DISCUSSION
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Since the Bipolar disorder (Manic-depression) is a mood disorder characterised by mood changes either in manic episodes or in depressive episodes or mixed episodes. The causes of the mood change may be some shocking life events, socioeconomic status, literacy/illiteracy, diabetes or, some imbalance in electrolytes levels or changes in lipid profiles like cholesterol, triglyceride, high density lipoprotein, low density lipoprotein and very low density lipoprotein etc.

The present study was conducted by considering the changes in various biochemical/metabolic parameters in study group and control group.

In the present study, the mean age was more among the normal cases (39.62 years) as compared to mean age of manic-depressive patients (33.65 years) and statistically significant difference was in them (Table No. 4.1). The study conducted by Abul Khalid et.al. (1998) also supported the present study and the mean age of study group was (34.65 years) and of control group (39.25 ± 8.0 years) but in his study three was no significant difference between two and he subject was below 20 years of age. The study conducted by American Psychiatric association DSM-IV Washington (1994), suggested the mean age at onset for a first name
episode is early 20’s but some cases starts in adolescence and others start after 50 years. In 50% cases major depressive episode immediately follows a manic episode. While the mixed episode appears to be more common in younger individuals and in individuals over age 60 years. With bipolar disorder, the same studies also suggested that 5-15% of individuals hypomania will ultimately develop a manic episode.

The study conducted by Habebolah et.al. (2006), suggested that mean age was 51 years, one these subjects met the criteria for bipolar disorder, mixed subtype and others for bipolar, manic subtype, The mean age of non-diabetic bipolar was 38 years, some of them met the DSM-IV criteria for bipolar disorder, mixed and majority for bipolar disorder, manic subtype.

The study conducted by APA (1997) also supported the present study and that the manic-depressive generally strikes before the age of 35 years (American Psychiatric Association, Let’s Talk Facts About Manic-depressive bipolar disorder, Review, 1997).

In the present study the male normal subjects were higher (58.0%) as compared to study group where as female manic-depressive patients were more (45.0%) as compared to normal female subject (42.0%) (Table No. 4.2) The study conducted by American Psychiatric Association (1994) also supported the present study and suggested a significant proportion of
women report a worsening of the symptoms of major depressive episode, several days before the onset of menses. Studies indicate that depressive episode occur twice as frequently in women as in men.

Another study conducted by Salokangas et.al. (1983) suggested that gender differences in psychiatric bipolar disorder has been well documented. It has been that in Schizophrenia, women have better premorbid and current sexual functioning than meals.

A study conducted by Hamilton et.al. (1996) and Kessler et.al. (1993) also supported the present study and that when we concentrate on mood disorders we find that unipolar depression is twice more common in females. It has also been reported that in depression women have greater number of symptoms and more frequent episodes than men. In the present study the manic-depressive were more (57.0%) from rural areas as compared to control group while the cases of manic-depressive were less (43.0%) from urban areas as compared to control group (50.0%) (Table No. 4.3). The study conducted by Bhatia et.al. (1996). Also supported the present study and that bipolar mood disorder is more common in rural areas as compared to urban. Another study conducted by Harold and Kraepelin et.al. (1998-1999), also supported and suggested because of poor socio-economic status bipolar illness is more common in rural areas as compared to urban areas. Although the illness is existing in
urban areas but due to lack of awareness among the rural population, poor and delayed diagnosis.

In the present study the data reveal that the manic-depressive patients were more (76.0%) from the low socio-economic status as compared to normal subjects (56.0%) where as only (26.0%) of normal subject were from middle socio-economic status and these were more as compared to manic-depressive patients (10.0%) and the minimum (18%) normal subjects were from the high socio-economic status and these were more as compared to manic-depressive patients (Table No. 4.4).

The study conducted by Abdul Khalid et.al.(1998) also supported the present study that the majority of the subjects had Rs. 1000-2000 family income per month and naturally they are under the poor socio-economic status and they are more prone to bipolar (manic-depressive) disorder as compared to well off-families.

