

**A DESCRIPTIVE STUDY ON THE PREVALENCE OF  
ANTENATAL DEPRESSION IN A RURAL AREA IN  
TAMILNADU**

**Dissertation submitted to  
THE TAMIL NADU  
DR.M.G.R. MEDICAL UNIVERSITY**  
*in partial fulfilment of the regulations  
for the award of the degree of*

**M.D. (Community Medicine)  
Branch XV**

**GOVERNMENT KILPAUK MEDICAL COLLEGE**



**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY  
CHENNAI, TAMILNADU**

**MAY 2018**

## **BONAFIDE CERTIFICATE**

This is to certify that this dissertation entitled “**A DESCRIPTIVE STUDY ON THE PREVALENCE OF ANTENATAL DEPRESSION IN A RURAL AREA IN TAMILNADU** ” submitted by **Dr. R. KAMALI** , Postgraduate student, Department of Community Medicine for partial fulfillment for the award of the degree, Doctor of Medicine in Community Medicine by The Tamilnadu Dr.M.G.R.Medical University, Chennai is a bonafide work done by her at **GOVERNMENT KILPAUK MEDICAL COLLEGE, CHENNAI**, during the academic year 2015 - 2018.

**Prof.Dr.K.Mary Ramola, M.D.**

Professor & HOD

Dept. of Community Medicine

Government Kilpauk Medical College

Chennai -10.

**Prof.Dr. P.Vasanthamani, M.D.,DGO.,MNAMS.,MBA**

DEAN,

Government Kilpauk Medical College,

Chennai-10.

## **DECLARATION**

I, **Dr. R. KAMALI**, solemnly declare that this dissertation, entitled “**A DESCRIPTIVE STUDY ON THE PREVALENCE OF ANTENATAL DEPRESSION IN A RURAL AREA IN TAMIL NADU**”, has been prepared by me, under the expert guidance and supervision of **Prof. Dr. K.MARY RAMOLA, M.D.**, Professor and HOD, Department of Community Medicine, Government Kilpauk Medical College Hospital, Chennai and submitted in partial fulfillment of the regulations for the award of the degree M.D.(Community Medicine) by The Tamil Nadu Dr. M.G.R. Medical University and the examination to be held in May 2018. This study was conducted at Peerankaranai, the Field Practice area of Government Kilpauk Medical College, Chennai. I have not submitted this dissertation previously to any university for the award of any degree or diploma.

Place: Chennai

Date:

**(Dr.KAMALI .R)**

## **DECLARATION**

I, **Prof.Dr.K.MARY RAMOLA, M.D.**, Professor and HOD, Department of Community Medicine, Government Kilpauk Medical College, Chennai declare that this dissertation, entitled “**A DESCRIPTIVE STUDY ON THE PREVALENCE OF ANTENATAL DEPRESSION IN A RURAL AREA IN TAMILNADU**”, has been prepared under my expert guidance and supervision by **Dr. .R. . KAMALI**, for her partial fulfillment of the regulations for the award of the degree M.D.(Community Medicine) by The Tamil Nadu Dr. M.G.R. Medical University and the examination to be held in May 2018.

Place: Chennai

Date :

**Prof.Dr.K.Mary Ramola, MD.,**

GUIDE

Professor & HOD,

Department of Community Medicine,

Govt. Kilpauk Medical College,

Chennai -10.

## **ACKNOWLEDGEMENT**

I wish to express my sincere thanks to **Prof.Dr.P.VASANTHAMANI, MD.,DGO.,MNAMS.,MBA** Dean, Government of Kilpauk Medical College, Chennai for having kindly permitted me to conduct the study.

I am grateful to the Professor and Head of the Department of Community Medicine, Govt. Kilpauk Medical College, **Prof.Dr.K.MARY RAMOLA, M.D.**, for her motivation, meticulous guidance, valuable suggestions, and for providing all necessary arrangements for conducting the study in our Field practice area.

I am extremely grateful and indebted to our Associate Professors **Dr.PRIYA SENTHILKUMAR, D.G.O., M.D.**, Community Medicine, and **Dr.SENTHIL KUMAR, D.C.H., M.D.**, Community Medicine, Department of Community Medicine, Government Kilpauk Medical College, Chennai for their concern, inspiration, expert advice and constant encouragement in preparing this dissertation.

I also express my sincere gratitude to all Assistant Professors and Tutors, Department of Community Medicine, Government Kilpauk Medical College, Chennai, for their constant motivation, encouragement and valuable suggestions.

I am thankful to the Institutional Ethics Committee for their guidance and approval of the study.

I also thank my entire postgraduates colleague for supporting me throughout the study. I thank the Medical officers of Peerkankaranai PHC, Nurses, Village Health Nurses and Anganwadi workers for their kind cooperation and permitting me to use their facilities for the study.

I wish to thank all the study participants whose willingness and patience made this study possible.

I thank my family, friends and God Almighty for their blessings in successfully completing the study.

## TABLE OF CONTENTS

<b>S.NO</b>	<b>TITLE</b>	<b>PAGE NO</b>
<b>1.</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>2.</b>	<b>JUSTIFICATION</b>	<b>4</b>
<b>3.</b>	<b>OBJECTIVES</b>	<b>6</b>
<b>4.</b>	<b>REVIEW OF LITERATURE</b>	<b>7</b>
<b>5.</b>	<b>MATERIALS AND METHODS</b>	<b>32</b>
<b>6.</b>	<b>RESULTS WITH DISCUSSION</b>	<b>39</b>
<b>7.</b>	<b>CONCLUSION</b>	<b>70</b>
<b>8.</b>	<b>SUMMARY</b>	<b>71</b>
<b>9.</b>	<b>LIMITATION</b>	<b>75</b>
<b>10.</b>	<b>RECOMMENDATION</b>	<b>76</b>
<b>11.</b>	<b>BIBLIOGRAPHY</b>	<b>77</b>

## ANNEXURES

<b>S.No</b>	<b>TITLE</b>
<b>I</b>	<b>PLAGIARISM CERTIFICATE</b>
<b>II</b>	<b>INSTITUTIONAL ETHICAL COMMITTEE APPROVAL</b>
<b>III</b>	<b>QUESTIONNAIRES</b>
<b>IV</b>	<b>SAMPLE SIZE CALCULATION</b>
<b>V</b>	<b>INFORMATION TO PARTICIPANTS</b>
<b>VI</b>	<b>PATIENT CONSENT FORM</b>
<b>VII</b>	<b>MRSI SOCIOECONOMIC SCALE</b>
<b>VIII</b>	<b>KEY TO MASTER CHART</b>
<b>IX</b>	<b>MASTER CHART</b>
<b>X</b>	<b>TAMIL CONSENT FORM</b>

## **LIST OF ABBREVIATIONS**

<b>EPDS</b>	<b>Edinburg Postnatal Depression Scale</b>
<b>DSM-5</b>	<b>Diagnostic and Statistical Manual of Mental Disorders</b>
<b>ICD-10</b>	<b>10th revision of the International Statistical Classification of Diseases and Related Health Problems</b>
<b>HAM-D</b>	<b>Hamilton Depression Rating Scale</b>
<b>CBT</b>	<b>Cognitive Behaviour Therapy</b>
<b>WHO</b>	<b>World Health Organisation</b>
<b>SPSS</b>	<b>Statistical Package for Social Sciences</b>
<b>MRSI</b>	<b>Market Research Society of India</b>
<b>PHC</b>	<b>Primary Health Centre</b>
<b>OCD</b>	<b>Obsessive Compulsive Disorder</b>
<b>CMD</b>	<b>Common Mental Disorders</b>
<b>LMIC</b>	<b>Low Middle Income Countries</b>
<b>DALY</b>	<b>Disability Adjusted Life Years</b>
<b>CES-D</b>	<b>Center for Epidemiologic Studies Depression Scale</b>
<b>PICME</b>	<b>Pregnancy infant cohort monitoring and evaluation</b>

## LIST OF TABLES

<b>S.No</b>	<b>Title</b>	<b>Page No.</b>
<b>1.</b>	<b>Distribution of Socio demographic data in study group</b>	<b>40</b>
<b>2</b>	<b>Distribution of Marriage and Conception related factors in study group</b>	<b>43</b>
<b>3.</b>	<b>Distribution of Obstetric factors in study group</b>	<b>44</b>
<b>4.</b>	<b>Distribution of family and spouse related factors in study group</b>	<b>45</b>
<b>5.</b>	<b>Distribution of child related factors in the study group</b>	<b>47</b>
<b>6.</b>	<b>Distribution of Antenatal depression in study group</b>	<b>48</b>
<b>7.</b>	<b>Prevalence of antenatal depression across socio demographic factors in the study population</b>	<b>50</b>
<b>8.</b>	<b>Prevalence of antenatal depression across marriage and conception related factors of study population</b>	<b>55</b>
<b>9.</b>	<b>Prevalence of antenatal depression across variables related to obstetric factors</b>	<b>58</b>
<b>10.</b>	<b>Distribution of antenatal depression across variables related to family and spouse related factors</b>	<b>60</b>
<b>11.</b>	<b>Prevalence of antenatal depression across variables related to child related factors</b>	<b>65</b>
<b>12.</b>	<b>Univariate analysis of statistically significant factors</b>	<b>67</b>
<b>13.</b>	<b>Multivariate analysis of factors associated with occurrence of antenatal depression.</b>	<b>68</b>

## LIST OF FIGURES

<b>S.no</b>	<b>Title</b>	<b>Page No.</b>
<b>1.</b>	<b>Pie chart of SES distribution in study group</b>	<b>41</b>
<b>2.</b>	<b>Educational status of the study population</b>	<b>42</b>

# 1. INTRODUCTION

Pregnancy is a period of transition in a woman. There are many Physical, Physiological and Psychological changes happening in her. Though this period is traditionally considered as a period of emotional wellbeing, pregnancy may induce or exacerbate emotional problems. This may have a negative impact on the pregnancy and also the postpartum period. The antenatal period is considered to be a high risk time for both for pre-existing and new onset psychiatric illnesses.<sup>1</sup>

## 1.1 Depression :

Depression is a common mental disorder, it is characterized by persistent sadness, marked loss of interest and fatigue as core symptoms lasting for at least two weeks or more<sup>2</sup>.

Depression is a major public health problem, contributing to significant morbidity, disability and mortality along with significant economic losses. Globally an estimated 322 million people were affected by Depression in 2015<sup>1</sup>. Depression is predicted to rise by about 22.5%. This may be due to population growth and aging<sup>3</sup>.

India has 57 million people (18%) affected by Depression<sup>4</sup>. The Disability adjusted life years (DALY) due to depression accounted for

37% in 2013. By 2025, Depression will be ranked the third most disabling condition globally<sup>5</sup>.

The lifetime risk of depression in women is about 1 in 8, and it is most prevalent during their reproductive years<sup>6</sup>.

## **1.2 Antenatal Depression :**

Pregnancy and depression affect each other. In the background of chronic life stressors, women may have difficulty in coping with the additional demands of pregnancy. Many women, particularly those living in poverty or having dependent children, may have a negative view of pregnancy. Memories of poor parenting or abuse, the women have suffered may resurface and cause distress. Domestic conflicts also lead to emotional problems. Maternal mental state in pregnancy may have significant impact on the mental and behavioural of the offsprings<sup>7</sup>.

Depression, when it occurs in pregnancy is called Antenatal Depression. The prevalence of prenatal depression is estimated to be 10–15% in developed countries and 19–25% in low income countries<sup>8</sup>. Women who experience antenatal depression often continue to have depressive symptoms in the post-partum period. A study shows that more than 54% of those with post-partum depression report having depressive episodes during pregnancy<sup>9</sup>.

Literature review also points to a growing body of evidence that common mental disorders (such as depression, anxiety, and stress) during pregnancy , conferring a specific risk to the growing fetus and affecting the child development<sup>10</sup>.

## 2. JUSTIFICATION

Historically, greater emphasis was placed on depression during the post-partum period, and relatively less attention was paid to depression in the ante-partum period. Many Studies have been conducted on post partum psychological disorders but Antenatal Psychological Morbidity has received less attention.

Prevalence of Antenatal Depression is higher in low income countries<sup>8</sup>. Antenatal depression is a predictor for post partum depression<sup>11</sup>. Untreated antepartum depression is of concern not only because of its association with post partum depression, but also because of the poor physical and neurocognitive developmental outcomes in infants<sup>12</sup>. Antenatal depression can also lead to suicide. Rates of suicidal ideation among depressed obstetric patients have ranged from 3% in Finland to 17.6% in USA .Suicide is a leading cause of death in women of reproductive age group in two of the most populous countries in the world, India and China. Mental health problems in mothers can lead to an increase in maternal mortality, both through adversely affecting their physical health as well as through suicides<sup>13</sup>.

Early diagnosis and treatment of depression during pregnancy will not only reduce the burden on mothers but also be an important

preventive action towards better physical and mental health of the offspring<sup>14</sup>. So this study will bridge the gap and will help in identifying antenatal depression and planning effective prevention and early intervention strategies .

Another important reason for conducting this study was to contribute to the body of knowledge of antenatal depression and identify the most important predictors of antenatal depression among pregnant women since this condition is neither well recognized, thoroughly studied, nor properly treated , more so in a Primary Care Setting.

### **3.OBJECTIVES**

- 1) To estimate the prevalence of Depression among Antenatal Women residing in rural area.
- 2) To identify the risk factors associated with Antenatal Depression
- 3) To determine the association between Antenatal Depression and low birth weight in babies born to depressed mothers through secondary data analysis.

## 4. REVIEW OF LITERATURE

**4.1 Depression:** Depression is a common illness all over the world. Depression is different from the usual mood changes and transient emotional reactions to challenges in everyday life. When Depression is persistent and has a moderate or severe , it may become a serious health problem. It can cause the affected person to suffer greatly and can also cause functional impairment. Severe depression can lead to suicide. As many as 800 000 people die due to suicide every year. Death by suicide is the second leading cause of death in 15-29-year-olds<sup>1</sup>.

**4.1.1 Global Scenario:** More than 322 million people affected worldwide<sup>15</sup>. The World Mental Health Survey conducted in 17 countries found that “on an average about 1 in 20 people reported having an episode of depression in the previous year”<sup>5</sup>.

The World Health Organization as ranked depression as the fourth leading cause of disability worldwide <sup>6</sup>. It is projected that by 2020, it will be the second leading cause of disability. Depression is also predicted to become the leading cause of disease burden by 2030, and it is already the leading cause of disease burden in women worldwide. The prevalence of major depression is higher in women compared to men. In

2010 its global annual prevalence was 5.5% and 3.2%, in females and males respectively, a 1.7-fold greater incidence in women<sup>16</sup>.

**4.1.2 Indian Scenario:** India accounts for nearly 18% of the world population. It accounted for 15% of global DALYs attributed to mental, neurological and substance use disorders (31 million 11 DALYs) with depression. This accounted for 37% (11.5 million DALYs) in 2013<sup>17</sup>. The problem is estimated to be higher as per various population-based studies, the prevalence of depression ranging from 1.8% to 39.6%. Lack of uniformity across studies, differences in nature of population, sample size of the study population, study instruments, assessment procedures and interpretation of findings, contribute to most of the variations in prevalence<sup>18-20</sup>. Common mental disorders are prevalent in primary care settings in LMICs. Studies conducted in India have documented that 17–46% of patients attending primary health centres suffer from CMDs<sup>21,22</sup>.

**4.1.3 Depression in women:** In India as in other countries of the world, Depression is higher in females (3.1%) than males(2.6%)<sup>23</sup>. Several reasons are attributed to higher rates among women. Biological and hormonal factors are found to be playing a greater role along with a wide array of social and economic factors. Findings from NMHS have shown consistently higher rates of depression for females across all age groups<sup>24</sup>.

