, Neuroticism contributed significantly to the variance in Depression as it has explained 52% of variance as R square change = .52 and F-ratio being 54.82***, p < .001. The t-value, that reflects the significance level for regression coefficients, for Neuroticism is 7.40***, p < .001. Further, Neuroticism has also shown importance in predicting Depression as beta weight is .73.

Emotional Adjustment being the second highest in order of entries also contributed significantly to the variance in Depression as it explained 6% of variance as R square change = .06 and F-ratio being 35.29***, p < .001. The t-value, that reflects the significance level for regression coefficients, for Emotional Adjustment is 2.81***, p < .001 with beta weight being .31.

Neuroticism and Emotional Adjustment taken together have explained 58% of variance in Depression (See Table 5.35).

3) For the third group of Hypertensives as well, Neuroticism again contributed significantly to the variance in Depression as it has explained 54% of variance as R square change = .54 and F-ratio being 57.78***, p < .001. The t-value, that reflects the significance level for regression coefficients, for Neuroticism is 7.60***, p < .001 with beta weight being .74.

Stress-b (Life Events) being the second highest also contribute significantly to the variance in Depression as it explains 8% of variance as R square change = .08 and F-ratio being 41.07***, p < .001. The t-value, that reflects the significance
level for regression coefficients, for Stress-b (Life Events) is 3.41***, p<.001 with beta weight being .34.

Neuroticism and Stress-b (Life Events) taken together have explained 62% of variance in Depression.

After computing Regression Analysis, the results have shown clearly that Neuroticism predicted Depression in all the three patient groups, that is, Psychosomatics, Diabetics and Hypertensives significantly.

Neuroticism is related to vulnerability and depression. Although the precise cause of depression isn't known, researchers have identified certain factors that seem to increase the risk of developing or triggering depression, and one of the important factors being having certain personality traits, such as having low self-esteem and being overly dependent, self-critical or pessimistic (Potkay & Allen, 1986; Hogan, Johnson & Briggs, 1997; Pervin & John, 1999).

The relationship between personality and depression has been long established, but the processes involved in the relationship are not well understood (Shea & Yen, 2005). Neuroticism, or negative emotionality, is described as a stable tendency to perceive and experience the world as threatening and distressing (Tellegen, 1985; Watson & Clark, 1992). It is moderately heritable, and associated with heightened sensitivity to negative stimuli, vulnerability to sadness, depression, anxiety and other negative emotions, as well as negative cognitions and appraisals, low self-esteem and life dissatisfaction. In adults, elevated levels of negative emotionality or neuroticism have been strongly associated with depression, and shown to prospectively predict increases in depression (Kendler, 2006; Lakdawalla & Hankin, 2008).

Few studies have examined the processes by which neuroticism may transact with other vulnerability factors to
contribute to increases in depression in adults (Lakdawalla & Hankin, 2008). It has been proposed that neuroticism may act as a vulnerability factor in the development of depression through the generation of stressful life events (Angold & Worthman, 1993).

In some people, a chronic illness causes depression. A chronic illness is an illness that lasts for a very long time and usually cannot be cured completely. However, chronic illnesses can often be controlled through diet, exercise, lifestyle habits, and certain medications. Some examples of chronic illnesses that may cause depression are diabetes, heart disease, arthritis, kidney disease, psychosomatic diseases lupus, and multiple sclerosis (MS). Hypothyroidism may also lead to depressed feelings (National Institute of Mental Health; American Psychiatric Association).

The coexistence of depression and cardiovascular disease (CVD) is regularly discussed, and much debated. There is strong evidence that there are pathophysiological mechanisms, particularly endothelial dysfunction, altered platelet aggregation, and hyperactivation of the thrombosis cascade, which coexist with hypothalamic-pituitary-adrenocortical axis dysfunction, and link depression to CVD. Therefore, depression should not be automatically considered to be a consequence of life impairment due to myocardial infarction or major stroke. Probably, it should be considered as one of the many other stressful events, or "genetic reactions to life", which are risk factors for CVD development. (Moretti, Bernobich, Esposito, Torre, Antonello, Angelis & Bellini, 2011).