Another study conducted by Goodwin et.al. (1990) also supported the present study and suggested that poor socio-economic status is most common predictor in bipolar disorder among the population. Although the cases have been reported from middle socio-economic status but percentage is less.

In the present study the unmarried manic-depressive patients were more (23.0%) as compared to unmarried normal subjects (22.0%) and
married normal subjects were more (78.0%) as compared to married manic-depressive patients (77.0%) (Table No. 4.5). If we look on the above data there is no more difference in percentage of married and unmarried in bipolar (manic-depressive) patients and normal subjects.

The study conducted by Abdul Khalid et.al. (1998) also supported the present findings and suggested that the same data have been observed in the study. Another study conducted by Ratanandra Kr. et.al. (2000) also supported the present study that married manic-depressive patients were more as compared unmarried but manic-depressive patients. In nutshell this might be because of many social/family responsibilities on an individual have after marriage life and some external environmental factors.

In the present study, majority of them (31%) among the study group were high school followed by (29.0%) graduate and a minimum (3.0%) each were post graduate and professionals while among the control group majority of them (44.0%) were intermediate followed by (24.0%) graduate and minimum (2.0%) were professionals (Table No. 4.6). The Abdul Khalid et.al. (1998) reported in the study the maximum number of subjects were educated upto class V and suggested as well as supported the present study but partly, that uneducated people have more manic-depressive disorder as compared to highly educated and the professionals as well.
Another study conducted by Gelenberg et.al. (1998) suggested the prevalence of manic-depressive illness were almost common among the manic-depressive and illiterate population. Although their findings/data were little bit contrary to the present study and this contradiction may be because of difference in the design of the study or the study conducted by them at different location/region.

In the present study the mean weight was more (66.28 kg) among the control group as compared to mean weight among the study group (62.38 kg) and it was found statistically significant among the manic-depressive patients and normal subjects (Table No. 4.7).

The study reported by Abdul Khalid et.al. (1998) found that there were no significant difference among manic-depressive patients and control group, means values of body mass index and weight did not differ significantly and it was also little bit contrary to present study, this contradiction may be because of different dietary habits or different inclusion and exclusion criteria taken in the present study.

Another study conducted in U. S. by Ciechanowski et.al. (2000) reported that more than 80% are overweight linked with type-2 diabetes but having bipolar disorder.

In the present study findings the mean height was more (164.72 cms) among the control group as compared to mean height of manic-
depressive patients (163.23 cms). (Table No. 4.8). Analysis showed that significant difference regarding the mean height was not observed between the manic-depressive patients and normal subjects. In the present study the mean BMI was more (24.78) in normal subjects as compared to manic-depressive patients (23.27), and a statistically significant difference regarding mean BMI was observed between the manic-depressive patients and normal subjects (Table No. 4.9). The study conducted by Abdul Khalid et.al. (1998) reported that height weight and body mass index also did not differ significantly. Findings were contrary to present study.

Another study conducted by Jamisen et.al. (1989) reported that there were positive and significant correlation among manic-depressive patients, regarding height and body mass index.

In the present study, among the study group most of the manic-depressive patients. (45.5%) were the moderate followed by 37.5% severe degree of severity and minimum (17.0%) were mild (Table No. 4.10).

As per the Diagnostic and Statistical Manual-IV criteria the degree of severity may change/vari ate in each study design was undertaken because climatic effects, locality, sociological, demographical and epidemiological factors can change study outcomes and infact the criteria for diagnosis. Although the present study was based on DSM-IV and ICD-10 criterion for diagnosis.
In the present study the mean values of serum creatinine (0.085), blood urea (27.54), serum lithium (0.68), serum sodium (144.68), serum potassium (4.34), serum cholesterol (193.22), triglyceride (162.27), low density lipoprotein (124.71) and very low density lipoprotein (34.27) were found more in manic-depressive patients as compared to normal subjects while the mean values of blood sugar (95.70), serum calcium (9.40) and high density lipoprotein (48.18) were found more among the normal cases as compared to manic-depressive patients (Table No. 4.11). Statistically, significant differences regarding the mean values of serum creatinine, blood sugar, serum lithium, serum sodium, serum potassium, serum cholesterol, triglyceride, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed among manic-depressive patients and normal subjects. However no significance differences were observed regarding the mean values of blood urea and serum calcium between the manic-depressive patients and normal subjects.