**4.1.4 Causes of Depression:** Depression results from a complex interaction of biological, psychological, cultural, economic and social factors. People who have gone through adverse life events (unemployment, bereavement, psychological trauma) are more likely to develop depression<sup>25</sup>. One third of depression is due to genetic factors and two thirds due to non genetic causes. Early childhood traumatic experiences increases the risk of developing depression in the presence of genetic vulnerability. Deficiency of monoamines, particularly noradrenaline and serotonin, are known to play a role in the pathogenesis of depression. Psychological factors such as negative parental influences like punitive parental style during early childhood , early loss of the maternal attachment bond are some of the many psychological factors. Social factors like impaired social relationships , substance abuse have been associated with the onset of depression. Domestic and intimate partner violence among women, which is widely prevalent in India and other LMICs, along with partner's alcohol use are closely associated with depression. The impact of modernization, urbanization, migration and globalization and consequent loss of family and social support systems, leading to social isolation and hence depression. Economic factors like poverty and cultural factors like religion, caste, beliefs, attitudes also have a role<sup>13</sup> . A holistic understanding is critical to develop integrated models of care delivery in different settings.

**4.2 Psychological changes in pregnancy :** Pregnancy is a major event in a woman's life. It is characterised by physical, mental and psychological changes. Pregnancy is usually associated with mood changes which can range from anxiety, exhaustion, depressive reaction to excitement.

During pregnancy, there are changes in body appearance, affectivity and sexuality. The position and role of women attains a new quality during pregnancy. Even thoughts of pregnancy can bring about numerous worries about its course and outcome, and about the delivery itself, which may be so intense that they may acquire a features of phobia<sup>26</sup>.

The pregnant woman has fears for her own and the new baby's survival. She is very vulnerable to the criticism and judgments of others. She wonders if she will really feel able to love and bond with her baby. The expectant mother's ability to create and maintain an adequate support network for herself is important during this phase. She may also fear abandonment, emotional as well as physical. The appearance of the new baby changes the dynamics between the couple and in the extended family<sup>27</sup>.

### **4.3 Pregnancy as a stressful event:**

Pregnancy is identified as a potent stressor that not only affects the psychic status of pregnant women, perinatal outcome, but also psychic functioning of the new-born individual. Appropriate relationship of partners and support of the society play an important role in overcoming stress during pregnancy.

**4.4 Perinatal mental illness:** Perinatal mental illness is a significant complication of pregnancy and the postpartum period. These disorders include depression, anxiety disorders, and postpartum psychosis, which usually manifests as bipolar disorder. Perinatal depression and anxiety are common, with prevalence rates for major and minor depression up to almost 20% during pregnancy and the first 3 months postpartum<sup>28</sup>

The common causes of psychological problems during pregnancy<sup>29</sup> :

Previous history of

- pregnancy loss
- Previous history of Perinatal depression , post natal psychosis or other disorders
- Fear of single motherhood
- Unplanned pregnancy
- Ambivalence towards pregnancy

- Excessive concern about the foetus
- Marital difficulties
- Lack of social support
- Increased life stress
- Unrealistic expectations versus reality in pregnancy
- IVF conception

#### **4.4.1 Antepartum Mental Health**

##### Common Disorders in the antepartum period

There are various antepartum disorders that affect women during pregnancy. The common psychological problems that have been reported in previous studies are depression, anxiety disorders, OCD, phobic reaction, stress, panic disorders, somatic symptoms, sleep disturbance etc. Though psychosis is not very common, there may be a relapse of psychosis in women with previous history of psychosis.<sup>30</sup>

- Anxiety, Fears
- Sleeping and eating disorders
- Mood Changes
- Irritability
- Self esteem issues
- Concerns with body image
- Depressed Mood

Some amount of anxiety and worrying is common in pregnancy. It is a normal reaction to a physically and emotionally stressful, life altering event.

#### **A. Anxiety Disorder in Pregnancy :**

Heron et al<sup>31</sup> reported that 21.9% pregnant women had anxiety symptoms and, of these, 64% continued to have anxiety postnatally. The reduced uterine blood flow in anxious women could be the mechanism for lower birth weight, preterm birth and elevated cortisol levels in infants<sup>32</sup>. Dysregulation of the Hypothalamic- Pituitary axis associated with depression may also have a direct effect on fetal development<sup>33</sup>. Pregnant women experience more anxiety during ante partum period as compared to post partum period and most of them are not being monitored during this time<sup>34</sup>.

Common themes of anxiety in pregnancy are fear of fetal loss, fear of fetus having any abnormalities, Fear of pain is often reported as the reason for fearing delivery. Other studies have suggested that the greatest fear was of delivering a physically or congenitally malformed child.

. Women who have already suffered during childbirth are afraid of re-traumatisation<sup>35</sup>. Anxiety in pregnancy is associated with shorter gestation and has adverse implications for fetal neurodevelopment and child outcomes<sup>36</sup>. A variety of poor outcomes are associated with during

pregnancy like Pre eclampsia, increased nausea and vomiting, longer sick leave , increased number of visits to the obstetrician, spontaneous preterm labour,preterm delivery, low birth weight,, lower apgar scores, breastfeeding difficulties, increase of PTSD symptoms, elective caesarian section<sup>37-39</sup>.

## **B. Panic Disorder :**

Panic disorder is distinguished by sudden and persistent unreasonable fear that may be due to the presence or anticipation of a specific object or situation. Panic disorder is more common in adult women than men, and the onset of this disorder is in the mid-20s, which coincides with the peak childbearing years. The prevalence of panic disorder in the general adult population is approximately 5%; the prevalence during pregnancy has not been accurately documented in the literature due to a lack of longitudinal and epidemiologic studies<sup>40</sup>.

Among the most common conditions comorbid with panic disorder is depression, with up to two thirds of panic patients experiencing major depression at some point during their lifetime. The presence of comorbid depression may complicate treatment and increase the severity of the patient's disease, and the presence of panic attacks in patients with major depression is associated with an increased risk of suicide<sup>41</sup>.

Main symptoms of panic disorder are :

Shortness of breath, palpitation, pounding heart, tremors, sweating, feeling unreal, nausea, butterflies in the stomach, light headedness, fear of dying or losing control or going crazy<sup>42</sup>.

### **C. Phobic Disorder:**

Fear of childbirth is common and more intense in pregnant nulliparous women than in pregnant parous women. Over 20% of pregnant women report fear and 6% describe a fear that is disabling. Altogether 13% of non-gravid women report fear of childbirth sufficient to postpone or avoid pregnancy.

It is well known that pregnancy may be a time of considerable anxiety with symptoms escalating in the third trimester. Women still suffer from the fear of death during delivery. When this specific fear of death during parturition precedes pregnancy and is so intense that tokos (childbirth) is avoided This phobic state is called "tokophobia". Tokophobia may effect women from childhood into old age<sup>35</sup>.

### **D. Obsessive Compulsive Disorder :**

Another common mental disorder in pregnancy is Obsessive Compulsive Disorder. The prevalence of OCD in pregnancy is reported

to vary between 0.2%- 5.2% , but the consistent rates among the studies are between 1% to 3% <sup>43</sup>.

**Obsessions are defined as:** As per DSM V<sup>42</sup> as “recurrent and persistent thoughts, impulses, or images that are experienced, at some time during the disturbance, as intrusive and unwanted, and cause marked anxiety and distress “Compulsions are defined<sup>42</sup> as follows: “Repetitive behaviours (eg, hand washing, ordering, checking) or mental acts (eg, praying, counting, repeating words silently) in response to an obsession or according to rules that must be applied rigidly “.

Though it is a heterogenous disorder which can present with a wide variety of obsessions and compulsions, there seems a consistent pattern in the content of the obsessions and compulsions in the perinatal period. They are contamination obsessions, washing or cleaning rituals are common in antenatal period. There is growing evidence to suggest that oxytocin may play a role in the pathogenesis of some forms of obsessive-compulsive disorder (OCD)<sup>44</sup>.

### **E. Antenatal Depression**

Antenatal Depression is a depressive episode that begins in pregnancy. Antenatal Depression is a predictor for postnatal depression .Depression can influence the health of the mother and the child.

Antenatal Depression is also associated with considerable distress, lost productivity and poorer maternal mental health behaviours<sup>45</sup>.

## **4.5 The burden of Antenatal Depression**

### **4.5.1 Global Scenario**

A study was done in Ethiopia to find the prevalence of Antenatal Depression in Ethiopia among 388 pregnant women attending the antenatal clinic at a tertiary care centre. The prevalence of antenatal depression in this study was found to be 23 %<sup>46</sup>.

In a study done in rural South Africa to find out the prevalence of antenatal depression among 109 pregnant women in their third trimester of pregnancy attending a primary health clinic. The prevalence of antenatal depression was found to be 51/109 (47%)<sup>47</sup>.

In a cohort study conducted to assess the risk factors and prevalence of depression in pregnancy among a multi-ethnic population of 749 pregnant women attending primary antenatal care during early pregnancy in Oslo between 2008 and 2010. The crude prevalence of depression was; Western Europeans: 8.6% (95% CI: 5.45-11.75), Middle Easterners: 19.5% (12.19-26.81), South Asians: 17.5% (12.08-22.92), and other groups: 11.3% (6.09-16.51)<sup>48</sup>.

A study conducted to estimate the prevalence and determine the risk factors for antenatal depression in Australia among 278 pregnant women who attended the antenatal clinics of two large public hospitals in suburban Melbourne. The prevalence of antenatal depression was 16.9% (N = 278)<sup>49</sup>.

A study was done to assess the prevalence and risk factors of antenatal depression in Nigeria among 314 pregnant women where the prevalence was found to be 24.5%<sup>13</sup>.

In a longitudinal study conducted to find the prevalence, course and risk factors for antenatal depression in 357 women. The prevalence was found to be 37.1%<sup>11</sup>.

In a study of depressive mood in early pregnancy and its association with risk factors in a national Swedish sample of 3011 women, Depressive mood was identified in 8% of the women<sup>50</sup>.

A study was done to examine the factors associated with persistence of depression from the antenatal to the postnatal period in urban Pakistan. A total of 1,357 pregnant women in their third trimester who attended the antenatal clinic were included in the study. The prevalence of Depression was found to be 25.8%<sup>51</sup>.

In a community-based study study done to estimate the prevalence of depression during pregnancy and to identify potential contributory factors among rural Bangladeshi women (n= 361), in Matlab sub-district.the prevalence of antenatal depression was found to be 33%<sup>52</sup>.

In a multicentre study on the epidemiology of perinatal depression was conducted among Japanese women expecting the first baby (N = 290). The incidence rate of the onset of Major Depressive Episode during pregnancy (antenatal depression) 5.6%<sup>53</sup>.

#### **4.5.2 Indian Scenario:**

In a study done in rural coastal India to find the prevalence and risk factors of antenatal depression. The prevalence was 16.3% among the 202 women sampled<sup>54</sup>.

A study was done on 270 pregnant mothers in their third trimester of pregnancy attending the district hospital in Goa. It was found that postpartum depression was detected in 59 (23%) mothers at 6 to 8 weeks after child birth. Of whom 78% had had antenatal psychological morbidity<sup>55</sup>.

In a study done to assess and compare the prevalence of anxiety and depression during and after pregnancy in an inpatient setting in a tertiary level hospital in Delhi, India among 100 pregnant women. It was found that 17(17%) had depression<sup>56</sup>.

In a study done in Guntur ,Andhra Pradesh in a tertiary care centre among 254 pregnant women,44.49% were having mental morbidities. Of whom 21.26% were having mild depression<sup>57</sup>.

A prospective study was conducted in a tertiary hospital in Bengaluru disorders during pregnancy and child birth. Of the 132 pregnant women ,27(20%) had antenatal psychological distress<sup>58</sup>.

### Indian studies done to estimate the prevalence of antenatal depression

S.no	Author	Place of study	Sample size	Prevalence
1.	S.Ajinkya <sup>59</sup>	Mumbai	185	9.18%
2.	C. George <sup>54</sup>	Tamilnadu	359	16.3%
3.	Amar D Bavle <sup>60</sup>	Bengaluru	318	12.3%
4.	Pai <sup>61</sup>	Mangalore	253	36.75%
5.	Jaju S <sup>62</sup>	Kerala	323	9.8%

#### 4.5.3 Risk factors for antenatal depression:

In a study done by Bronwyn et al to determine the risk factors of antenatal depression significant risk factors for antenatal depression were low self-esteem, antenatal anxiety, low social support, negative cognitive style, major life events, low income and history of abuse<sup>11</sup> .

A systematic review was done to find the risk factors for depression during pregnancy by C A Lancaster et al. Maternal anxiety, life stress, history of depression, lack of social support, unintended pregnancy, having insurance, domestic violence, low income, low educational status, smoking, single status, and poor relationship quality were associated with antepartum depressive symptoms in bivariate

analyses. Life stress, lack of social support, and domestic violence were significant in multivariate analyses<sup>63</sup>.

A study done to find the prevalence and risk factors for antenatal depression in Kwazulu Natal, South Africa, Risk factors for depression included HIV seropositivity ( $p=0.02$ ), a past history of depression ( $p=0.02$ ), recent thoughts of self-harm ( $p<0.000$ ), single status ( $p=0.04$ ) and unplanned pregnancy ( $p=0.01$ )<sup>64</sup>.

In study done to find the psychosocial risk factors for antenatal depression in Athens , low marital satisfaction and high trait anxiety, which is a central component of neuroticism, are major risk factors of antenatal depression<sup>65</sup>.

#### **4.6 Outcome of antenatal Depression:**

Antenatal Depression is associated with various outcomes in the mother and child

##### **4.6.1 Postpartum Affective Disorders:**

Postpartum period extending from the time of delivery to up to six weeks is a period of increased risk for the development of mood disorder. There are three common forms of affective illness in the postpartum period: Maternity blues, postpartum depression and postpartum

psychosis. The prevalence, onset and duration of the three types of disorders is given in the table<sup>66</sup>.

### **Postpartum Blues:**

Postpartum blues is the most common observed puerperal mood disturbance, with a prevalence of 30-75%<sup>67</sup>. The symptoms begin within a few days of delivery, and persist for hours to several days. The symptoms include mood lability, irritability, tearfulness, generalized anxiety, and sleep and appetite disturbance. Postnatal blues are by definition time-limited and mild and do not require treatment other than reassurance, the symptoms remit within days<sup>68</sup>. Up to 20% of women with blues will go on to develop major depression in the first year postpartum<sup>69</sup>.

**Postpartum depression:** As per DSM V patients must meet the criteria for a major depressive episode and the criteria for the peripartum-onset specifier. The definition is therefore a major depressive episode with an onset in pregnancy or within 4 weeks of delivery.

The DSM-5<sup>42</sup> criteria for a major depressive episode are as follows:

a) Five or more out of 9 symptoms (including at least one of depressed mood and loss of interest or pleasure) in the 2-week period. Each of

these symptoms represents a change from previous functioning, and needs to be present most of the time, nearly every day:

- Depressed mood (subjective or observed)
- Loss of interest or pleasure
- Change in weight or appetite.
- Insomnia or hypersomnia
- Psychomotor retardation or agitation (observed)
- Loss of energy or fatigue
- Worthlessness or guilt
- Impaired concentration or indecisiveness; or
- Recurrent thoughts of death or suicidal ideation or attempt.

Symptoms cause significant distress or impairment.

Postpartum depression usually begins within 1–12 months after delivery. In some women, post partum blues simply continue and become more severe. In others, a period of wellbeing after delivery is followed by a gradual onset of depression. Postpartum depression is characterized by tearfulness, despondency, emotional lability, feelings of guilt, loss of appetite, and sleep disturbances as well as feelings of being inadequate and unable to cope with the infant, poor concentration and memory, fatigue and irritability<sup>68</sup>.