In another study by Wouts, Janzing, Lampe, Franke, Vegt, Tendolkar, Iersel, Buitelaar & Voshaar (2011), they clearly stated that Vascular disease and neuroticism are both risk factors for late-life depression. In this study they examined the interaction between vascular disease and neuroticism as determinants of
clinically relevant depressive symptoms (CRDS) in late-life. Neuroticism was strongly associated with CRDS in women. In men vascular disease interacted negatively but significantly with neuroticism when predicting CRDS.

Comorbid depression in patients with Type 2 diabetes is important because of the negative consequences on the prognosis of diabetes. The aims of the paper by Gois, Akiskal, Akiskal & Figueira (2012), were first to describe current research that has examined the relationship between temperament, diabetes and depression, and second to make recommendations for future research. Current research has described the relationship of temperament with cyclothymia, bipolar disorder, mood instability and suicidality. Studies on the relationship between temperament and depressive disorders are scarce. Nevertheless, there is likely a continuum between depressive temperament and related personality traits and subthreshold and clinical depressive states and disorders and diabetes outcomes.

The objective of the study by Bot, Pouwer, Ormel, Slaets & Jonge (2010), was to determine rates and risks of major depression in diabetes outpatients with subthreshold depression. Having a higher baseline level of anxiety and depression appeared to be related to incident major depression during 2 year follow-up in diabetic patients with subthreshold depression.

So, from the results above we can clearly see that how negative personality traits like neuroticism is related to chronic diseases like diabetes and hypertension and mental illness as well like depression.

Hence our hypothesis is proved that a) Neuroticism / Anxiety scores will be high in patients as compared to the normals, b) Depression scores will also be high in patients as compared to the normal and c) Diabetics will score high in neuroticism and depression as compared to the other groups because of its greater complication.
The second highest predictor of Depression for two patient groups, that is, Psychosomatics and Hypertensives, was Stress (b)- Life events.

As already stated that patients are high in Neuroticism, their personality traits are such that they find difficult to cope up with Stress, specially the life events. Therefore, they gradually go into Depression.

Stressful life events are associated with the onset of episodes of major depression. However, exposure to stressful life events is influenced by genetic factors, and these factors are correlated with those that predispose to major depression.

The aim of this study by Kendler, Karkowski & Prescott (1999), was to clarify the degree to which stressful life events cause major depression. While independent stressful life events were significantly associated with onsets of depression, when level of threat was controlled, the association was significantly stronger for dependent events. Stressful life events have a substantial causal relationship with the onset of episodes of major depression. However, about one-third of the association between stressful life events and onsets of depression is noncausal, since individuals predisposed to major depression select themselves into high-risk environments.

In the first case control study in 1969, Paykel found that depressed patients had significantly more exit and undesirable events occurring in the six months prior to the onset of depression than did a control series. In 1978, as the result of two community surveys carried out in Cambellwell between 1969 and 1975 of women aged 18 and 55 and a series of comparable psychiatric patients, Brown and Harris published their influential book, "Social Origins of Depression". The relationship between the onset of depressive episodes and antecedent misfortune, usually in the form of life events is well established (Paykel,
In different research studies, an excess of life events has been shown to occur in the three months prior to an episode of depression—and it has also been found that the risk of depression can increase six-fold in the six months after experiencing markedly threatening life events. After studying women in London, Brown & Harris (1978) divided circumstances that can increase the vulnerability of a person to life events into two kinds:

- Long-term difficulties such as ongoing, stressful circumstances. These include things like long-standing difficult relationships. These can cause depression and can make the effects of life events worse.
- Vulnerability factors. Again, these can make the effects of life events worse, although they can't in themselves cause depression.