The study conducted by Abdul Khalid et.al. (1998) reported the comparison of serum lipid profiles of depressives and controls. Mean total serum cholesterol in depressives and control was (166.39 ± 27.81 mg/dl and 181.40 ± 30.9 mg/dl) respectively. Though total serum cholesterol was lower in depressives as compared to controls but it was not statistically significant. The differences between the depressives and controls regarding
triglycerides level was significant (p<0.05). Difference regarding HDL was highly significant (p<0.01) between depressive and controls. Statistically significant (p<0.05) difference regarding LDL level was reported between test and controls studies suggested that total serum cholesterol, serum triglycerides and serum HDL cholesterol were increased in depression. Total serum cholesterol was the most important predictive variables of severity of depression followed by serum HDL cholesterol and serum LDL cholesterol.

The study conducted by Barrados et.al. (1992) and Engelberg (1992) reported that depressed subjects with definite suicide intent had significantly lower total serum cholesterol, serum triglycerides and serum LDL cholesterol as compared to partial communicators and non-communicators. Significant but negative correlation was found between SPQ Score and total serum cholesterol and serum LDL cholesterol. Several authors have hypothesized mechanisms where by cholesterol lowering could result in diminished central serotonergic transmission.

The study conducted by Boston et.al. (1996) reported that is most abundant in nervous system where it plays a important role per different aspects of cellular structure (fluidity of cell membranes) and function (eg. membrane permeability and exchange processes.
The study conducted by Hawton et.al. (1993) suggested that membranes and plasma cholesterol concentration are kept in equilibrium by homeostatic mechanisms. However, lower plasma concentration of cholesterol may lead to lower concentration in brain which in turn reduce serotonergic neuronal activity.

Another study conducted by Bajwa et.al. (1992) suggested that there were inherent limitation in studying serum lipids because of multiple factors affecting them. We used strict selection criteria to exclude the condition affecting lipid homeostasis. So the depressives or manic depressives and controls were matched for age, sex and BMI to overcome their effect.

The study conducted by Mendels and Frazer (1973) and Pettigrew et.al. (1982) also supported the present study and suggested that sodium, potassium and calcium are involved in nerve messages about stress it may be that this is where the vulnerability lies, cell membrane characteristics have been investigated as a possible source of vulnerability to affective disorder (mood disorder). The study of Pettigrew (1989) and his fellow researchers showed that there were altered membranes dynamics in R.B. C. and W.B.C. from people with bipolar disorder.

Another study conducted by Goodwin and Jamison (1990) has also supported the present study findings and suggested that sodium and
potassium are known to fluctuate in both depression and mania and lithium is known to replace sodium with in individual cells. But exact mechanism of action of lithium and how the cell membrane regulate the movement of sodium, potassium and calcium is still not known.

Braham et.al. (1995) reported that lithium on the other hand, inhibits lipoprotein lipase and lowers the plasma levels of free fatty acid. It is probable that the limitation of triglycerides synthesis may result in lower levels of lower triglycerides.

Roy et.al. (2002) had also supported the present study and suggested that abrupt decrease in lithium is associated with an elevated risk of occurrence in bipolar disorder.

Xiaoli Chen et.al. (2001) suggested that lithium has been shown to increase glucose uptake in skeletal muscles and adipose tissues, the therapeutic effect of lithium on bipolar disorder is thought to be mediated by its inhibitory effect on myoinositol-1-monophosphatase (IMPase).

Mallette et.al. (1986) reported that lithium enhances PTH secretion and reduces urinary calcium excretion such that 10-20% of patients on long term lithium were hypercalcemic.