## **Postpartum Psychosis:**

Very severe depressive episodes which are characterized by the presence of psychotic features are classed as postpartum psychotic affective illness or puerperal psychosis. The clinical onset is rapid, with symptoms presenting as early as the first 48 to 72 hours postpartum, and the majority of episodes developing within the first 2 weeks after delivery. The presenting symptoms are typically depressed or elated mood which can fluctuate rapidly, disorganization behaviour, labile mood, and delusions and hallucinations. Due to the nature of psychotic or depressive symptoms, new mothers are at risk of injuring their children through neglect, practical incompetence or command hallucinations or delusions<sup>69</sup>.

Many studies have found the impact of antenatal depression. Antenatal depression is a significant predictors for postnatal depression. Antenatal depression was identified as a mediator between seven of the risk factors and postnatal depression<sup>49</sup>.

The findings from a meta-analyses of over 14,000 subjects, and subsequent studies of nearly 10,000 additional subjects found that depression during pregnancy the strongest predictors of postpartum depression<sup>70</sup>.

#### **4.6.2 Low birth weight and infant growth:**

A prospective cohort study of 143 depressed and 147 non depressed mothers in Rawalpindi Pakistan found that relative risk for LBW (< or =2500 g) in infants of depressed mothers was 1.9 (95% CI 1.3-2.9). The association remained significant after adjustment for confounders by multivariate analyses<sup>71</sup>.

Possible mechanisms by which prenatal depression affects infant growth and illness include adopting a less healthy lifestyle and reduced care-seeking in the prenatal period<sup>72</sup>.

A cohort study done in Goa, India found that maternal psychological morbidity was independently associated with low birth weight (odds ratio 1.44, 95% CI 1.0–2.07)<sup>73</sup>.

#### **4.6.3 Adverse obstetric and fetal outcomes:**

Women diagnosed with depression during pregnancy were significantly more likely to have caesarean delivery, preterm labour, anemia, diabetes, and preeclampsia or hypertension compared with women without depression. Fetal outcomes significantly associated with maternal depression were fetal growth restriction, fetal abnormalities, fetal distress, and fetal death<sup>74</sup>.

Elevated levels of depression and anxiety were found to be associated with obstetric outcome (obstetric complications, pregnancy symptoms, preterm labor and pain relief under labor), and had implications for fetal and neonatal well-being and behavior<sup>75</sup>.

Animal models suggest that activity of the stress-responsive hypothalamic-pituitary-adrenal (HPA) axis and its hormonal end-product cortisol are involved in these effects in both mother and offspring. The fetal environment can be altered if stress in the mother changes her hormonal profile, and in humans, there is a strong correlation between maternal and fetal cortisol levels<sup>76</sup>.

#### **4.6.4 Child emotional behavioural problems:**

Parental psychological stress and psychopathology during pregnancy not only increased across their transition into parenthood but was also associated with difficult child temperament at 12 months postpartum<sup>77</sup>. An independent effect of antenatal depression on children's conduct problems and antisocial behaviour is a well-replicated finding. There is emerging evidence that exposure to depression during pregnancy impacts negatively on offspring, although the findings are complex and needs replication<sup>27</sup>

Hadley et al<sup>78</sup> found that maternal mental health problems were associated with both global and specific developmental problems. Studies from New Zealand<sup>79,80</sup> reported that the prevalence rates of internalizing problems were significantly higher in children whose mothers had self-reported symptoms of psychological disorder.

#### **4.7 Screening tools for antenatal depression :**

Psychological health of pregnant women is as important as their physical health. Hence it is important to identify Psychological problems in pregnancy especially antenatal depression. Many scales are available to assess the mental wellbeing of antenatal women.

##### **4.7.1 Edinburg Postnatal Depression Scale (EPDS)**

Globally, the EPDS<sup>81</sup> is the most widely accepted screening tool in the perinatal period, with a reported sensitivity of 68±86%, and specificity of 78±96% . In an Australian sample of 4,148 women, the reported sensitivity was 100% and specificity was 89% . The EPDS tool has also been validated for use antenatally in many studies<sup>82</sup>.

The EPDS has been translated and validated in a number of non-English speaking contexts , Bangladeshi , Chinese , Serbian , Greek, including Hindi and Tamil<sup>83</sup>.The total number of depressive symptoms was tallied to obtain a total score (out of 30), which was then coded as a

categorical variable (score  $\geq 13$  or score  $< 13$ ) to indicate scores that are likely to suggest depressive disorder. A woman who reported a higher EPDS score of  $\geq 13$  is referred to the psychiatric clinician for formal assessment of depression and appropriate management.

The EPDS rates the severity of depressive symptoms experienced over the previous 7 days. Five of the items identify dysphoric mood, two identify anxiety, and three identify guilt and suicidal thoughts.

The sensitivity and specificity of EPDS differed across studies which may be attributed to variations in study methodology and characteristics of the study populations. EPDS had pooled sensitivity of 0.80 and pooled specificity of 0.81 after excluding studies for pregnant women with Human Immunodeficiency Virus (HIV) and those who were young. The EPDS had the highest level with an area under curve ranging from .770 to .965 indicating a high level of accuracy in detecting depression in pregnant women in low resource settings<sup>84</sup>.

#### **4.7.2 Beck's Depression Inventory (BDI)**

The BDI is a 21-item self-rating inventory which measures symptoms of depression on a scale from 0 to 3 [45]. Sensitivity of BDI in the two studies was  $Se = .867$  and  $Se.$  with AUC of .87 and .90 respectively (Table 3) BDI had pooled  $Se = .85$  and pooled  $Sp = .76$ <sup>84</sup>

### **4.7.3 Kessler-10 (K-10)**

The Kessler-10 (K-10) is a self-administered 10-item questionnaire which measures anxiety and depression rated over the past 4 weeks . The data from the two K-10 studies were inconsistent with the second highest accuracy (AUC = .95) in India and the lowest accuracy (AUC = .66) in South Africa<sup>85</sup>.

### **4.7.4 Other instruments:**

A number of other screening instruments were also reported as having been used in low resource settings. These were: CES-D, a 20 item self-rating scale which measures depressive symptomatology in the general population ; the HSCL-25, a self-report inventory for identifying common psychiatric symptoms which include fifteen items for screening depression (HSCL- 15); the SRQ, a 20 item scale that is used to assess for psychiatric disturbance and the HAM-D, a 21 items clinician administered scale that assesses severity of, and change in, depressive symptoms<sup>85</sup>.

## **4.8 Treatment for Antenatal depression:**

Given the high prevalence of depression in women of childbearing age, promotion of optimal treatment during pregnancy is of major public health importance<sup>86</sup>. The treatment of antenatal depression is managed the same way as the traditional depression. The safety of the mother and

fetus has to be borne in mind before starting the treatment. Many patients with mild-to-moderate depression can be treated by psychosocial approaches including individual and group psychotherapy in lieu of medication<sup>87</sup>. Well-known effective psychotherapeutic treatment for depression includes cognitive behavioural therapy (CBT) and interpersonal psychotherapy<sup>88</sup>. Drug treatment with anti depressants like SSRI is also commonly adopted by many clinicians for their patients with severe disease. However, proper and vigilant follow-up by the clinician is important to protect the patient and the fetus from any rare possible side effects of the drug therapy<sup>89</sup>.

## **5.MATERIALS AND METHODS**

### **5.1 Research Question**

1. What is the Prevalence of Antenatal Depression among pregnant women residing in rural area?
2. What are the risk factors associated with Antenatal Depression ?
3. Is there any association between low birth weight in babies born to Antenatally Depressed mothers?

### **5.2 Methodology**

**Study Design :** Cross sectional study

**Target population :** Rural population

### **5.3 Study population:**

Pregnant women attending the antenatal clinic at the rural Health Subcenter of Peerkankaranai Primary Health Centre of Medavakkam Block Saidapet Health Unit District in Kanchipuram District .

### **Inclusion criteria :**

Pregnant Women in their third trimester of pregnancy attending the antenatal clinic at the health subcenter.

**Exclusion Criteria:**

Pregnant Women with serious medical conditions and who are in labour were excluded

**5.4 Sample size:**

Sample size is 260 ( $Z_{\alpha pq/L^2}$ )

For an expected prevalence (p) from previous studies of 20% with Z value of 1.96 at 95% confidence interval, and with limit of accuracy (L) at 5 % (Absolute precision), 5% for non responders ,the sample size required was 260 study participants.

**5.5 Sampling Procedure:**

To achieve a sample size of 260, of the 12 months in a year, 3 months was randomly chosen and all antenatal cases more than 24 weeks of gestation attending the antenatal clinic at the Health subcentre who consented to participate in the study were selected . After the completion of the study, data on birth weight of the babies were obtained from the PICME register which is maintained by the Village Health Nurse.

## **5.6 Ethics Approval**

The study was approved by the Institutional Ethics Committee (IEC) of Government Kilpauk Medical College ( ref no.4721/ME-1/Ethics/2016) on 11.08.16. Participants were informed about the purpose of the study. Written informed consent was obtained. The participants were assured that the information obtained will be for research purposes and would therefore be anonymous and kept strictly confidential .

## **5.7 Data Collection tools:**

1. Socio demographic and Obstetric data collected with semi structured questionnaire.
2. Socio economic status using MRSI Scale
3. Edinburg Postnatal Depression Scale

## **5.8 Overview of Tools:**

1. A semi structured questionnaire was used to collect data on socio demographic details like age education, occupation, income and obstetric details like obstetric score, age of marriage, age of conception , spacing between pregnancies, arranged marriage , risk factors for Antenatal depression like family history of depression , past history of depression, marital conflicts, preference of male child, alcohol abuse in partner, lack of family support

**2. Marketing Research Society of India ( MRSI ) :** Socio Economic Status Scoring was done using the Marketing Research Society of India<sup>90</sup> It's based on two variables, Number of “consumer durables” (from a predefined list)-owned by the family. The list has 11 items, ranging from ‘electricity connection’ and ‘agricultural land’- to cars and air conditioners. Education of chief earner . Based on the intersection of both variables, the household is categorised into one of the five groups Class I – Upper; Class II – Upper Middle; Class III – Lower Middle; Class IV – Upper Lower; Class V – Lower .

**3) EPDS :**The Edinburg Postnatal Depression Scale, is valuable and efficient tool designed to identify women at risk for perinatal Depression. The Scale has been thoroughly validated for use in Postnatal, Non Postnatal and Antenatal Women(18,19).It is a 10 – items(18,19),Self – rating Scale. Each item is scored on a scale from 0 to 3.Maximum score is 30. A score of 13 out of 30 was taken as the cutoff, indicative of Antenatal Depression with a sensitivity of 92% and specificity 92% <sup>91</sup>. A validated Tamil Translation of the Scale <sup>83</sup> will be used.

**Method of data collection:**

All pregnant women in the study area in their II or III trimester who were attending the antenatal clinic at the health subcentre were enlisted in the study after obtaining informed consent . After establishing rapport ,Socio demographic details, obstetric data and details of risk factors was collected from them with a structured and validated questionnaire administered in the local language. Presence of antenatal depression was assessed using the translated version of EPDS ( The Edinburg Postnatal Depression Scale ). A score of 13 or above was considered abnormal and was indicative of Antenatal Depression. Study participants with significant scores were referred to the District Mental Health Psychiatrist visiting the Medavakkam Primary Health Centre. Later after completion of data collection, birth weight of the babies were collected from the EDD register using the PICME Number ( Pregnancy Infant Cohort Monitoring and Evaluation).

**Operational definitions of terms used in the study:**

**Antenatal Depression** : Antenatal Depression is defined as depression occupying in pregnancy characterised by Depressed mood (subjective or observed), irritability, Loss of interest or pleasure, Change in weight or appetite, Insomnia or hypersomnia, Psychomotor retardation or agitation , Loss of energy or fatigue, Worthlessness or guilt, Impaired concentration

or indecisiveness; or Recurrent thoughts of death or suicidal ideation or attempt. Present for most of the day for atleast 2 weeks.<sup>42</sup>

**Alcohol Abuse in Partner :** Alcohol consumption in partner of the equivalent of 60 grams of ethanol more than two times a week.

**Marital conflicts :** Verbal or physical quarrel between partners resulting in significant distress & frustration , more than two times per week

**Percieved lack of social support :** Perception of the participant that she has lesser than expected emotional support from family members.

**Unplanned pregnancy :** Mistimed, unwanted or unintended pregnancy

**Preference for male child :** Desire to have male child in the current pregnancy.

**Low Birth Weight :** Weight at birth is less than 2500 gms measured using Salters Weighing Scale<sup>92</sup>

## **5.9 Statistical Analysis:**

1. The data collected was entered in MS Excel and analysed using SPSS 16 version.
2. the demographic data was presented as frequencies, mean and standard deviation
3. Test of association was done using chi square test
4. Univariate and multi variate analysis was performed to find the strength of association.

## 6. RESULTS WITH DISCUSSION

The study was undertaken in the rural population of Peerkankaranai PHC area, the field practice area of Department of community medicine, Government Kilpauk Medical College, Chennai 10. The study was conducted to find the prevalence and risk factors of antenatal depression in rural population. The results of the study are presented and discussed here.

The total population of Peerkankaranai is 29250 out of which 260 pregnant women in their third trimester of pregnancy were included in the study. They were in the age group of 18 to 38 years. Majority of them had studied up to high school and above, were married and were homemakers. Most of them belonged to upper middle socioeconomic class.

### **Socio demographic characteristics of the study population :**

The sociodemographic factors of age, education, occupation, economic status and family structure have been identified as important factors in explaining the variability of the prevalence rates of antenatal depression.

**Table1: Distribution of Socio demographic data in study group**

(N=260)

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age group</b>		
Less than 30	224	86.15%
More than 30	36	13.85%
<b>OCCUPATION</b>		
House wife	245	94.23%
Working	15	5.77%
<b>Type of family</b>		
Nuclear	113	43.46%
Joint	102	39.23%
Extended nuclear	45	17.31%

Table 1 shows the basic socio demographic data of the study population. The mean age of the study population was  $25.52 \pm 3.928$ . Majority 224 (86.15%) of the study participants were less than 30 years. The youngest subject was 18 years and oldest age was 38 years in the study population. Majority of the study subjects 245 (94.23%) were housewives. About 113 (43.46%) of the study population lived in a nuclear family and 102 (39.23%) of them lived in a joint family.

### Socio economic status of the study population :

The socio economic status varies with the composition of the study population

**Fig1: Pie chart of SES distribution in study group (N=260)**

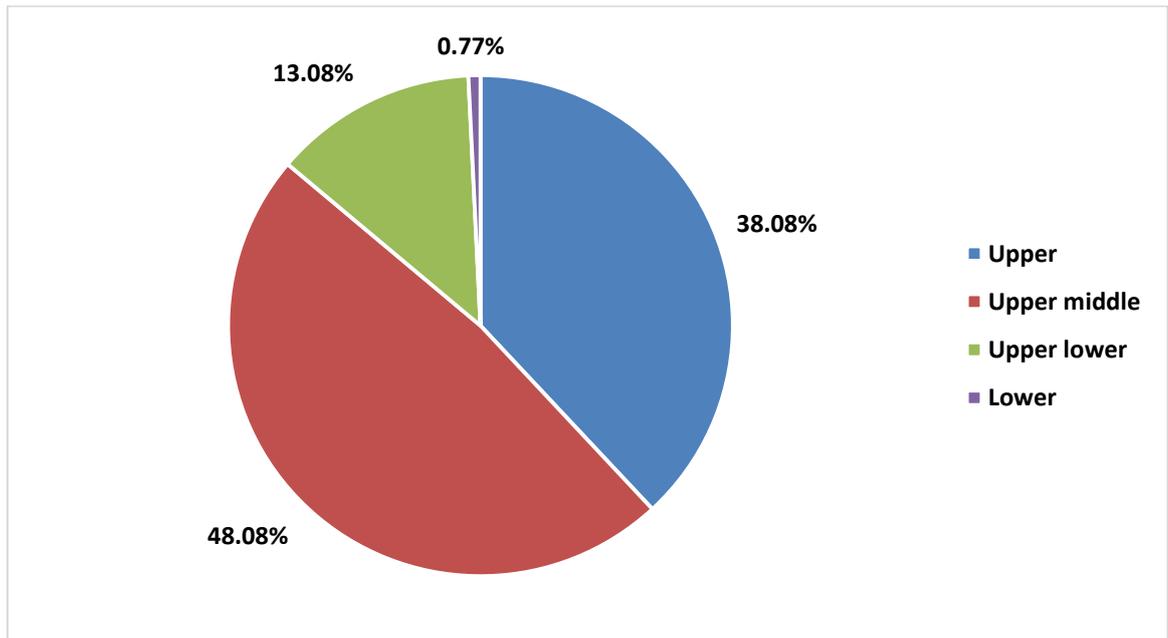


Figure 1 shows that nearly half 125 (48.08%) of the study population belonged to the upper middle class and about 34 (13.08%) and only 2 (0.77%) belonged to the lower class.

