Depression is a cluster of symptoms with characteristic psychological, physical, behavioral and vegetative features which differ in the extent of their manifestation. The core symptoms of depression are loss of interest or pleasure (anhedonia) and depressed mood. The term depression is used to denote a wide spectrum of moods and mood disturbances ranging from everyday low mood to fully diagnosed major affective disorder. Disorders of mood have been known for thousands of years. The first written account of depression dates back to ancient Egypt, where the Eber papyrus described an illness characterized by severe hopelessness. In the Old Testament, Saul is described as suffering from severe depression. This illness was originally termed melancholia, a term which first appeared in the writings of Hippocrates in the 4th century B.C., making mood disorders the oldest known psychiatric syndromes.

In the fields of psychology and psychiatry, the terms depression or depressed refer to sadness and other related emotions and behaviors. Everyone occasionally feels blue or sad, but these feelings usually pass within a couple of days. When a person has depression, it interferes with his or her daily life and routine, such as going to work or school, taking care of children, and relationships with family and friends. It can be thought of as either a disease or a syndrome. The Diagnostic and Statistical Manual of Mental Disorders (DSM) states that a depressed mood is often reported as feeling sad, helpless, and hopeless. The changes that develop during depression disrupt interpersonal relationships and can exacerbate social losses that may be occurring in the life of the patient. Nonetheless, depression can impact on all of the activities of the individual, including employment and the full range of social life. Depression causes pain for the person who has it and for those who care about him or her. In its most extreme form, depressed patients become psychotic. Such patients distort or misperceive reality, experience hallucinations or develop bizarre beliefs and behaviors.
Depression is one of the commonest psychiatric disorders and one of the leading causes of
disability worldwide. The World Health Organization (WHO) Collaborative Project noted
that disability levels among patients with depression were greater than patients suffering
other chronic/recurrent illnesses, such as asthma, chronic back pain, or diabetes.
Epidemiological studies have been extremely important in the study of depression and
have demonstrated that it is found in a wide range of cultures. Recognition that its
incidence is increasing in various cultures suggests that depression represents an
interaction between biological and psychosocial processes. Depression impacts an
enormous number of people: at any time 3 to 4% of the population of the United States
suffer from an affective disorder, and the lifetime risk for having at least one major
depressive episode is 10 to 15% in the general population. There are over 30,000 deaths
by suicide each year in the United States, making it a leading cause of death. In India, the
suicide rate increased by 6.2% per annum between 1980 and 1990, during which period
the population growth rate was 2.1% and the highest growth in suicide rates was for
young adults. Indeed, the WHO predicted that by 2020, major depression will be second on
the list of as a cause of disability (following ischaemic heart diseases), ahead of such
common health problems as cancer, infectious diseases, road-traffic accidents and AIDS.

Sobocki and colleagues (2006) estimated total cost of depression in Europe based on
published epidemiologic and economic evidence. They found that in 28 countries with a
population of 466 million, at least 21 million were affected by depression. The total
annual cost of depression in Europe was estimated at Euro 118 billion in 2004, which
-corresponds to a cost of Euro 253 per inhabitant. Direct costs alone totaled dollar 42
billion, comprised of outpatient care (Euro 22 billion), drug cost (Euro 9 billion) and
hospitalization (Euro 10 billion). Indirect costs due to morbidity and mortality were
estimated at Euro 76 billion. This makes depression the most costly brain disorder in
Europe, accounting for 33% of the total cost. The cost of depression corresponds to 1%
of the total economy of Europe.
Many of the leading causes of death and disability in India and other developing countries are associated with socioeconomic status. The least well-off suffer a disproportionate share of the burden of disease, including depression, obesity, and diabetes. At present, there is little real understanding about the mechanisms or mediating factors between low socioeconomic status and depression. There is evidence that lack of social support may increase the risk of depression. Low socioeconomic status might decrease a person’s ability to engage in social activities. Unplanned urbanization is posing great strains on traditional social support systems across the developing world. The lack of social support and the breakdown of kinship structures is probably the key stressor for the millions of migrant laborers to the urban centers of India leaving behind millions of dependants in the rural areas whose only hope of survival are the remittances their relatives send from distant cities. Some studies have reported that impact of lower household income was approximately two fold higher to develop risk for depression in students attending poor versus rich schools. There is also powerful inverse relation between socioeconomic status and obesity. Some studies have suggested that clinical treatment of obesity may sometimes not just be a matter of diet and exercise but also of dealing with issues of depression and social status.