Goodwin and Jamison (1990) also supported the study regarding the finding of calcium in bipolar disorder and suggested that calcium levels
have been shown to be related to mood changes. Calcium channel blockers such as verapamil may have antimanic and perhaps antidepressant and anticycling properties.

Rose et.al. (2002) suggested that when serum calcium levels increase as occurs in PHP, this is recognised by calcium receptor which sends signals to reduce the amount of calcium reabsorbed from the tubule into the blood stream.

The study conducted by Habibolah et.al. (2006) reported that overall frequency of diabetes mellitus in the patients with bipolar disorder, manic or mixed subtype (9.3%) was significantly higher than in general population that previously were studied and Cassedy et.al. (1999) reported 3.4%, and mean ages of diabetic and non-diabetic groups was significant (p < 0.01) in biopolar patients.

Lilliker et.al. (1980) reported that diabetes mellitus (10.1%) in cohort of patients with bipolar disorder, manic, and mixed subtype, is similar to the 10% frequency reported, this rate 10.1% rate of diabetes mellitus in manic Cohort is well above the rate in the general population (3.4%).

Kennedy et.al. (1989) and Board et. al. (1957) reported that manic episode might also predispose to the development of diabetes mellitus, increased glucocorticoid have been reported to reduce diabetes mellitus and hypercortisolemia has been reported during depressive episodes.
Harris et.al. (1997) suggested that electrical works in concert with parathyroid hormone in calcium homeostases, regulating the concentration of calcium in blood and the balance between calcium deposition and calcium mobilization from bone acting through nuclear receptors, calcitriol activates the synthesis of an intestinal calcium binding protein essential for uptake of dietary calcium.

The study conducted by Boraujerdi et.al. (1993) also supported the present study and suggested that no significance difference was observed regarding the mean values of blood urea and serum creatine, among study and control group.

Another study conducted by Clark et.al. (1997) and Cassedy et.al. (1996) also supported the present study findings and suggested that there was no significance difference regarding the mean values of blood urea and serum creatinine among the manic depressive patients and cases in the control group. The study conducted by Dunn et.al. (1997) also reported that there was no change in creatinine levels of manic-depressive patients.

In the present study, the mean values of serum creatinine (0.83), serum lithium (0.71), serum sodium (144.95), serum potassium (4.32), serum calcium (9.41), serum cholesterol (190.92), triglycerides (159.98), low density lipoprotein (123.21) and very low density lipoprotein (33.81)
were found to be more among the manic-depressive patients as compared to normal subjects whereas mean values of blood urea (26.30), blood sugar (95.15) and high density lipoprotein (44.70) were found to be more in normal subjects as compared to manic-depressive patients (Table No. 4.12) The present study also suggested that statistically significant differences regarding mean values of serum creatinine, blood sugar, serum lithium, serum sodium, serum potassium, triglycerides, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between the name depressive patients and normal subjects (p < 0.05). However, no significant difference regarding mean values of blood urea, serum calcium and cholesterol were observed between manic-depressive patients and normal subjects (p > 0.05).

As far as I know and I searched out for reference no study was done by other researchers of such type parameter in manic-depressive patients and normal subjects below aged 40 years.

In the present study, the mean values of serum creatinine (0.96), blood urea (40.39), serum sodium (143.33), cholesterol (193.93), serum potassium (4.42), triglycerides (173.88), low density lipoprotein (132.30) and very low density lipoprotein (36.58) were found more among the manic depressive patients as compared to normal subjects while the mean values of blood sugar (96.16) serum lithium (0.59), serum calcium (9.47) and high density lipoprotein (51.15) were more in normal subjects as
compared to the manic depressive patients aged above 40 years (Table No. 4.13). Statistically, significant differences regarding mean values of serum creatinine, blood urea, serum lithium, serum sodium, serum potassium, serum calcium triglycerides, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between manic-depressive patients, and normal subjects. No other study of such type was conducted by other researcher, till the completion of the present study.