### **Educational status of the study population:**

The distribution of the educational status of the study population is shown in figure2.

**Figure 2 : Educational status of the study population**

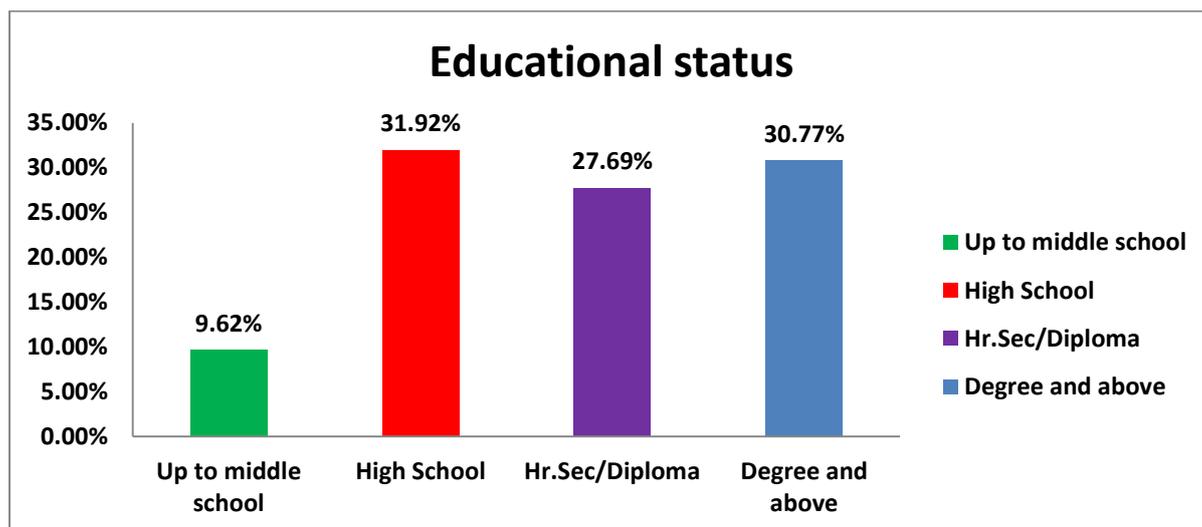


Figure 2 shows that about 83 (31.92%) participants had a high school education and above and 80 (30.77%) had completed upto degree and above . There was only 1 (0.4%) who did not have formal education.

### **Marriage and Conception related factors:**

Marital factors are associated with antenatal depression in many studies. Possible risk factors studied based on literature review were teenage marriage and type of marriage (arranged/ love) .

**Table 2: Distribution of Marriage and Conception related factors in study group (N=260)**

<b>Age at Marriage</b>	<b>Frequency</b>	<b>Percentage</b>
Less than 18	15	5.77%
More than 18	245	94.23%
<b>Arranged marriage</b>		
Yes	181	69.62%
No	79	30.38%
<b>Age at first conception</b>		
Less than 19	22	8.46%
More than 19	238	91.54%

Table 2 shows that almost 245 (94.23%) of the participants were married after the age of 18 years. About 70% of them had an arranged marriage. Around 238 (91.54%) had their first conception after the age of 19 years but still there were 8.5% teenage pregnancies.

### Obstetric risk factors:

Obstetric factors like gravidity<sup>59</sup>, parity<sup>93</sup>, number of living children, abortion, stillbirth, birth spacing<sup>94</sup>, planned pregnancy were some of the risk factors which were found to be associated with antenatal depression in many studies .

**Table 3: Distribution of Obstetric factors in study group (N=260)**

<b>GRAVIDA</b>	<b>Frequency</b>	<b>Percent</b>
Primi	115	44.23%
Multi	145	55.77%
<b>Number of living children</b>		
0	133	51.15%
1	114	43.85%
2	13	5.00%
<b>Last Child Birth</b>		
Primi	131	50.38%
< 3 years	59	22.69%
> 3 years	70	26.92%
<b>CURRENT CONCEPTION PLANNED</b>		
Yes	211	81.15%
No	49	18.85%

Table 3 shows that 145 (55.77%) were multi gravidae. About 114 (43.85%) of the women had a single living child. Only 11 (4.2%) of the study subjects had more than 2 abortions. There was a history of stillbirths in 2 ( 0.7 %) of the subjects. The birth spacing was more than 3 years in 70 (26.92%) . About 211 (81.15%) participants had a planned pregnancy.

### **Family and Spouse factors :**

Marital status, conflicts with spouse, preference for male child and perceived lack of social support were found to be associated with an increased risk of antenatal depression.

**Table 4 : Distribution of family and spouse related factors in study group (N=260)**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Family h/o depression</b>		
Yes	9	3.46%
No	251	96.54%
<b>living with partner</b>		
Yes	255	98.08%
No	5	1.92%
<b>Marital conflicts</b>		
Yes	38	14.62%
No	222	85.38%
<b>Male child preference</b>		
Yes	70	26.92%
No	190	73.08%
<b>Alcohol abuse in partner</b>		
Yes	51	19.62%
No	209	80.38%
<b>Percieved lack of social support</b>		
Yes	40	15.38%
No	220	84.62%

Family history of mental illness was present in 9 ( 3.46%). None of the participants in our study population had a past history of depression .

Almost 255 (98.08%) of the participants were living with their partners. Marital conflicts were present in 38 (14.62%) of the participants. A preference for male child was present in 70 (26.92%) participants. Alcohol abuse was present in 51 (19.62%) of the participants. About 40 (15.38%) of the study population perceived a lack of social support.

### **Child related factors :**

Studies have found antenatal depression is associated with adverse neonatal outcomes like poor growth leading to low birth weight in babies . Birth weight details were obtained by using secondary data from PICME register.

**Table 5: Distribution of child related factors in the study group**

**(N=260)**

<b>Type of delivery</b>	<b>Frequency</b>	<b>Percentage</b>
Normal	116	44.62%
LSCS	144	55.38%
<b>Sex of child</b>		
Male	129	49.62%
Female	131	50.38%
<b>Birth weight</b>		
Less than 2.5	28	10.77%
More than 2.5	232	89.23%

Table 5 shows that almost 116 (44.62%) of the women had normal vaginal delivery. Around 131 (50.38%) babies born were of female sex. Majority 232 (89.23%) of the babies had a normal birth weight. However 28 (10.77) of the babies had a low birth weight (<2.5 kg) in our study .

## Prevalence of Antenatal Depression

Prevalence of antenatal depression was measured using Edinburgh Postnatal Depression Scale ( EPDS ).This scale was chosen because it has been validated for antenatal use<sup>91</sup>. We used the cut-off of 13 or more (on the 0-30 point scale) to indicate probable depression. This cut-off indicates probable depression with a sensitivity of 86% and specificity of 78% consistent with previous studies in large cohorts that collected EPDS data antenatally and postnatally<sup>95</sup>.

**Table 6 : Distribution of Antenatal depression in study group (N=260)**

EPDS SCORE	Frequency	Percentage	95% CI	
depression > 13	38	14.62%	0.108	0.194
No depression <13	222	85.38%	0.805	0.891

According to EPDS score, 38 had antenatal depression. So the prevalence of antenatal depression in our study is 14.62%. The mean EPDS score was  $8.62 \pm 4.07$  with a minimum score of 0 and maximum score of 21.

This is comparable to the result of a study done by Amar D Bavle et al in a tertiary hospital where 12.3% of the population had antenatal depression<sup>60</sup>.

In a community based study done in coastal south India, the prevalence of antenatal depression was 16.3%. Also a study done among pregnant women in Urban area of Delhi , the prevalence of antenatal depression was 17%.The prevalence of antenatal depression was 18% in rural Bangladesh in a study done by E. Nasreen et al<sup>96</sup>. The prevalence of antenatal depression in our study is lower compared to other studies done in India because of the better health care system in Tamilnadu and various welfare measures taken by the Government of Tamilnadu such as the Dr.Muthulakshmi Reddy Maternity benefit Scheme which provides financial assistance to pregnant mothers. Also the successful implementation of various national programs for reproductive and child health in the state.

In contrast a study done by Biratu et al in Ethiopia found a prevalence 24.94% of antenatal depression. This may be due to the lower socio economic status of the study population and due to the inadequate primary care facilities in Ethiopia <sup>29</sup>.

In a study done in two peri urban settlements in Cape Town, South Africa <sup>97</sup>, the prevalence of antenatal depression was 39%.The possible reasons for higher prevalence may be due to the methodological differences between various studies and using of different measurement tools. The differences in economic and socio demographic factors might

also attribute for the increased prevalence of antenatal depression in other studies .

### **Prevalence of antenatal depression across various risk factors**

Antenatal depression has to been found to be significantly associated with various risk factors like socio demographic factors, obstetric factors, marital and conception related factors, family and spouse related factors and child related factors.

#### **Socio demographic factors:**

**Table 7 : Prevalence of antenatal depression across socio demographic factors in the study population (N=260)**

<b>S.No</b>	<b>Study Variable</b>	<b>Prevalence of Depression n (%)</b>	<b>p value</b>
1.	<b>Age</b> < 30 yrs (N=224) >30 yrs (N = 36)	33 (14.73) 5 (13.89)	0.89
2..	<b>Education</b> Up to middle school (N-25) High School( N- 83) Hr.Sec/Diploma (N-72) Degree & above (N- 80)	0 14 (16.86) 14 (19.44) 10 (12.5)	0.1
3.	<b>Occupation</b> House wife (N-245) Working (N-15)	37(15.1) 1(6.6)	0.369

4..	<b>Socio economic status</b>		
	Upper (N-99)	15(15.15)	0.545
	Upper middle (N-225)	17(7.5)	
	Upper lower (N-34)	5(14.7)	
	Lower (N-2)	1(0.5)	
5.	<b>Family Type</b>		
	Nuclear (N-113)	15(13.27)	0.264
	Joint (N-102)	19(18.62)	
	Extended Nuclear (N-45)	4(8.88)	

\* p value <0.05 is significant

Table 7 shows the association of antenatal depression with sociodemographic factors, like age, education, occupation, socio economic status and type of family . There was no significant association of the above factors and antenatal depression.

**Age :** Many studies have found significant correlations between age and antenatal depression. Younger age was associated with antenatal depression in some of the studies and some studies found advanced maternal age to be associated with antenatal depression. Younger women may have more difficulty in adjusting to pregnancy because of the demands of different roles, including marriage and career<sup>98</sup>. Bodecs T et al found teenage and poor socioeconomic status were significantly

associated with antenatal depression <sup>99</sup>. In a study done by Rich-Edwards JW, younger maternal age was associated with increased risk of antenatal depressive symptoms, which may be attributed to the prevalence of financial problems, unintended pregnancy, and being single<sup>100</sup>.

Antenatal depression in women with advanced maternal age may be because older women may have more difficult life experiences and have to make adjustments to motherhood. There will be a lack of peer support due to deviation from social norms due to advanced maternal age <sup>101</sup>. Similar finding was found in a study done by Balestrieri Matteo et al in Italy<sup>102</sup>, Ali NS et al <sup>103</sup>;and Nasreen et al <sup>91</sup>. Raisanen S et al<sup>104</sup> found both adolescent and advanced age pregnancy are associated with depression.

**Educational status:** In our study majority of the participants 90% had completed high school and above and more than 30% have college education. This is reflective of the literacy rate in this area. As per census 2011, Tamilnadu has a high literacy rate of 80.09%. The Kanchipuram district, to which our study area belongs has a literacy rate of 84.49%.and the literacy rate of Peerkankaranai area is 92%. Low educational status was associated with ante natal depression in a study done in Serbia<sup>105</sup>. Similar results were found by some authors. Similar results were found

by Agostini et al who found no association level of education and antenatal depression<sup>106</sup>. But Husain et al<sup>107</sup>, in a study done among British Pakistani women found significant association between education and antenatal depression.

**Occupation:** In our study majority of the study participants, 94% were homemakers. In a study done by Yanikkerem et al<sup>108</sup>, it was found that being unemployed or being a house wife was associated with antenatal depression because these factors lead to restriction of social relationships and economic dependence on the spouse or other family members.

**Socio economic status:** Socioeconomic status (SES) is one of the most important social determinants of health and diseases. Composite scales are generally used to measure the SES, which has a combination of social and economic variables. The most commonly used scales for measuring socioeconomic status are modified BG Prasad scale and Kuppuswamy scale. However, social transformation and fast growing economy have made these scales ineffective in measuring the socio economic status. These scales predominantly use income as one of the parameter to measure socio economic status. Information regarding income was unreliable and people hesitate to reveal the true income. Also monthly or annual income may not be truly reflect the family's economic standing, particularly in rural areas, Since the per capita monthly income or family

income could not be confirmed from the population, we used a new system of socio economic status classification, called MRSI ( Marketing Research Society of India) scale. This scale is commonly used in Marketing Research and is based on the educational status of the head of the family, but instead of income, the total number of durable Items was included . The occupation of the head of the family is also not taken into account. Hence the MRSI scale avoids the practical problems of enquiring about the income<sup>90</sup>.

As per MRSI nearly half of the study population belonged to upper middle class and around 13% of the population belonged to upper lower class.

**Family type:** In our study 60% of the were women living in nuclear or extended nuclear families and 40% of them lived it in a joint family. This shows the effect of urbanisation on rural areas as more families opting for nuclear families. Bhattacharjee et al found that antenatal depression is negatively correlated with social support and this negative correlation was far more among pregnant women from a joint family .

### Marriage and conception related factors:

Factors like age of marriage, arranged, age at first conception, last child birth have been found to be significantly associated with antenatal depression in many studies.

**Table 8 : Prevalence of antenatal depression across marriage and conception related factors of study population (N=260)**

Variables	Category (N)	Antenatal Depression	p value
		Present n(%)	
Age at marriage	Less than 18 (N-15)	1 (6.6)	0.369
	More than 18 (N-245)	37 (15.1)	
Arranged marriage	Yes (N-181)	23 (12.7)	0.187
	No (N-79)	15 (18.98)	
Age at first conception	Less than 19 (N-22)	0 (0%)	0.043*
	More than 19 (N-238)	38 (19)	
Current conception planned	Yes (N-211)	30 (14.21)	0.707
	No (N-49)	8 (16.32)	
Last child birth	< 3 years (N-190)	29 (15.26)	0.626
	> 3years (N-70)	9 (12.85)	

\* p value < 0.05 is significant

Table 8 shows that there is no association between marriage and conception related factors like age at marriage, arranged marriage, planned pregnancy or not and last child birth and antenatal depression. Age at first pregnancy was found to be significantly associated with antenatal depression.

**Age of marriage:** In our study majority of the women ( 94% ) got married after the age of 18 , which is the legal age of marriage in India. This is similar to the finding in Census 2011 where 95.6% of women were married after the age of 18 years<sup>109</sup>.

**Arranged Marriage:** Marriages in which spouses were chosen by the elders of the family may benefit from the approval and support of all family members. This family support may improve the quality of quality<sup>110</sup>. Poor marital quality has been found to be associated with antenatal depression in a study done by Blizsta et al<sup>111</sup>. In our study nearly 79% of the participants had an arranged marriage.