Literature spanning several decades has addressed the relationship among obesity and depression. However, obesity and depression research have evolved as two independent disciplines, which rarely or never overlap. Experts have seen a connection between people’s weight and their mood. This is because, according to them, obesity causes chemical imbalances in people which can regulate the way they feel. As a result, obesity can transform people to become depressed especially since they not only experience poor health but are also unsatisfied with how they look.

Some neuro-chemical researches also suggest that there may be a physical connection between depression and obesity. Some obese people over eat and crave carbohydrates, while avoiding protein-rich foods. It appears that as many as two-thirds of all obese people are carbohydrate cravers, though not all carbohydrate cravers are obese. Scientists
have proposed many possible causes for obesity and depression, including genetic predisposition, race, socioeconomic status, society's negative attitudes toward overweight, negative body image, negative stereotypes, education, dieting and the effect of poor physical health on mood.

Twin and family studies have repeatedly suggested that genetic factors contribute to the development of depressive disorder or to quantitative traits that reflect a liability to this disorder, such as anxiety and neuroticism. The heritability of depression appears to be remarkable, with estimates between 40% and 70%. Depression associated genetic factors are largely shared with generalized anxiety disorder, whereas environmental determinants seem to be distinct. With the advent of relatively affordable and fast methods for large scale genotyping, the next aim has become the identification of the chromosomal regions or loci involved in the development of depression via linkage or allelic association analyses. Although depression confronts geneticists with similar challenges to other complex medical diseases, such as hypertension or diabetes, it is unique in that it is a consequence of the dysfunctional master control organ, the brain. Although the post-genomic era is still in its infancy, several milestones have already been reached. Variation in gene expression has been confirmed to play a predominant role in individual differences; gene–environment interactions have been established in humans and in a nonhuman primate model; gene–phenotype correlations have been substantiated by functional neuro-imaging; and the notion of gene networks that control brain development is increasingly recognized. Given the psychobiologic complexity of depressive disorders, it is not surprising that the identification of specific genetic factors is extremely difficult and continues to be among the last frontiers of gene hunting.

The interaction of specific genetic alleles with depressive symptoms could be important to understanding gene/environment interactions, since depressive symptoms have been linked with obesity and dis-regulation in eating (e.g. both hyperphasia and appetite loss). Some genetic models propose that depression and obesity share common pathophysiological elements of the serotonergic and dopaminergic neurotransmitter
systems. Tryptophan hydroxylase 1 (TPH1) is a rate limiting enzyme involved in serotonin synthesis and therefore its an important candidate gene to be looked for in combined etiology of depression and obesity. Leptin (LEP) gene has recently attracted more attention due to its specific effects in the pathogenesis of obesity and depression. Understanding the potential interaction between biological, psychological, and social risk factors is central to generating informed hypotheses about the causes and ultimately prevention of depression and obesity.

In modern times several research approaches suggest that personality and the liability to psychiatric illnesses like depression is influenced by several genes. If it is true it could shed light on genetic architecture of psychiatric illnesses. More over the genetic profile of different populations for the depressive disorders will serve as platform to diagnose the risk individuals from the high-risk families at early age and design strategies for early and timely intervention of the disease will be possible. Obesity by itself is also one of the major disorders worldwide and this study will also focus on its relation with depression. India is developing country and most of its population is in the lower income group. Despite the abundance of evidence available on the prevalence of depression and obesity in the general population and among low income and poor persons, few studies have specifically investigated the influence of depressive symptoms and obesity on the health status and economic independence. It is crucial to identify individuals who are at increased risk for developing depressive symptoms and obesity to prevent the adverse health and economic outcomes associated with these disorders. Aim of present study is to find out the combined role of genes, environmental and social factors in the development of depressive symptoms and associated obesity.
AIMS AND OBJECTIVES

a. To study the correlation, if any, between obesity and depression.
b. To elucidate the role of \( TPH \) and Leptin gene polymorphism in weight gain/loss in association with symptomatology of depression.
c. To identify the genotypes associated with susceptibility to depression, if any.
d. To study the effect of factors like the socioeconomic status of the family on the incidence of depression.
e. To perform a multivariate analysis using the symptoms of depression, BMI and their co-relation to socioeconomic status of the patients and control subjects.