In the present study, mean values of serum creatinine, blood urea, serum lithium, serum sodium, serum potassium, serum cholesterol, triglycerides, low density lipoprotein and very low density lipoprotein were found to be more among the manic-depressive male patients as compared to the normal male subjects, where as the mean values of blood sugar, serum calcium and high density lipoprotein were found less among the manic-depressive male patients as compared to the normal male subjects. (Table No. 4.14). In present study, significant differences regarding the mean values of serum creatinine, blood urea, serum lithium, serum sodium, serum potassium, serum calcium, serum cholesterol, triglycerides, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between manic-depressive male subjects and normal male subjects. However, no significant difference was observed regarding blood sugar level.
The study conducted by Ghaemi et al. (1997) also supported the present study regarding the mean values of serum creatinine, lipid profile, serum electrolytes and suggested that the same biochemical parameters were significant among the manic-depressive male patients and the male normal subjects.

In the present study, the mean values of serum lithium, serum sodium, serum potassium, serum calcium, serum cholesterol, serum triglycerides low density lipoprotein and very low density lipoprotein were found more among manic-depressive female patients as compared to the normal female subjects where as the mean values of the serum creatinine, blood urea, blood sugar, and high density lipoprotein were found to be more among normal female subjects as compared to the manic depressive female patients (Table No. 4.15). Significant difference regarding mean values of blood urea, blood sugar, serum lithium, serum sodium, serum potassium, serum calcium, triglycerides high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed in females between study and control groups. However, no significant differences regarding mean values of serum creatinine and serum cholesterol were observed between manic-depressive female patients of normal female subjects.
The study conducted by Weirz Bicke et.al. (2001) was related to some how the same aspects but did not support the present study and contradiction may be because of different age group and seasonal effects.

In the present study, the mean values of serum creatinine, serum lithium, serum sodium, serum potassium, serum calcium, serum cholesterol, serum triglycerides, low density lipoprotein and very low density lipoprotein were found more among the manic-depressive patients as compared to the normal subjects having body mass index below 25 where as the mean values of blood urea, blood sugar and high density lipoprotein were found more among the normal subjects having BMI below 25 as compared to the manic-depressive patients having Body mass index below 25. (Table No. 4.16). Significant differences regarding the mean value of blood sugar, serum lithium, serum sodium, serum potassium, serum cholesterol, serum triglycerides, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between manic-depressive patients and normal subjects having BMI below 25 (p<0.05).

The Abdul Khalid et.al. (1998) reported that height, weight and body mass index did not differ significantly and it was some how different to present study.
In the present study, the mean values of serum creatinine, blood urea, serum lithium, serum sodium, serum potassium, serum cholesterol, triglycerides, low density lipoprotein and very low density lipoprotein were found more among the manic-depressive patients having BMI above 25 as compared to the normal subjects having BMI above 25 while the mean values of blood sugar serum calcium and high density lipoprotein were found more among the normal subjects having body mass index above 25 as compared to the manic-depressive patients having body mass index above 25. (Table No. 4.17).

In the present study, significant differences regarding the mean value of serum creatinine, blood sugar, serum lithium, serum sodium, serum potassium, serum calcium, serum triglycerides, low density lipoprotein and very low density lipoprotein were observed between manic-depressive patients and normal subjects having body mass index above 25 \((p<0.05)\). No significant difference in the mean values of the blood urea, serum cholesterol and high density lipoprotein were observed between manic-depressive patients and normal subjects having body mass index above 25.

The study conducted by Abudul Khalid et.al. (1998) reported that the body mass index did not differ significantly and it was contrary to present findings, this difference in both studies may be because of
different region/location of study where conducted and study gap in both the study.