**Age at first conception:** Majority of the women in our study, about 92% conceived after 19 years i. e beyond teenage. Only 8% of them conceived in their teenage. In a study done by Stacy C Hodgkinson et al, it was found that pregnant teens had an increased risk for depression, had more suicidal ideations and had a risk of delivering low birth weight babies<sup>112</sup>.

The apparently protective effect in our study is because the population estimate for age at a first conception >19 years is (0.00 to 15.44) very wide than the population estimate for age at first conception < 19 years is (11.58 to 21.29). So this apparently protective effect gives a wrong impression that teenage pregnancy is protective with regard to antenatal depression.

**Planned Pregnancy:** Unplanned pregnancies have substantial negative consequences for the mother and baby<sup>113</sup>. In our study about 19% of the women accepted that their pregnancy is not a planned one. In a study by Ajinkya et al<sup>59</sup> about 20% of the women had an unplanned pregnancy.

**Obstetric factors :**

Obstetric factors gravidity, number of living children, number of abortions were associated with antenatal depression in many studies.

**Table 9 : Prevalence of antenatal depression across variables related to obstetric factors (N=260)**

<b>Variable</b>	<b>Category (N)</b>	<b>Antenatal Deoression n(%)</b>	<b>p value</b>
		<b>Present</b>	
<b>Obstetric score</b>	<b>Primi (N-115)</b>	18 (15.65)	0.673
	<b>Multi (N-145)</b>	20 (13.79)	
<b>No of living children</b>	<b>0 (N-133)</b>	23 (17.29)	0.425
	<b>1 (N-114)</b>	13 (11.4)	
	<b>2 (N-13)</b>	2 (15.38)	
<b>No of abortions</b>	<b>Less than 2 (N-248)</b>	36 (14.51)	0.837
	<b>More than 2 (N-12)</b>	2 (16.66)	

\* p value <0.05 is significant

Table 9 shows that there is no significant association between antenatal depression and obstetric factors like gravid status, number of living children, number of abortions

**Gravidity:** For 55% of the study participants, the current pregnancy was not the first (multi gravida). Though there was no significant association in our study, Ajinkya et al found that gravidity is associated with antenatal depression<sup>59</sup>.

**Abortion:** In our study 4.4% of the participants had more than 2 abortions. In a study in Pakistan A. Waqas et al 22% of the study population had previous abortion and found that previous abortions can become a risk factor for antenatal depression in subsequent pregnancies<sup>114</sup>

**Last child birth:** As per Government of India norms a birth interval of 3 years between children is advised for the health and well being of the mother and child. In our study around 23 % of the women had a birth interval of less than 3 years. Gong et al has found that a short birth interval is a risk factor for adverse mental health in pregnant mothers<sup>115</sup>.

**Family and spouse related factors:**

Family and spouse related factors studied are family history of depression, marital conflicts, alcohol abuse in partner, living with spouse, male child preference and perceived lack of social support.

**Table 10 : Distribution of antenatal depression across variables related to family and spouse related factors (N=260)**

Variable	Category N(%)	Antenatal Depression n(%)	p value
		Present	
Family H/o depression	Yes (N-9)	3(33.33)	0.106
	No (N-251)	35(13.94)	
Living with partner	Yes (N-255)	38 (14.9)	0.350
	No (N-5)	0 (0)	
Marital conflicts	Yes (N-38)	13 (34.21)	<0.001*
	No (N-222)	25 (11.26)	
Male child preference	Yes (N-70)	14 (0.2)	0.136
	No (N-190)	24 (12.63)	

<b>Alcohol abuse in partner</b>	<b>Yes (N-51)</b>	13 (25.49)	0.014*
	<b>No (N-209)</b>	25 (11.96)	
<b>Percieved lack of social support</b>	<b>Yes (N-40)</b>	13 (32.5)	<0.001*
	<b>No (N-220)</b>	25 (11.36)	

\* p value <0.05 is significant

Table 10 shows that there was a significant association between marital conflicts, alcohol abuse in spouse and perceived lack of social support and antenatal depression. There was no significant association between antenatal depression and family history of mental illness, living with partner and male child preference.

**Past history of depression:** A past history of depression and a history of psychiatric treatment for depression during a previous pregnancy or at any time during the lifetime, is also a established risk factor for the development of antenatal depression<sup>91,116</sup>. In our study none of the pregnant women had a past history of depression. This may be due to stigma associated with a psychiatric diagnosis that they were not willing to reveal even if they had had an episode of depression.

**Family history of depression:** In our study about 3 % of the women had a family h/o depression. This is comparable to the NMHS survey report which states that the prevalence of mood disorder in Tamilnadu is about 4.62%.

Family history of depression is an important primary risk factor for antenatal depression as per S M Marcus et al<sup>117</sup> who found nearly half of the study subjects had a history of depression in the past . Jeong et al found that a family history of psychiatric illness during the lifespan has been observed as another important risk factor for antenatal depression<sup>118</sup>. Nevertheless, this may sometimes be difficult to evaluate, because the woman may not be aware of mental problems that have affected relatives, or may be not willing to declare it<sup>119</sup>.

**Living with partner:** In our study 98% of the women were living with their partner. Balestrieri et al found that women living with their partners have a higher level of depression than those women who are living alone,with friends or with the community<sup>98</sup>. Bilszta et have found that single women have more depressive symptoms compared to women with partners<sup>91</sup>.

**Marital conflicts:** In our study around 15% of the women had marital conflicts. Problematic or dissatisfied relationship with partner have been

identified as an important risk factor for the onset of anxiety and depression during pregnancy.<sup>38,91</sup> In a study done by Pednekar et al, it was found that interpersonal problems especially related to marital relationship were a major cause for depression<sup>120</sup>

**Preference for male child:** In our study more than one fourth of the study population had a preference for male children. Son preference in India is very well documented. There are economic, religious, social and emotional reasons for male child preference<sup>121</sup>. Maryam Rouhi et al in a sample of Iranain women found tion of male child preference was common and was associated with antenatal depression<sup>122</sup>.

**Alcohol abuse in partner :** In our study alcohol abuse was found in 20 % of the women's partners . Alcohol abuse in partner was found to be significantly associated with antenatal depression. Spousal alcohol use can lead to intimate partner violence<sup>123</sup> and marital conflicts<sup>124</sup> which are risk factors for antenatal depression . Problems related to alcohol abuse in the partner may be marital problems , domestic violence , financial and health problems . This explains the increased risk for depression in women who report excessive alcohol use by their partner<sup>125</sup>.

**Percieved lack of social support:** Lack of social support is another factor strongly associated with an increased risk of antenatal anxiety and

depression<sup>128</sup>. In our study 15 % of the participants perceived a lack of social support. A significant association between perceived lack of social support and antenatal depression was found. Many studies have found that lack of social support is significantly associated with antenatal depression<sup>126,127,128</sup>. Adewuya et al in a study done in late pregnancy in Nigeria found that perceived lack of social support (OR=6.08, 95% CI=1.42-26.04) was independently associated with antenatal depression<sup>126</sup>. Bayrampour et al found low social support, was a common predictor of depression in pregnancy<sup>127</sup>. Dibaba et al in a study done in rural Ethiopia found women who reported moderate (AOR = 0.27; 95% CI 0.14-0.53) and high (AOR = 0.23, 95% CI 0.11-0.47) social support during pregnancy were less likely to report depressive symptoms<sup>128</sup>.

### Child related factors :

This table shows the association antenatal depression and child related factors like type of delivery, gender of the child, low birth weight.

**Table 11 : Prevalence of antenatal depression across variables related to child related factors (N=260)**

Variable	Category	Antenatal Depression	p value
		Present	
Birth weight	Less than 2.5 N-28	7 (25)	0.100
	More than 2.5 N-232	31 (13.36)	
Sex of child	Male N-129	18 (13.95)	0.764
	Female N-131	20 (15.22)	
Type of delivery	Normal N-116	15 (12.9)	0.490
	LSCS N-144	23 (15.9)	

\* p value <0.05 is significant

Table 11 shows that there was no significant association between the type of delivery, gender of the child and low birth weight in our study. The finding that low birth weight is not associated with antenatal depression in our study may be due to the efficient public health system

in the state and also the contribution from increased economic growth, higher literacy rate, gender equality, and lowered fertility rate of the state. A study done by Andersson L et al also found no differences in neonatal outcome between women with antenatal depressive disorders and healthy subjects and that the neonatal outcome did not deteriorate despite the women's impaired mental health during pregnancy<sup>128</sup>.

In contrast a study done by Steer RA<sup>129</sup> found that in depressed women, the risk of a poor outcome rose by 5-7% ( $p < 0.05$ ) for each point of increase in the BDI score and the risk of delivering a low birth weight baby was 3.97 (95% (CI) 3.80-4.15).

**Type of delivery:** Studies also provide strong evidence that maternal depression is associated with poor growth in infants and other adverse neonatal outcomes like operative delivery. In our study about half of the study population had a operative delivery. Depression in late pregnancy was associated with increased risk, operative deliveries (caesarean section and instrumental vaginal delivery)  $p < 0.2$  and other adverse neonatal outcomes.

**Gender of the baby:** Gender of the baby was almost equally distributed in our study.

### **Risk Quantification:**

For factors which showed statistical significance ( $p < 0.05$ ), prevalence odds ratio was estimated initially using univariate analysis and unadjusted odds ratio was calculated.

**Table 12 : Univariate analysis of statistically significant factors**

<b>S.No</b>	<b>Variable</b>	<b>Unadjusted Odds ratio (95% CI)</b>	<b>p value</b>
1.	Teenage pregnancy	0.11 (0.006 -1.94)	0.134
2.	Marital conflicts	4.09 (1.86 – 9.01)	0.000*
3.	Alcohol abuse in partner	2.51 (1.18 – 5.36 )	0.016*
4.	Percieved lack of social support	3.75 (1.71 – 8.20 )	0.000*

\* P value < 0.05

Table 12 shows that marital conflicts, alcohol abuse in partner and perceived lack of social support were significantly associated with antenatal depression.

### **Multivariate analysis of risk factors for antenatal depression:**

The factors that had statistically significant risk in univariate analysis were further subjected to multivariate analysis to find adjusted odds ratio and the findings are as follows

**Table 13 : Factors associated with occurrence of antenatal depression.**

<b>Factors</b>	<b>Odds ratio</b>	<b>95%CI for Odds ratio</b>		<b>p-value</b>
		<b>Lower</b>	<b>Upper</b>	
<b>Marital conflicts</b>	2.961	1.258	6.969	0.013*
<b>Alcohol abuse in partner</b>	1.751	0.763	4.017	0.186
<b>Perceived lack of social support</b>	3.155	1.397	7.122	0.006*

\* p value < 0.05 is significant

Table 13 the results of the multi variate analysis . It was found that women with marital conflicts have 3 times more chance of developing antenatal depression and women who perceived a lack of social support have three times more chance of developing antenatal depression. Similar association was found by Lee et al <sup>119</sup>, who found that low perceived social support and marital dissatisfaction were significantly associated

with antenatal depression and Zeng et al found that good partner relationship and social support were positive\_protective factors against antenatal depression<sup>130</sup>. Alcohol abuse was not statistically significant. This may be because of problems with quantification of alcohol consumed which might be the reason for the multi variate analysis for not picking it up as a risk factor.

## 7. CONCLUSION

The study was done among 260 pregnant women from three sub centres under Peerkankaranai PHC, Saidapet HUD, Kanchipuram District. The study was done among pregnant women who completed a gestational age of 24 weeks residing in Peerkankaranai PHC area.

### **Antenatal Depression**

As per EPDS, 14.62% of study population had antenatal depression and 85.38% did not have antenatal depression. The mean EPDS Score was  $8.62 \pm 4.07$  with a minimum score of 0 and maximum score of 21.

Among the various risk factors for antenatal depression studied, three factors were found to be significant in univariate analysis .They are marital conflicts ( $p < 0.01$ ), alcohol abuse in partner ( $p < 0.05$ ) and perceived lack of social support ( $p < 0.01$ )

Subsequent multi variate analysis revealed that Marital conflicts (AOR = 2.96, 95% CI 1.25 - 6.96) and perceived lack of social support (AOR = 3.15, 95% CI 1.39 – 7.12) were the factors causing significant risk.

## **8. SUMMARY**

The main objective of this study was to find out the prevalence of antenatal depression in a rural area which is the area covered by Peerkankaranai PHC, a field practice area attached to the Department of Community Medicine, Government Kilpauk Medical College.

### **Methodology:**

A cross sectional study was conducted in the Peerkankaranai PHC area, Saidapet HUD, Kanchipuram district among 260 pregnant women, who are in their third trimester of pregnancy. After getting informed consent a pre validated questionnaire was used to collect socio demographic, obstetric, risk factor data of the study participants. Edinburg Postnatal Depression Scale (EPDS) was used to estimate the prevalence of antenatal depression. Data collected was entered in MS Excel and analysed using SPSS version 16.

### **Results and Discussion:**

The study showed the mean age of the population as  $25.52 \pm 3.928$ . Majority 224 (86.15%) of the study participants were less than 29 years. About 90 % of them had high school education. Majority of the study subjects 245 (94.23%) were homemakers.

About 113 (43.46%) of the study population lived in a nuclear family. Nearly half 125 (48.08%) of the study population belonged to the upper middle class and about 99 (38.08%) of them belonged to the upper class. Almost 245 (94.23%) of the participants were married after the age of 18 years.. Around 70% of them had an arranged marriage. Around 238 (91.54%) had their conception after the age of 19 years.

In our study 145 (55.77%) were multi gravidae. About 114 (43.85%) of the women had a single living child and 5% had 2 children. Only 11 (4.2%) of the study subjects had more than 2 abortions. There was a history of stillbirths in 2 ( 0.7 %) of the subjects. The birth spacing was less than 3 years in 59 (22.69%) participants. About 211 (81.15%) participants had a planned pregnancy.

Family history of mental illness was present in 9 (3.46%) None of the participants had a past history of depression. Almost 255 (98.08%) of the participants were living with their partners. Marital conflicts were present in 38 (14.62%) of the participants. A preference for male child was present in 70 (26.92%) participants. Alcohol abuse was present in 51 (19.62%) of the participants. About 40 (15.38%) of the study population perceived a lack of social support.

In this study 14.62% of the antenatal mothers had antenatal depression as per EPDS. The prevalence of antenatal depression across various factors like socio demographic factors, Obstetric factors, family, marital, spouse related factors were analysed. Among those factors, statistically significant association was found for teenage pregnancy, marital conflicts, alcohol abuse in partner and perceived lack of social support( $p < 0.05$ ). For these factors risk estimation was done. The unadjusted odds ratio showed significant value for 3 of the factors namely marital conflicts, alcohol abuse in partner and perceived lack of social support. Further refining was done by calculating the adjusted odds ratio using multi variate analysis which identified 2 factors , marital conflicts (AOR = 2.96, 95% CI 1.25 - 6.96 ) and perceived lack of social support ( AOR = 3.15, 95% CI 1.39 – 7.12 ) as having significant risk.

### **Conclusion:**

The present study conducted in a rural area covered by the Peerkankaranai PHC. Of the 260 antenatal mothers examined 14.62% were positive for antenatal depression. Presence of marital conflicts and a perceived lack of social support were significantly associated with antenatal depression.

These findings demonstrate the importance of antepartum screening for depression in antenatal clinics in primary health care setting . Early detection and intervention leads to favourable outcomes.

## 9. LIMITATIONS

- This study was a cross sectional study , so the measurements of exposure and disease were collected at the same time, and so a temporal sequence was not established
- Antenatal depression in our study was assessed by a self-report rating scale rather than a structured interview which would have confirms the diagnosis .
- The prevalence of antenatal depression tends to be higher when symptoms, rather than disorders, are investigated
- The sample size was estimated for finding prevalence and not associations. It would required a sample size 960 to an show an association of depression with low birth weight when prevalence of depression is 9% normal weight and 18% in low birth weight, at 95% confidence level when 10% of babies are expected to be low birth weight.