Kessier (1997), reviewed recent research on the relationship between stressful life experiences and depression. A distinction is made between aggregate studies of overall stress effects and focused studies of particular events and difficulties. A distinction is also made between effects of life stress on first onset of depression and on the subsequent course of depression. Although the available evidence suggests that acute stressful life events can lead to the recurrence of episodes of major depression, a series of methodological problems compromise our ability to make clear causal inferences about the effects of life events on first onset of major depression or about the effects of chronic stress on either onset or recurrence of depression.

A sample of 200 depressed patients (100, males, 100 females) was matched on socio demographic variable with an equal number of control subjects. The frequency of occurrence of life events in the 12 months immediately prior to onset of
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depression was compared with a comparable twelve-month period in control population. Results of this controlled comparison indicated a general excess of life events prior to the onset of depression. Analysis of different categories of events showed that event involving finances affects patients more which is 61% in case of males, 73% in females, next event hit more our patients is job problems which is 37% in males and 4% in females. Third life event is relationship difficulties, which are more in females 54%, and 26% is males. Illness life event affected 14% males and 21% females. The legal issues affected 13% males and 5% in females. The last life event separations/deaths affected more females which is 23% and 6% males; these findings supports the importance of life events in genesis of depression (Rashid & Haider, 2008).

There’s good evidence to link life events with the onset of both psychiatric illness and physical illness. Psychiatric illnesses, which can be associated with life events, include anxiety, depression and deliberate self-harm. Examples of such a link are when someone presents to their doctor with abdominal pain after a life event and a healthy appendix is then unnecessarily removed (Creed, 1981).

A consecutive unselected series of 60 in-patients suffering from dermatologic disorders (psoriasis, chronic urticaria and fungal infections of the skin) was examined. Twenty patients with each illness were included. Stressful life events immediately before illness onset, levels of psychological distress, and alexithymic traits were investigated. Patients with psoriasis and chronic urticaria were exposed to stressful life situations before disease onset and suffered from psychological distress (anxiety, depression, inadequacy) (Fava, Perini, Santonastaso & Fornasa, 1980).

Depression is one of the most common complications of chronic illness. It is estimated that up to one-third of individuals
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with a serious medical condition experience symptoms of depression. People diagnosed with chronic illnesses must adjust to the demands of the illness as well as to its treatment. The illness may affect a person's mobility and independence, and change the way a person lives, sees him- or herself, and/or relates to others. These requirements can be stressful and cause a certain amount of despair or sadness that is normal. In some cases, having a chronic illness can trigger clinically significant depression, a potentially serious but treatable illness itself (Cleaverland Clinic, 2009).

Any chronic condition can trigger depression, but the risk increases with the severity of the illness and how much disruption it causes in one's life. Depression caused by chronic illness can in turn aggravate the illness, causing a vicious cycle to develop. Depression is especially likely to occur when the illness is associated with pain, disability, or social isolation. Depression in turn can intensify pain, fatigue, and the self-doubt that can lead to avoidance of others. The rate for depression occurring with other medical illnesses is quite high (Cleaverland Clinic, 2009):

- Heart attack: 40%-65%
- Coronary artery disease (without heart attack): 18%-20%
- Parkinson's disease: 40%
- Multiple sclerosis: 40%
- Stroke: 10%-27%
- Cancer: 25%
- Diabetes: 25%

The list given above proves our results to be valid, as all the diseases with high percentage are psychosomatic and hypertension.

A study by Cadoret, Winokur, Dorzab & Baker (1972), examines the relationship between various possible precipitating
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events and the onset of unipolar depressive illness in 100 patients. The precipitating factors studied were: (1) deprivation prior to age 16 as a result of loss of parents by death, separation or divorce; (2) personal losses through death in the year before admission; (3) threatened personal losses; and (4) physical illness in the preceding six months. Patients whose depressive illness started before age 40 had a significantly higher incidence of real or threatened personal losses than did later-onset depressives (after 40). Twelve patients claimed a personal loss preceding the onset of depressive symptoms.