In the present study, the mean values of serum creatinine, blood urea, serum lithium, serum sodium, serum potassium, serum cholesterol, serum triglycerides, low density lipoprotein and very low density lipoprotein were found more among the study group as compared to control group in rural areas while the mean values of blood sugar, serum calcium and high density lipoprotein were found more among control group as compared to the study group in the rural areas (Table No. 4.18). Significant differences in the mean values of serum sodium, serum lithium, blood sugar, serum potassium, serum calcium, serum triglycerides, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between the study group and the control group belonged to rural areas (p<0.005). No significant differences in the mean values of serum creatinine, blood urea and serum cholesterol were observed between control group and study group belonged to rural areas.

The study conducted by Bhatia et.al. (1996) reported that difference in number of manic-depressive patients was observed between rural and urban population but significant difference regarding mean values of serum cholesterol blood sugar have been observed.
Another study conducted by Hardold and Kraepelun et.al. (1998-1999) reported that because of poor socio-economic status in rural population the certain parameters may vary but this is not always and may vary in different localities selected for study.

In the present study, the mean values of serum creatinine, serum lithium, serum sodium, serum potassium serum calcium, Serum cholesterol, serum triglycerides, low density lipoprotein and very low density lipoprotein were observed more among the study group as compared to control group from urban areas while the mean values of blood urea, blood sugar and high density lipoprotein were found less among the study group as compared to control group belonged to urban areas (Table No. 4.19). Significant differences in the mean values of serum creative, blood urea, serum lithium, serum triglycerides high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between study group and control group of urban areas. However, no significant differences were observed in the mean values of blood sugar and serum calcium between study group and control group were of urban areas.

The study done by Myers et.al. (2001) and Jones et.al. (2002) reported that there was no significant differences were observed regarding the mean values of serum cholesterol triglycerides, serum electrolyte, and
significant difference was observed regarding mean values of blood sugar, and serum calcium levels.

In the present study, the mean values of various biochemical parameters the serum creatinine, serum lithium, serum sodium, serum potassium, serum, calcium, serum cholesterol, serum triglycerides, low density lipoprotein and very low density lipoprotein were found more among the study group of high socio-economic status as compared to control group of high socio-economic status, where as the mean values of blood urea, blood sugar and high density lipoprotein were found less among the study group of high socio-economic status as compared to the control group of the same status. (Table No. 4.20). Significant differences regarding the mean values of serum creatinine, blood urea, serum sodium, serum potassium, serum triglycerides and very low density lipoprotein were observed between the study group of high socio-economic status and the control group of high socio-economic status. No significant differences in the mean values of blood sugar, serum lithium, serum calcium, serum cholesterol, high density lipoprotein and low density lipoprotein were observed between study group and control group of high socio-economic status.

In the present study, mean values of serum creatinine, blood urea, serum lithium, serum sodium, serum potassium, serum cholesterol, serum triglycerides, low density lipoprotein, high density lipoprotein and very low
density lipoprotein were found more among the study group as compared to the control group of middle socio-economic status, whereas mean values of blood sugar and serum calcium were found less among the study group as compared to the control group of middle socio-economic status. (Table No. 4.21). Significant differences regarding mean values of serum creatinine, serum lithium, serum sodium, serum potassium, serum cholesterol, serum triglycerides, low density lipoprotein very low density lipoprotein were observed between the study group and the control group of middle socio-economic status. No significant differences in the mean values of blood urea, blood sugar, serum calcium, and high density lipoprotein were observed between the study group and the control group of middle socio-economic status.

In the present study, the mean values of serum creatinine, blood urea, serum-lithium, serum sodium, serum potassium, serum cholesterol, serum triglycerides, high density lipoprotein, low density lipoprotein and very low density lipoprotein were found more among study group as compared to the control group of low socio-economic status where as the mean values of blood sugar and serum calcium were found less among the study group as compared to the control group of low income group. (Table No. 4.22). Significant differences in the mean values of blood sugar, serum lithium, serum sodium, serum potassium, low density lipoprotein and very low density lipoprotein were observed between the
study group and the control group of low income group. No significant differences in the mean values of serum creatinine, blood urea, serum calcium and serum cholesterol were observed between the study group and the control group of low/poor socio-economic status.