## 10. RECOMMENDATION

- Strategies for developing feasible community-level screening in pregnant high-risk women are probably likely to be effective in reducing morbidity
- Screening for antenatal depression in antenatal clinics helps in identifying women at risk of developing Antenatal depression. Which in turn helps to identify women with risk of developing postnatal depression.
- Screening for antenatal depression should be included in routine antenatal care practice.
- Shorter time efficient and accurate screening methods that can be employed by health care workers at the primary level or community will be beneficial.

## **BIBLIOGRAPHY**

1. Depression and other common mental disorders: global health estimates. Geneva :World Health organisation ; 2017
2. ICD 10 International Classification of Diseases,
3. Martin Prince, Vikram Patel, Shekhar Saxena, Mario Maj, Joanna Maselko, Michael R Phillips, Atif Rahman. No health without mental health. *Lancet* 2007; 370: 859–77
4. National Mental Health Survey of India,2015-2016.Prevalence,pattern and Outcomes.
5. S. Marcus et al. Depression: a global public health concern. *WMHD* 2012
6. WHO Factsheet feb 2017
7. Joanna Maselko, Siham Sikander, Sonia Bhalotra. Effect of an early perinatal depression intervention on long-term child development outcomes: follow-up of the Thinking Healthy Programme randomised controlled trial. *Lancet* 2015;2:609-17
8. Maternal mental health and child health and development in low and middle income countries. A report of UNFPA & WHO meeting, 2008 .

9. Saurabh R. Shrivastava, Prateek S. Shrivastava, and Jegadeesh Ramasamy. Antenatal and postnatal depression: A public health perspective. *J Neurosci Rural Pract.* 2015 Jan-Mar; 6(1): 116–119.
10. Kentaro Usuda, Daisuke Nishi. Prevalence and related factors of common mental disorders during pregnancy in Japan: a cross-sectional study. *Biopsychosoc Med.* 2016; 10: 17
11. Bronwyn Leigh and Jeannette Milgrom. Risk factors for antenatal depression, postnatal depression and parenting stress. *BMC Psychiatry.* 2008; 8: 24.
12. Maria Muzik, MD MS<sup>✉</sup> and Stefana Borovska. Perinatal depression: implications for child mental health. *Ment Health Fam Med.* 2010 Dec; 7(4): 239–247.
13. Okechukwu Thompson and IkeOluwapo Ajayi, Prevalence of Antenatal Depression and Associated Risk Factors among Pregnant Women Attending Antenatal Clinics in Abeokuta North Local Government Area, Nigeria, *Depression Research and Treatment*, vol. 2016, 79, 15 pages
14. Rahman, A et al. Association between Antenatal Depression and Low Birthweight in a Developing Country. *Acta Psychiatrica Scandinavica.* 2007; 115.6 : 481–486.
15. Depression and other common mental disorders: global health estimates. Geneva: World Health Organization; 2017

16. Murray CJ, Lopez AD. Evidence-based health policy--lessons from the Global Burden of Disease Study. *Science*. 1996; 274:740–743.
17. Murray CJL, Lopez AD, editors. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*. Cambridge, MA: Harvard University Press; 1996.
18. Cyranowski JM, Frank E, Young E, et al. Adolescent onset of the gender difference in lifetime rates of major depression: a theoretical model. *Arch Gen Psychiatry*. 2000;57:21.
19. Whiteford HA, Degenhardt L, Rehm J, et al. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *Lancet*. 2013;382:1575–86.
20. Charlson FJ, Baxter AJ, Cheng HG, Shidhaye R, Whiteford HA. The burden of mental, neurological, and substance use disorders in China and India: a systematic analysis of community representative epidemiological studies. *Lancet*. 2016;388:376–89.
21. Behera P, Sharan P, Mishra AK, Nongkynrih B, Kant S, Gupta SK. Prevalence and determinants of depression among elderly persons in a rural community from northern India. *Natl Med J India*. 2016;29:129–35.

22. Sengupta P, Benjamin AI. Prevalence of depression and associated risk factors among the elderly in urban and rural field practice areas of a tertiary care institution in Ludhiana. *Indian J Public Health*. 2015;59:3.
23. Rao TSS, Darshan MS, Tandon A, Raman R, Karthik KN, Saraswathi N, et al. Suttur study: An epidemiological study of psychiatric disorders in south Indian rural population. *Indian J Psychiatry*. 2014;56:238.
24. Amin G, Shah S, Vankar GK. The prevalence and recognition of depression in primary care. *Indian J Psychiatry*. 1998;40:364–9.
25. Pothen M, Kuruvilla A, Philip K, Joseph A, Jacob KS. Common mental disorders among primary care attenders in Vellore, South India: nature, prevalence and risk factors. *Int J Soc Psychiatry*. 2003;49:119–25.
26. Bjelica A, Kapor-Stanulović N. **Med Pregl**. Pregnancy as a psychological event. [Article in Serbian] 2004 Mar-Apr;57(3-4): 144-8
27. New insights into perinatal depression : pathogenesis and treatment during pregnancy and postpartum, *Dialogues Clin Neurosci*, v.13(1); 2011 Mar,
28. Beverly Goul, Stern D. Psychological aspects of pregnancy. *Motherhood constellations*. 1995.

29. Biratu A, Haile D. Prevalence of antenatal depression and associated factors among pregnant women in Addis Ababa, Ethiopia: a cross-sectional study. *Reproductive Health*. June 2015;12:99.
30. Carter, Xanthoula Kostaras. Psychiatric disorders in pregnancy. *BCMJ*, , No. 2, March 2005; Vol. 47: page(s) 96-99
31. Heron J, O'Connor TG, Evans J, Golding J, Glover V. The course of anxiety and depression through pregnancy and the postpartum in a community sample. *J Affect Disord* 2004; 80(1) : 65-73
32. Teixeira JM, Fisk NM, Glover V. Association between maternal anxiety in pregnancy and increased uterine artery resistance index: cohort based study. *BMJ* 1999; 318(7193) : 1288- 1289
33. Depression in India –Lets Talk,WHO 2017
34. The experiences of prenatal depression among Taiwanese women  
Authors Ying-Fen Tseng, Chen-Mei Hsu, Yu-Hsiang Liu, Chung-  
Hey Chen. First published: 9 October 2008 DOI: 10.1111/j.1365-  
2648.2008.04805.
35. New insights into perinatal depression : pathogenesis and treatment during pregnancy and postpartum, *Dialogues Clin Neurosci* ,v.13(1); 2011 Mar,

36. Christine Dunkel Schetter and Lynlee Tanner. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry* 2012, 25:141–148.
37. Brockington I.F. *Motherhood and Mental Health*. Oxford Medical Publication;1996
38. Martini J, Knappe S, BEESDO-Baum K, Lieb R. Anxiety disorders before birth and self perceived distress during pregnancy: associations with maternal depression and obstetric , neonat al and early childhood outcomes.
39. Alder J, Fink N, Bitzer J, Hösli I, Holzgreve W. Depression and anxiety during pregnancy: a risk factor for obstetric, fetal and neonatal outcome? A critical review of the literature. *J Matern Fetal Neonatal Med*. 2007 Mar;20(3):189-209.
40. Sofya M. Rubinchik, M.D., Anita S. Kablinger, M.D., and J. Suzette Gardner, B.G.S. Medications for Panic Disorder and Generalized Anxiety Disorder During Pregnancy. *Prim Care Companion J Clin Psychiatry*. 2005; 7(3): 100–105
41. Grove G, Coplan JD, Hollander E. The neuroanatomy of 5-HT dysregulation and panic disorder. *J Neuropsychiatry Clin Neurosci*. 1997;9:198–207

42. American Psychiatric Association. Diagnostic and statistical manual for mental disorders, 5th edition, DSM V TR. Washington, DC: American Psychiatric Press
43. Faruk Uguz, Medine Gynas Ayhan. Epidemiology and Clinical Features of Obsessive Compulsive Disorder During Pregnancy and Postpartum Period: A Review. *Journal of Mood Disorders* 2011;1(4):178-86
44. Ariadna Forray, M.D.,<sup>1</sup> Mariel Focseneanu, M.D.,<sup>2</sup> Brian Pittman, M.S.,<sup>1</sup> Christopher J. McDougle, M.D.,<sup>3</sup> and C. Neill Epperson. Onset and Exacerbation of Obsessive-Compulsive Disorder in Pregnancy and the Postpartum Period. *The Journal of clinical psychiatry* 71.8 (2010): 1061–1068. PMC
45. John Eastwood, Felix A. Ogbo, Alexandra Hendry, Justine Noble, Andrew Page. The Impact of Antenatal Depression on Perinatal Outcomes in Australian Women. *PLoS ONE* 12(1): e0169907. doi:10.1371/journal.pone.0169907.
46. Tadesse Awoke Ayele, Telake Azale, Kassahun Alemu, Zewditu Abdissa, Haregewoin Mulat, Abel Fekadu. Prevalence and Associated Factors of Antenatal Depression among Women Attending Antenatal Care Service at Gondar University Hospital, Northwest Ethiopia. *PLoS ONE* 11(5): e0155125.

doi:10.1371/journal.pone.0155125

47. Tamsen Jean Rochat , Mark Tomlinson , Till Bärnighausen , Marie-Louise Newell , Alan Stein. The prevalence and clinical presentation of antenatal depression in rural South Africa. *Journal of Affective Disorders* 2011;135 : 362–373.
48. Nilam Shakeel, Malin Eberhard-Gran, Line Sletner, Kari Slinning, Egil W Martinsen, Ingar Holme and Anne Karen Jenum. A prospective cohort study of depression in pregnancy, prevalence and risk factors in a multi-ethnic population. *BMC Pregnancy and Childbirth* (2015); 15:5.
49. Lee, Antoinette M. PhD; Lam, Siu Keung MD; Sze Mun Lau, Stephanie Marie BsocSc; Chong, Catherine Shiu Yin MBBS; Chui, Hang Wai MPH; Fong, Daniel Yee Tak PhD. Prevalence, Course, and Risk Factors for Antenatal Anxiety and Depression. *Obstetrics & Gynecology* 2007;110 (5):1102-1112.
50. Christine Rubertsson,Ulla Waldenström & Birgitta Wickberg. Depressive mood in early pregnancy: Prevalence and women at risk in a national Swedish sample. *Journal of Reproductive and infant psychology* 2003; 21 (2):113-123.
51. Nusrat Husain, Asia Parveen, Meher Husain, Qamar Saeed, Farhat Jafri et al. Prevalence and psychosocial correlates of perinatal

- depression: a cohort study from urban Pakistan. Archives of Women's Mental Health, October 2011, 14:395.
52. Gausia K, Fisher C, Ali M, Oosthuizen J. Antenatal depression and suicidal ideation among rural Bangladeshi women: a community-based study. Arch Womens Ment Health. 2009 Oct;12(5):351-8.
  53. T. Kitamura, K. Yoshida, T. Okano, K. Kinoshita, M. Hayashi et al. Multicentre prospective study of perinatal depression in Japan: incidence and correlates of antenatal and postnatal depression. Archives of Women's Mental Health May 2006; Volume 9(3): 121–130.
  54. Christina George, Anoop RN Lalitha, Abish Antony. Antenatal depression in coastal South India: Prevalence and risk factors in the community
  55. Patel V, Rodrigues m, De Souza N. Gender , poverty and postnatal depression a study on mothers in Goa India. American Journal of Psychiatry. January 2002; 159: 43- 47
  56. Shaily Mina, Yatan Pal Singh Balhara , Rohit Verma , Shachi Mathur. Anxiety and Depression amongst the urban females of Delhi in Ante-partum and Post-partum period. DELHI Psychiatry Journal Oct 2012; Vol. 15 (2):347-351.

57. Keerti S Jogdand, Pravin N Yerpude. A cross sectional study on social factors responsible for mental morbidity among pregnant women. *Innovative Journal of Medical and Health Science* July - August (2015); Vol 5(4): 159 – 161.
58. K. A. Mariam, Krishnamachari Srinivasan. Antenatal psychological distress and postnatal depression: A prospective study from an urban clinic. *Asian Journal of Psychiatry* June 2009;
59. Shaunak Ajinkya, Pradeep R. Jadhav, and Nimisha N. Srivastava. Depression during pregnancy: Prevalence and obstetric risk factors among pregnant women attending a tertiary care hospital in Navi Mumbai. *Ind Psychiatry J.* 2013 Jan-Jun; 22(1): 37–40.
60. Bavle AD, Chandahalli AS, Phatak AS, Rangaiah N, Kuthandahalli SM, Nagendra PN. Antenatal depression in a tertiary care hospital. *Indian J Psychol Med* 2016;38:31-5. 26.
61. Hegde , Shruthi S and Pai , Keshava K and , Abhishekh Hulegar A and , Sandeep K.R *Prevalence of antenatal depression and gender preference: A cross sectional study among mangalore population, Karnataka, India.* *Journal of Pharmaceutical and biomedical sciences* , 30 (30). pp. 1011-1014. ISSN 2230 – 7885
62. Jaju S, Al Kharusi L, Gowri V. Antenatal prevalence of fear associated with childbirth and depressed mood in primigravid

- women. *Indian J Psychiatry* 2015;57:158-61.
63. Christie A. Lancaster, MD, MS, Katherine J. Gold, MD, MSW, MS, Heather A. Flynn, PhD, Harim Yoo, Sheila M. Marcus, MD, and Matthew M. Davis, MD, MAPP. Risk factors for depressive symptoms during pregnancy: a systematic review. *Am J Obstet Gynecol.* 2010 Jan; 202(1): 5–14.
64. L Manikkam, J K Burns. Antenatal depression and its risk factors: An urban prevalence study in KwaZulu-Natal. *The South African medical journal* 2012; Vol 102(12): 940-944
65. Kleanthi Gourounti, Kleanthi Gourounti, Agnoston Martiron. Psychosocial risk factors of depression in pregnancy : a survey study. *Health Science Journal* 2015; Vol. 9 No. 1:11: 1-6
66. Robertson, E., Celasun, N., and Stewart, D.E. (2003). Risk factors for postpartum depression. In Stewart, D.E., Robertson, E., Dennis, C.-L., Grace, S.L., & Wallington, T. (2003). Postpartum depression: Literature review of risk factors and interventions. *University Health Network Women's Health Program* 2003;1:15
67. O'Hara, M. W., Neunaber, D. J., & Zekoski, E. M. (1984). Prospective study of postpartum depression: prevalence, course, and predictive factors. *Journal of Abnormal Psychology*, 93(2), 158-171.