In addition, major life events can lead to depression. These include (National Institute of Mental Health, 2012):

- Combat experience
- Trauma
- Stressful situations such as bankruptcy or sickness
- The loss of a friend or loved one
- Absence from loved ones
- Moving to a new home, neighborhood, state or country
- Prolonged tension in relationships
- Having a child
- Starting or ending a romantic relationship

Lastly, the second highest predictor of Depression in Diabetics was Emotional Adjustment.

If a person is emotionally unstable or maladjusted, it means that he is under Depression. Symptoms of an emotionally unstable person and a depressed person are all the more same. Characteristics for Emotionally unstable person are (Connell, 2011):

- Severe mood swings
- Outbursts of anger, often inappropriate
Identity confusion or lack of clear sense of identity.
Frantic efforts to avoid real or perceived abandonment
Self-harming behaviour, e.g. suicidal threats, self-mutilating behaviour
Development of intense interpersonal relationships which are unstable
Chronic feelings of emptiness or boredom
Impulsivity especially with regards to potentially self-damaging behaviours.
Suicidal tendencies.

These patients are at a higher risk than the general population of completed suicide. Obviously these personality difficulties can coexist with other psychiatric disorders e.g. depression, anxiety, panic disorder and even psychosis. Characteristics of a Depressed person are (Smith, Saisan, & Segal, 2012):

- Feelings of helplessness and hopelessness.
- Loss of interest in daily activities.
- Appetite or weight changes.
- Sleep changes.
- Anger or irritability.
- Loss of energy.
- Self-loathing.
- Reckless behavior.
- Concentration problems.
- Unexplained aches and pains.
- Suicidal tendencies.

As stated by Gois, Akiskal, Akiskal & Figueira (2012), major depression, depressive symptoms, distress with diabetes and psychological adjustment to type 2 diabetes (T2DM) are somehow overlapping constructs with shared covariance. Nevertheless, diabetes distress remains the most prevalent long-lasting factor associated with hyperglycemia in T2DM. This ought
to be taken on account when treatment is planned, namely when one is looking for metabolic control and emotional distress integrative care. Temperament or other long-term individual characteristics may support the interplay of distress, psychological adjustment and depressive states in T2DM. Depressive temperament may constitute a vulnerability factor to behavioral or biological T2DM outcome or even a potential risk factor to T2DM later incidence.

The emotional burden of diabetes is significant (Fisher, 2006; Matthews & Lloyd, 2005; Polonsky, et al., 2005; Rubin, 2005; Samuel-Hodge, et al., 2000; Skovlund & Peyrot, 2005) and research shows that greater emotional representation of diabetes is associated with poorer self-care (Barnes, 2000), and impaired metabolic control (Weinger & Jacobson, 2001). Co-morbid depression is also a problem for many people with diabetes. Adults with diabetes are twice as likely to be depressed than similar individuals without diabetes (Anderson, Freedland, Clouse, & Lustman, 2001); and depression is associated with poor glycaemic control (Lustman, et al., 2000). Findings from a cross national study revealed 41% of people with diabetes had poor psychological wellbeing (Peyrot, et al., 2005).

Previous diabetes research has demonstrated a positive relationship between the number of symptoms attributed to diabetes and poor emotional adjustment (Edgar & Skinner, 2003; Paschalides, et al., 2004) perceived consequences and depression/anxiety (Law, Kelly, Huey, & Summerbell, 2002; Skinner & Hampson, 1998); and a negative association between perceived control and depression (Eiser, Riazi, Eiser, Hammersley & Tooke, 2001; Paschalides, et al., 2004).

Hence we conclude that people with psychosomatic diseases experience depression. In fact, depression is one of the most common complications of psychosomatic diseases. Depression caused by chronic disease often aggravates
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The condition, especially if the illness causes pain and fatigue, or limits a person’s ability to interact with others. Depression can intensify pain, as well as fatigue, sluggishness, irritability, impulsivity, etc. The combination of chronic illness and depression also can cause people to isolate themselves, which is likely to exacerbate the depression.