The study conducted by Goodwin et.al. (1990) also supported the study and reported poor socio-economic status is one of the most predictive characteristics for aggravation of bipolar disorder. His study also revealed that the means values of serum lipid profile, serum lithium and blood sugar were observed more among study group and control group in high socio-economic status, where as the mean values regarding serum creatinine, blood urea, were observed more and more among the study group and serum creatinine among the control group in poor socio-economic status but significant differences regarding the mean values of serum lithium, serum lipid, serum creatinine and blood sugar were observed among the study group and control group in poor socio-economic status.

In the present study, the mean value of serum cholesterol was found more among the severe manic-depressive patients as compared to mild and moderate study group whereas mean value of serum triglycerides was found to be more among the moderate manic-depressure patients as compared to mild and severe patients in study group. The mean value of
high density lipoprotein and low density lipoprotein were more among the severe patients in study group as compared to mild and moderate manic-depression patients while the mean value of very low density lipoprotein was more among the moderate as compared to mild and severe manic depressive patients (Table No. 4.23). Significant differences in the mean values of serum triglycerides, serum high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed between mild vs severe manic-depressive patients. While the significant differences in the mean value of low density lipoprotein was found between the moderate and severe manic-depressive patients. However, no significant differences in the mean values of all lipid profile were observed between mild and moderate manic-depressive patients and mean value of serum cholesterol between mild with severe manic-depressive patients and mean values of serum cholesterol, high density lipoprotein and very low density lipoprotein were observed between moderate with severe manic-depressive patients.

The present study was carried out and categorized to find out the severity of the disease as well as prognosis of the severity but no other study was done by the other researchers, as far as I know about and searched out for the literature. Significant values regarding some parameters and insignificant values of other parameters may be because of vulnerability or may be due to family history.
In the present study, the significant differences regarding the mean values of serum creatinine and blood urea were observed between mild vs moderate patients, mild vs severe and moderate vs severe manic-depressive patients where as significant different regarding the mean value of blood surgar level was observed between mild vs severe manic-depressive patients. However, no significant difference regarding the mean value of blood sugar were observed between mild vs moderate and moderate vs severe manic-depressine patients (Table No. 4.24). No other study was done by researchers till the present work was carried out and the findings may vary due the study designed for a particular region.

In the present study, the mean level of the all electrolytes were more among the mild manic-depressive patients as compared to moderate and severe manic-depressive patients and significant differences regarding the mean values of all electrolytes except serum lithium between mild vs moderate, mild vs severe and moderate vs severe manic-depressive patients were observed (p<0.05) (Table No. 4.25).

Definitly the present study gave a very significant values regarding the all electrolyte levels and may help in the early diagnosis of bipolar disorder but nothing work was carried out in the past for such type of study.
In the present study, the statistically significant and positive correlations were observed between the age with blood urea, blood sugar, and serum triglyceride among the study group ie as the age advances, blood urea, blood sugar and serum triglyceride also increases and vice-versa but significant and negative correlations were observed significant and negative correlations were observed between age with serum lithium, serum calcium, high density lipoprotein and low density lipoprotein among the study group ie as the age advances, serum lithium, serum calcium, high density lipoprotein and low density lipoprotein decreases and vice-versa (Table No. 26). Insignificant and positive correlations were observed between age with serum creatinine, serum potassium, serum cholesterol and very low density lipoprotein among the study group while insignificant and negative correlation was observed between the age with serum sodium in the study group (Table No. 4.26).

The study conducted by Gordon et.al. (1969) supported the present study but regarding the mean values of blood urea, blood sugar, serum triglyceride with age increased i.e. they were significant and positive correlated with age where as most of electrolytes were significant but negative correlation were observed with age. Insignificant and positive correlation were observed between age with serum creatinine and serum cholesterol.
In the present study, significant and positive correlations were observed between age with serum creatinine, serum calcium and high density lipoprotein among the control group i.e. as the age increases serum creatinine, serum calcium and high density lipoprotein also increases and vice versa. Insignificant and positive correlations were observed between age with blood urea, blood sugar, serum lithium, serum sodium, serum cholesterol, serum triglycerides and very low density lipoproteins among the control group, while insignificant and negative correlations were observed between age with serum potassium and low density lipoprotein among the control group (Table No. 4.27).