68. Kennerly, H. & Gath, D. (1989). Maternity blues. I. Detection and measurement by questionnaire. *British Journal of Psychiatry*, 155, 356-362.
69. Campbell, S. B., Cohn, J. F., Flanagan, C., Popper, S., & Meyers, T. (1992). Course and correlates of postpartum depression during the transition to parenthood. *Development and Psychopathology*, 4, 29-47.
70. Robertson E, Grace S, Wallington T, Stewart DE. Antenatal risk factors for postpartum depression: a synthesis of recent literature. *Gen Hosp Psychiatry*. 2004 Jul-Aug;26(4):289-95
71. Rahman A, Bunn J, Lovel H, Creed F. Association between antenatal depression and low birth weight in a developing country. *Acta Psychiatr Scand*. 2007 Jun; 115(6):481-6.
72. Robinson, G. E. & Stewart, D. E. (2001). Postpartum disorders. In N.L.Stotland & D. E. Stewart (Eds.), *Psychological aspects of women's health care* (2nd ed. ed., pp. 117-139). Washington, DC: American Psychiatric Press, Inc
73. vikram patel, martin prince. maternal psychological morbidity and low birth weight in India the *British journal of psychiatry* feb 2006, 188 (3) 284-285.
74. Bansil P, Kuklina EV, Meikle SF, Posner SF, Kourtis AP, Ellington

- SR, Jamieson DJ. Maternal and fetal outcomes among women with depression. *J Womens Health (Larchmt)*. 2010 Feb;19(2):329-34.
75. Alder J, Fink N, Bitzer J, Hösli I, Holzgreve W. Depression and anxiety during pregnancy: a risk factor for obstetric, fetal and neonatal outcome? A critical review of the literature. *J Matern Fetal Neonatal Med*. 2007 Mar;20(3):189-209
76. Talge NM, Neal C, Glover V. Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *J Child Psychol Psychiatry*. 2007 Mar-Apr;48(3-4):245-61.
77. Perren S, von Wyl A, Bürgin D, Simoni H, von Klitzing K. Depressive symptoms and psychosocial stress across the transition to parenthood: Associations with parental psychopathology and child difficulty. *J Psychosom Obstet Gynaecol*. 2005;26:173–83.
78. Hadley C, Tegegn A, Tessema F, Asefa M, Galea S. Parental symptoms of common mental disorders and children's social, motor, and language development in sub-Saharan Africa. *Ann Hum Biol*. 2008;35:259–75.
79. Gao W, Paterson J, Abbott M, Carter S, Iusitini L. Maternal mental health and child behaviour problems at 2 years: Findings from the Pacific Islands Families Study. *Aust N Z J Psychiatry*. 2007;41: 885–95.

80. Paterson J, Carter S, Gao W, Perese L. Pacific Islands families study: Behavioral problems among two-year-old Pacific children living in New Zealand. *J Child Psychol Psychiatry*. 2007;48: 514–22.
81. Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786.
82. John Eastwood, Felix A. Ogbo, Alexandra Hendry, Justine Noble, Andrew Page, for the Early Years Research Group (EYRG). The Impact of Antenatal Depression on Perinatal Outcomes in Australian Women.
83. Benjamin, D., Chandramohan, A., Annie, I. K., Prasad, J., & Jacob, K. S. (2005). Validation of the Tamil version of Edinburgh post-partum depression scale. *The Journal of Obstetrics and Gynecology of India*, 55, 241–243.
84. Martins Cde S, Motta JV, Quevedo LA, Matos MB<sup>1</sup>. Comparison of two instruments to track depression symptoms during pregnancy in a sample of pregnant teenagers in Southern Brazil. *J Affect Disord*. 2015 May 15;177:95
85. Genesis Chorwe-Sungani, Jennifer Chipps. A systematic review of

screening instruments for depression for use in antenatal services in low resource settings BMC PsychiatryBMC series – open, inclusive and trusted2017**17**:112.

86. Helga Zoega , Helle Kieler, Mette Nørgaard,et al. Use of SSRI and SNRI Antidepressants during Pregnancy: A Population-Based Study from Denmark, Iceland, Norway and Sweden. <https://doi.org/10.1371/journal.pone.0144474>
87. Kimberly A. Yonkers, M.D.,Katherine L. Wisner, M.D., MS., Donna E. Stewart, M.D., FRCPC, Tim F. Oberlander, M.D., FRCPC. The management of depression during pregnancy: a report from the American Psychiatric Association and the American College of Obstetricians and Gynecologists. *Obstet Gynecol.* 2009 Sep; 114(3): 703–713.
88. Practice guideline for major depressive disorder in adults. American Psychiatric Association. *Am J Psychiatry.* 1993 Apr;150(4 Suppl):1-26.
89. Hassaan Tohid, Aisha Ashraf. Depression in Pregnancy: A Psychiatric Dilemma. *The Journal of Middle East and North Africa Sciences* 2016; 2(8) <http://www.jomenas.org>
90. Measuring Socio Economic Status – search for a new alternative. K. Mary Ramola, A. Velmurugan : *SMJ Vol 3 | Issue 1 | January-*

March | 2016.

91. Screening for antenatal depression with the Edinburgh Depression Scale Adomas Bunevicius, Laima Kusminskas, Victor J. Pop, Cort A. Pedersen & Robertas Bunevicius Pages 238-243 | Received 09 Apr 2008, Accepted 28 Oct 2008, Published online: 22 Oct 2009, Indian Journal of Psychosomatic Obstetrics & Gynaecology
92. Low Birth Weight : Country, Regional, Global estimates, The United Nations Children's Fund and World Health Organization, 2004.
93. Abuidhail J, Abujilban SJ. Characteristics of Jordanian depressed pregnant women: a comparison study. *Psychiatr Ment Health Nurs* 2014 Sep;21(7):573-9.
94. Gong X, Hao J, Tao F, Zhang J, Wang H, Xu R. Pregnancy loss and anxiety and depression during subsequent pregnancies: data from the C-ABC study. *Eur J Obstet Gynecol Reprod Biol*. 2013 Jan;166(1):30-6
95. Karen A. Ertel, Karestan C. Koenen, Janet W. Rich-Edwards, and Matthew W. Gillman. Antenatal and postpartum depressive symptoms are differentially associated with early childhood weight and adiposity. *Paediatr Perinat Epidemiol*. 2010 Mar; 24(2): 179–189.

96. Hashima E Nasreen, Zarina N Kabir, Yvonne Forsell, and Maigun Edhborg. Prevalence and associated factors of depressive and anxiety symptoms during pregnancy: A population based study in rural Bangladesh. *BMC Womens Health*. 2011; 11: 22.
97. Mary Hartley, Mark Tomlinson, Erin Greco, W Scott Comulada, Jacqueline Stewart, Ingrid le Roux. Depressed mood in pregnancy: Prevalence and correlates in two Cape Town peri-urban settlements. *Reprod Health*. 2011; 8: 9.
98. Da Costa D, Larouche J, Dritsa M, Brender W. Variations in stress levels over the course of pregnancy: factors associated with elevated hassles, state anxiety and pregnancy-specific stress. *J Psychosom Res* 1999;47:609–21
99. Bödecs T, Szilágyi E, Cholnoky P, Sándor J, Gonda X, Rihmer Z, Horváth B. Prevalence and psychosocial background of anxiety and depression emerging during the first trimester of pregnancy: data from a Hungarian population-based sample. *Psychiatr Danub*. 2013 Dec;25(4):352-8.
100. Rich-Edwards JW<sup>1</sup>, Kleinman K, Abrams A, Harlow BL, McLaughlin TJ, Joffe H, Gillman MW. Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in a medical group practice. *J Epidemiol Community*

Health. 2006 Mar;60(3):221-7.

101. Giulia M. Muraca, MPH, K.S. Joseph, MD, PhD. The Association Between Maternal Age and Depression. *J Obstet Gynaecol Can* 2014;36(9):803–810
102. Balestrieri Matteo, Isola Miriam, Bisoffi Giulia , Calo` Salvatore , Conforti Anita , Driul Lorenza. Determinants of ante-partum depression: a multicenter study *Soc Psychiatry Psychiatr Epidemiol* (2012) 47:1959–1965.
103. Ali NS, Azam IS, Ali BS, Tabbusum G, Moin SS. Frequency and associated factors for anxiety and depression in pregnant women: a hospital-based cross-sectional study. *Scientific World Journal*. 2012;2012:653098.
104. Räisänen S, Lehto SM, Nielsen HS, Gissler M, Kramer MR, Heinonen S. Risk factors for and perinatal outcomes of major depression during pregnancy: a population-based analysis during 2002-2010 in Finland. *BMJ Open*. 2014 Nov 14;4(11).
105. Bojana Kitanovic Dmitrovic, Miroslava Gojnic Dugalić, , Gordana Nikolic Balkoski, , AleksandarDmitrovic, , Ivan Soldatovic. Frequency of perinatal depression in Serbia and associated risk factors . *International Journal of Social Psychiatry* Vol 60, Issue 6, pp. 528 – 532.

106. Francesca Agostini, Erica Neri, Paola Salvatori, Sara Dellabartola Laura Bozicevic, Fiorella Monti. Antenatal Depressive Symptoms Associated with Specific Life Events and Sources of Social Support Among Italian Women. *Matern Child Health J* DOI 10.1007/s10995-014-1613.
107. Nusrat Husain, Asia Parveen, Meher Husain, Qamar Saeed, Farhat Jafri et al. Prevalence and psychosocial correlates of perinatal depression: a cohort study from urban Pakistan. *Archives of Women's Mental Health*, October 2011, 14:395.
108. Yanikkerem E., Ay S., Mutlu S., Goker A. Antenatal depression: prevalence and risk factors in a hospital based Turkish sample. *J. Pak. Med. Assoc.* 2013;63:472–477
109. Census of India 2011 .Chapter 2.Population composition.
110. Chowdhry P. Contentious marriages, eloping couples: Gender, caste, and patriarchy in northern India. Oxford University Press; New Delhi: 2007.
111. Bilszta JL, Tang M, Meyer D, Milgrom J, Ericksen J, Buist AE. Single motherhood versus poor partner relationship: outcomes for antenatal mental health. *Aust N Z J Psychiatry.* 2008 Jan;42(1):56-65.
112. Stacy C. Hodgkinson, MA, Elizabeth Colantuoni, PhD, Debra

- Roberts, PhD, Linda Berg-Cross, PhD, and Harolyn M.E. Belcher, MD, MHS. Depressive Symptoms and Birth Outcomes among Pregnant Teenagers. *J Pediatr Adolesc Gynecol*. 2010 Feb; 23(1): 16–22.
113. Klima CS. Unintended pregnancy. Consequences and solutions for a worldwide problem. *J Nurse Midwifery*. 1998 Nov-Dec;43(6):483-91.
114. Ahmed Waqas , Nahal Raza, Haneen Wajid Lodhi, Zerwah Muhammad. Psychosocial Factors of Antenatal Anxiety and Depression in Pakistan: Is Social Support a Mediator? <https://doi.org/10.1371/journal.pone.0116510>
115. Gong X, Hao J, Tao F, Zhang J, Wang H, Xu R. Pregnancy loss and anxiety and depression during subsequent pregnancies: data from the C-ABC study. *Eur J Obstet Gynecol Reprod Biol*. 2013 Jan;166(1):30-6
116. L Manikkam, J K Burns. Antenatal depression and its risk factors: An urban prevalence study in KwaZulu-Natal. *The South African medical journal* 2012; Vol 102(12): 940-944
117. Sheila M. Marcus, MD and Julie E. Heringhausen. Depression in Childbearing Women: When Depression Complicates Pregnancy .
118. Jeong HG, Lim JS, Lee MS, Kim SH, Jung IK, Joe SH. The

association of psychosocial factors and obstetric history with depression in pregnant women: focus on the role of emotional support. *Gen Hosp Psychiatry*. 2013 Jul-Aug;35(4):354-8.

119. Antoinette M. Lee, PhD, Siu Keung Lam, MD, Stephanie Marie Sze Mun Lau, BsocSc, Catherine Shiu Yin Chong, MBBS, Hang Wai Chui, MPH, and Daniel Yee Tak Fong, PhD. *Obstet. Gynecol.* 2007;110:1102–1112.
120. Pereira, Bernadette et al. The explanatory models of depression in low income countries: Listening to women in India. *Journal of Affective Disorders*. Sep 2007; Volume 102 , Issue 1: 209 – 218
121. Rohini Pande and Anju Malhotra . Son preference and daughter neglect in India. International Center for Research on Women Copyright © 2006.
122. Maryam Rouhi, Narges Rouhi, Mayam Vizheh, and Kamal Salehi. Male child preference: Is it a risk factor for antenatal depression among Iranian women? *British Journal of Midwifery* 2017 25: 9, 572-578
123. Deepthi Varma, M.Phil, Prabha S. Chandra, MD, MRC Psych, and Michael P. Carey, Ph.D. Intimate Partner Violence and Sexual Coercion among Pregnant Women in India: Relationship with Depression and Post-Traumatic Stress Disorder

124. Michael P. Marshal. For better or for worse? The effects of alcohol use on marital functioning. *Clin Psychol Rev.* 2003 Dec; 23(7): 959–997.
125. Nayak MB, Patel V, Bond JC, Greenfield TK. Partner alcohol use, violence and women's mental health: population-based survey in India. *The British Journal of Psychiatry.* 2010;196(3):192-199.
126. Adewuya AO, Ola BA, Aloba OO, Dada AO, Fasoto OO. Prevalence and correlates of depression in late pregnancy among Nigerian women. *Depress Anxiety.* 2007;24(1):15-21.
127. Bayrampour H, McDonald S, Tough S. Risk factors of transient and persistent anxiety during pregnancy. *Midwifery.* 2015 Jun;31(6):582-9.
128. Dibaba Y, Fantahun M, Hindin MJ. The association of unwanted pregnancy and social support with depressive symptoms in pregnancy: evidence from rural Southwestern Ethiopia. *BMC Pregnancy Childbirth.* 2013 Jun 24;13:135. doi: 10.1186/1471-2393-13-135.
129. Steer RA, Scholl TO, Hediger ML, Fischer RL. Self-reported depression and negative pregnancy outcomes. *J Clin Epidemiol.* 1992 Oct;45(10):1093-9.

130. Zeng Y., Cui Y., Li J. Prevalence and predictors of antenatal depressive symptoms among Chinese women in their third trimester: a cross-sectional survey. *BMC Psychiatry*. 2015;15:66.

# ANNEXURE I

The screenshot displays a web browser window with the URL <https://secure.orkund.com/view/31121001-864725-831820#q1bKLvayjjaK1VEqzky0zL7E7MS05VsjLQMzI2MLSwnDUzNTyZBdLgtQA=>. The page title is "URKUND".

**Document Details:**

- Document: [ULTIMATE FINAL THESIS.docx \(D31461458\)](#)
- Submitted: 2017-10-19 16:49 (+05:0-30)
- Submitted by: Kamali R (kamaliradhai@gmail.com)
- Receiver: kamaliradhai.mgmu@analysis.orkund.com
- Message: [THESIS Show full message](#)

**Sources Table:**

Rank	Path/Filename
100%	INTRODUCTION
99%	INTRODUCTION
99%	Literature Review 4.1 Depression : Depression is a common illness all over the world. Depr

**Text Comparison:**

The bottom section shows a side-by-side comparison of the document text. The left pane shows the original text, and the right pane shows a version with some differences highlighted. The text is titled "INTRODUCTION" and discusses pregnancy, depression, and its impact on women's mental health.

1. Introduction : Pregnancy is a period of transition in a woman. There are many Physical, Physiological and Psychological changes happening in her. Though this period is traditionally considered as a period of emotional wellbeing, pregnancy may induce or exacerbate emotional problems. This may have a negative impact on the pregnancy and also the postpartum period. The antenatal period is considered to be a high risk time for both for pre-existing and new onset psychiatric illnesses. 1. Depression : Depression is a common mental disorder, it is characterized by persistent sadness , marked loss of interest and fatigue as core symptoms lasting for at least two weeks or more 2. Depression is a major public health problem, contributing to significant morbidity , disability and mortality along with significant economic losses . Globally an estimated 322 million people were affected by Depression in 2015 1. Depression is predicted to rise by about 22.5 % . This may be due to population growth and aging 3. India has 57 million people (18%) affected by Depression 4. The Disability adjusted life years (DALY) due to depression accounted for 37% in 2013. By 2025, Depression will be ranked the third most disabling condition globally 5. The lifetime risk of depression in women is about 1 in 8, and it is most prevalent during their reproductive years 6. Antenatal Depression : Pregnancy and depression affect each other. In the background of chronic life stressors, women may have difficulty in coping with the additional demands of pregnancy. Many women, particularly those living in poverty or having dependent children, may have a negative view of pregnancy . Memories of poor parenting or abuse, the women have suffered may resurface and cause distress.

Domestic conflicts also lead to emotional problems.

Maternal mental state in pregnancy may have significant impact on the mental and behavioural of the offspring 7.