The study conducted by Gordon et.al. (1969) and Bennett et.al. (1994) suggested the same findings and supported the present study in a few parameters regarding then mean values and significance.

The Alvin et.al. (2001) also supported the present study and reported that significant and positive correlations were observed between age with, serum creatinine, and serum calcium.

In the present study, statistically significant and positive correlations were observed between body mass index with serum creatinine, blood urea, blood sugar and serum cholesterol among the study group i.e. as the body mass index increases the serum creatinine, blood urea, blood sugar and serum cholesterol also increases and vice-versa. Significant and
negative correlations was observed between body mass index with serum calcium among the manic-depressive patients i.e. as the body mass index increases the serum calcium level decreases and vice-versa. Insignificant and positive correlations between body mass index with serum triglyceride, high density lipoprotein, low density lipoprotein and very low density lipoprotein were observed where as insignificant and negative correlations were observed between body mass index with serum lithium, serum sodium, and serum potassium among the manic-depressive patients (Table No. 4.28).

The study conducted by Abdul Khalid et.al. (1998) and Jamison et.al. (1989) reported that body mass index did not differ significantly and this study did not support the present study because the body mass index may be affected by region of study where it was designed.

In the present study, significant and positive correlation were observed between body mass index with serum sodium, serum cholesterol, and high density lipoprotein cholesterol fraction among the normal subjects i.e the body mass index increases, the level of serum sodium, serum cholesterol and high density lipoprotein cholesterol also increases and vice-versa. While statistically significant and negative correlation was observed between body mass index with serum lithium among the control group i.e. as the body mass index increases, the level of serum lithium decreases and vice-versa. Insignificant and positive correlations were
observed between body mass index with serum creatinine, blood sugar, serum potassium, serum calcium and low density lipoprotein where as insignificant and negative correlations were observed between body mass index with blood urea, serum triglyceride and very low density lipoprotein among the control group (Table No. 4.29).

The study conducted by Abdul Khalid et.al. (1998) and Jamison et.al. (1989) did not support the present study, reason for contradiction could not clear because the findings in bipolar disorder may vary from one study to other study.

In the present study, the significant and positive correlations were observed between manic-depressive level of the patients with high density lipoprotein cholesterol fraction and low density lipoprotein cholesterol fraction ie as the degree of severity of disease/disorder increases, the values of high density lipoprotein fraction also increases and vice-versa, where as significant and negative correlation between manic-depressive level of patients with serum triglyceride and very low density lipoprotein fraction were observed ie. as the degree of the severity of disease increases, the values of serum triglyceride, and very low density lipoprotein decreases and vice-versa. Insignificant and positive correlation between manic-depressive level of patients with serum cholesterol was observed (Table No. 4.30).
The study conducted by Lesti et.al. (2005) also supported the study that the mean values of high density. Lipoprotein cholesterol fraction and low density lipoprotein fraction increases with increase in the degree of severity of manic-depressive illness.

In the present study, the significant and positive correlations between manic-depressive level of patients with serum creatinine, blood urea, and blood sugar were observed i.e. as the manic depressive severity increases, the values of serum creatinine, blood urea and blood sugar also increases (Table No. 4.31).

Lesti et.al. (2005) supported the present study as the mean values of serum creatinine, blood urea and blood sugar increases with the increase in the degree of severity of the disease.

In the present study, statistically significant and negative correlation between manic-depressive level with serum sodium, serum potassium and serum calcium were observed among the study group. However, insignificant and negative correlation between manic-depressive level of patients with serum lithium was observed (Table No. 4.32). No such type of study was done by the researchers which were not able to manifest the such correlation between manic depressive level with other parameters of importance.