**ANNEXURE II**

**INSTITUTIONAL ETHICAL COMMITTEE CERTIFICATE**

**INSTITUTIONAL ETHICS COMMITTEE**  
**GOVT.KILPAUK MEDICAL COLLEGE,**  
**CHENNAI-10**

**Ref.No.4721/ME-1/Ethics/2016 Dt: 11.08.2016**

**CERTIFICATE OF APPROVAL**

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "A descriptive study on the prevalence of antenatal depression in a rural area in Tamil Nadu" – For Project Work Submitted by Dr.R.Kamali, MD, Dept. of Community Medicine, Govt. KMC, Chennai-10.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information / informed consent and asks to be provided a copy of the final report.



**DEAN**

**Ethical Committee**  
**Govt.Kilpauk Medical College,**  
**Chennai**

### ANNEXURE III

#### QUESTIONNAIRE

S. No.

1. Name:

2. Age /Sex:

3. Occupation: 1. 2. 3. 4. 5. 6.

4. Educational Qualification: 1. 2. 3. 4. 5. 6. 7.

5. Socioeconomic status: 1. 2. 3. 4. 5.

6. Assets :

7. Residential area:

8. Obstetric Score : G P L A

9. Family History Of Mood Disorder : Yes No

10. Past History Of Depression :

11. Age at Marriage :

12. Is It an Arranged Marriage : Yes No

13. Age of First Conception :

14. Last Child Birth :

15. Is the Current Conception is Planned : Yes No

16. H/O Miscarriage / Still Birth : Yes No

17. Living with Partner : Yes No

18. Any Marital Conflicts : Yes No

19. Preference for Male Child : Yes No

20. Alcohol Use in Partner : Yes No

21. Percieved Lack of social Support : Yes No

## ANNEXURE IV

### EDINBURG POSTNATAL DEPRESSION SCALE

#### Edinburgh Postnatal Depression Scale<sup>1</sup> (EPDS)

Name: \_\_\_\_\_ Address: \_\_\_\_\_

Your Date of Birth: \_\_\_\_\_

Baby's Date of Birth: \_\_\_\_\_ Phone: \_\_\_\_\_

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- Yes, all the time  
 Yes, most of the time      This would mean: "I have felt happy most of the time" during the past week.  
 No, not very often      Please complete the other questions in the same way.  
 No, not at all

In the past 7 days:

- |   |  |
|---|--|
| 1. I have been able to laugh and see the funny side of things<br><input type="checkbox"/> As much as I always could<br><input type="checkbox"/> Not quite so much now<br><input type="checkbox"/> Definitely not so much now<br><input type="checkbox"/> Not at all | *6. Things have been getting on top of me<br><input type="checkbox"/> Yes, most of the time I haven't been able to cope at all<br><input type="checkbox"/> Yes, sometimes I haven't been coping as well as usual<br><input type="checkbox"/> No, most of the time I have coped quite well<br><input type="checkbox"/> No, I have been coping as well as ever |
| 2. I have looked forward with enjoyment to things<br><input type="checkbox"/> As much as I ever did<br><input type="checkbox"/> Rather less than I used to<br><input type="checkbox"/> Definitely less than I used to<br><input type="checkbox"/> Hardly at all     | *7. I have been so unhappy that I have had difficulty sleeping<br><input type="checkbox"/> Yes, most of the time<br><input type="checkbox"/> Yes, sometimes<br><input type="checkbox"/> Not very often<br><input type="checkbox"/> No, not at all  |
| *3. I have blamed myself unnecessarily when things went wrong<br><input type="checkbox"/> Yes, most of the time<br><input type="checkbox"/> Yes, some of the time<br><input type="checkbox"/> Not very often<br><input type="checkbox"/> No, never                  | *8. I have felt sad or miserable<br><input type="checkbox"/> Yes, most of the time<br><input type="checkbox"/> Yes, quite often<br><input type="checkbox"/> Not very often<br><input type="checkbox"/> No, not at all  |
| 4. I have been anxious or worried for no good reason<br><input type="checkbox"/> No, not at all<br><input type="checkbox"/> Hardly ever<br><input type="checkbox"/> Yes, sometimes<br><input type="checkbox"/> Yes, very often                                      | *9. I have been so unhappy that I have been crying<br><input type="checkbox"/> Yes, most of the time<br><input type="checkbox"/> Yes, quite often<br><input type="checkbox"/> Only occasionally<br><input type="checkbox"/> No, never  |
| *5. I have felt scared or panicky for no very good reason<br><input type="checkbox"/> Yes, quite a lot<br><input type="checkbox"/> Yes, sometimes<br><input type="checkbox"/> No, not much<br><input type="checkbox"/> No, not at all                               | *10. The thought of harming myself has occurred to me<br><input type="checkbox"/> Yes, quite often<br><input type="checkbox"/> Sometimes<br><input type="checkbox"/> Hardly ever<br><input type="checkbox"/> Never   |

Administered/Reviewed by \_\_\_\_\_ Date \_\_\_\_\_

<sup>1</sup>Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

<sup>2</sup>Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

Users may reproduce the scale without further permission providing they respect copyright by quoting the names of the authors, the title and the source of the paper in all reproduced copies.

## ANNEXURE V

### Sample size:

Sample size is 260 (  $Z\alpha pq/L^2$  )

For an expected prevalence (p) from previous studies<sup>52</sup> of 20% with Z value of 1.96 at 95% confidence interval, and with limit of accuracy ( L ) at 5 % (Absolute precision), 5% for non responders ,the sample size required was 260 study participants.

$q = 1-p$  (proportion of people without hypertension) = 0.8

The sample size required for the study was calculated as follows

$$n = \frac{1.96 \times 1.96 \times 0.2 \times 0.8}{0.05 \times 0.05} = \frac{0.6147}{0.0025} = 246$$

**ANNEXURE VI**  
**INFORMATION TO PARTICIPANTS**

Investigator : **Dr. KAMALI.R**

Name of the Participant:

**Title : A Descriptive Study On The Prevalence Of Antenatal Depression In a Rural Area in Tamilnadu**

You are invited to take part in this research study. We have got approval from the IEC. You will be asked to fill up a Questionnaire, and We would be asking you questions regarding Your Past and Personal History , so that appropriate preventive measures could be planned .

Date:

Signature of the Investigator:

Place:

Signature /thumb impression of the participant:

## ANNEXURE VII

### PATIENT CONSENT FORM

**Study detail : A Descriptive Study On The Prevalence Of Antenatal Depression In a Rural Area in Tamilnadu**

Patients Name :

Patients Age :

Identification Number :

Patient may check (  ) these boxes

I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask question and all my questions and doubts have been answered to my complete satisfaction.

I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving reason, without my legal rights being affected.

I understand that the ethical committee and the regulatory authorities will not need my permission to look at my health records

However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from this study.

I agree to take part in the above study and to comply with the instructions given during the study and faithfully cooperate with the study team and to immediately inform the study staff if I suffer from any deterioration in my health or well-being or any unexpected or unusual symptoms.

I hereby consent to participate in this study.

Signature/thumb impression:

Signature of investigator:

Patients Name and Address:

Study investigator's Name:Dr.Kamali

## ANNEXURE VIII

### MRSI SOCIOECONOMIC SCALE

Market Research Society of India Scale:

The New SEC system used to classify Households in india, based on two variables

- 1) Education of the chief earner
- 2) Number of consumer Durables( from a predefined list )- owned by the family.

The list has 11 items, ranging from electrical connection and agricultural land to cars and air conditioners

There are twelve grades in the SEC system , ranging from A1 to E3.

Source: [Imbrint.com/research/The-New-SEC-system-3rdMay2011.pdf](http://Imbrint.com/research/The-New-SEC-system-3rdMay2011.pdf)

As MRSI scale is a new scale, we also used Modified BG.PRASAD Socio economic scale classification for comparison

### THE NEW MRSI SOCIOECONOMIC SCALE

**RECORDING**  
**The grid**

**01**

	Items owned / have access at home	Circle	Tick
	Electricity Connection	01	✓
	Ceiling Fan	02	✓
	LPG Stove	03	✓
	Two Wheeler	04	✓
	Colour TV	05	✓
1a	Refrigerator	06	✓
	Washing Machine	07	
	Personal Computer/Laptop	08	
	Car/Jeep/Van	09	✓
	Air Conditioner	10	
1b	Agricultural Land	11	✓
	NUMBER OF STANDARD <sup>11</sup> OWNED		8

## THE NEW MRSI SOCIOECONOMIC SCALE

No. of Durables	Chief Earner: Education (Q2)						
	Illiterate	Literate but no formal schooling/ School- Upto 4 years	School- 5 to 9 years	SSC/ HSC	Some College (incl a Diploma) but not Grad	Graduate/ Post Graduate: General	Graduate/ Post Graduate: Professional
	1	2	3	4	5	6	7
None	E	E	E	E	E	E	D
1	E	E	E	E	D	D	D
2	E	E	D	D	D	D	D
3	D	D	D	D	C	C	C
4	D	C	C	C	C	B	B
5	C	C	C	B	B	B	B
6	C	B	B	B	A	A	A
7	C	B	B	A	A	A	A
8	B	A	A	A	A	A	A
9+	B	A	A	A	A	A	A

## ANNEXURE IX

### KEY TO MASTER CHART

<b>Items</b>	<b>Description of coded items</b>
<b>SES</b>	<b>A- UPPER, B- UPPER MIDDLE, C- LOWER MIDDLE, D- UPPER LOWER, E- LOWER</b>
<b>TYPE OF FAMILY</b>	<b>1- NUCLEAR, 2- JOINT, 3-EXTENDED NUCLEAR</b>
<b>FAMILY H/O DEPRESSION</b>	<b>1- YES, 2- NO</b>
<b>PAST H/O DEPRESSION</b>	<b>1- YES, 2- NO</b>
<b>AGE OF MRG</b>	<b>1-&lt;18 YEARS, 2- &gt;18 YEARS</b>
<b>AGE AT FIRST CONCEPTION</b>	<b>1-&lt;19 YEARS, 2- &gt;19 YEARS</b>
<b>ALCOHOL ABUSE IN PARTNER</b>	<b>1- YES, 2- NO</b>
<b>LACK OF PERCIEVED SOCIAL SUPPORT</b>	<b>1- YES, 2- NO</b>
<b>MARITAL CONFLICTS</b>	<b>1-YES, 2- NO</b>
<b>EPDS SCORE</b>	<b>1-&lt;13(ANTENATAL DEPRESSION ABSENT), 2&gt;13(ANTENATAL DEPRESSION PRESENT)</b>
<b>BIRTH WEIGHT</b>	<b>1- &lt; 2500 GMS ( LBW), 2-&gt;2500 GMS (NORMAL WEIGHT)</b>
<b>LCB</b>	<b>1- &lt;3 YEARS, 2- &gt; 3 YEARS</b>
<b>TYPE OF DELIVERY</b>	<b>1-NORMAL, 2- OPERATIVE</b>

ANNEXURE X - MASTER CHART

AGE	OCCUPATI ON	Education Category	ASSET	prasad SES	income SES	SES	GRAVIDA	PARA	LIVE	ABORTIO N	FAMILY TYPE	PAST/H/O	AGE AT MARRIAGE	AGE AT 1 <sup>ST</sup> MARRIAGE	LCB	CURRENT CONCEPTI ON PLANNED	STILLBIRT H	LIVING WITH PARTNER	MARITAL CONFLICT WITH PARTNER	MALE CHILD PREFERENCE	ALCOHOL ABUSE IN PARTNER	PERCEIVED LACK OF SOCIAL SUPPORT	Actual EPDS Score	EPDS Categories	BIRTH WEIGHT	sex of child	Type of delivery
22	KAVITHA	HW	4	10	WM	A	50000	C	1	0	2	2	2	2	0	2	2	2	2	2	2	2	8	1	2	1	
31	Shobha	HW	5	TV	B	6000	A	4	1	1	2	2	2	2	0	2	2	1	2	2	2	2	10	1	2	1	
28	Lakshmi P	HW	6	BCOM	A	18000	A	3	1	1	1	2	2	2	1	2	1	2	2	2	2	2	3	1	2	2	
21	Paavithra	HW	4	WM	A	8000	A	2	1	1	1	2	2	2	1	2	1	2	1	2	2	2	12	1	2	1	
29	Poojitha B	HW	4	10	Fridge	A	8000	B	2	1	0	2	2	2	2	2	2	1	2	2	2	2	6	1	2	2	
22	Bakulakshmi	HW	5	12	WM	A	80000	A	2	1	0	1	2	2	2	2	2	1	2	1	2	2	5	1	2	2	
25	Kerenthy	HW	4	10	WM	A	10000	A	2	1	0	3	2	2	2	2	0	2	1	2	2	2	3	1	2	2	
34	Kameshwari	HW	4	10	Fridge	A	15000	B	2	1	0	2	2	2	2	2	2	2	2	2	2	2	10	1	2	1	
35	Mangalalaxmi	HW	2	5	TV	A	8000	B	2	1	0	1	2	2	2	2	2	2	2	2	2	2	5	1	2	1	
22	Janaki	HW	5	12	TV	A	12000	B	2	1	0	1	2	2	2	2	1	2	2	2	2	2	11	1	2	1	
29	Jayakshi	HW	4	10	Fridge	A	9000	B	2	1	0	3	2	2	2	2	2	2	2	2	2	2	11	1	2	2	
25	Omkarshakti	HW	6	BCOM	TV	A	15000	A	3	1	1	1	2	2	2	2	2	2	2	2	2	2	11	1	2	2	
22	Mithaha	PVT	7	BE	WM	A	45000	A	1	0	1	2	2	2	2	2	0	1	2	2	2	2	10	1	2	2	
26	Kulavanni	HW	5	12	FAN	A	10000	B	1	0	0	2	2	2	2	2	0	1	2	2	2	2	6	1	2	2	
29	Kulavanni	PVT	7	MBA	WM	A	20000	A	1	0	0	2	2	2	2	2	0	1	2	2	2	2	10	1	2	2	
21	Monalekha	HW	4	10	Fridge	A	10000	C	1	0	0	1	2	2	2	2	2	2	2	2	2	2	6	1	2	2	
28	Rajlaxmi	HW	5	12	WM	A	15000	C	4	2	2	1	2	2	2	2	2	2	2	2	2	2	16	2	2	1	
23	Anjali	HW	3	4	TV	A	10000	C	3	2	1	2	2	2	2	1	2	2	2	2	2	2	3	1	2	2	
24	Gracy	HW	6	BCA	Fridge	A	10000	B	2	1	1	2	2	2	2	2	2	2	2	2	2	2	4	1	2	2	
24	D Prema	HW	4	9	Fridge	A	10000	B	1	0	0	1	2	2	2	2	0	1	2	2	2	2	6	1	2	2	
23	Shobha	HW	4	10	Fridge	A	10000	B	1	0	0	1	2	2	2	2	2	2	2	2	2	2	4	1	2	2	
26	Kshikarasi	HW	4	10	TV	A	10000	C	2	0	1	1	2	2	2	2	2	2	2	2	2	2	7	1	2	2	
26	Nirmala	HW	6	BCOM	TV	A	10000	B	2	0	1	1	2	2	2	2	2	2	2	2	2	2	5	1	2	2	
21	Muthakumari	HW	5	MPhil	WM	A	15000	A	2	1	1	1	2	2	2	2	2	2	2	2	2	2	6	1	2	1	
27	Dhanini	HW	3	12	Fridge	A	13000	A	2	1	0	2	2	2	2	2	2	2	2	2	2	2	13	2	2	1	
24	Vidusalli	HW	6	MSc	Fridge	A	15000	A	2	1	0	2	2	2	2	2	2	2	2	2	2	2	4	1	2	2	
23	Divya	HW	6	BSc	WM	A	40000	A	1	0	0	3	2	2	2	2	0	1	2	2	2	2	7	1	2	2	
28	Kapana	PVT	6	BCA	WM	A	40000	E	2	0	0	1	2	2	2	2	2	2	2	2	2	2	4	1	2	2	
35	Benipriya	HW	4	9	WM	A	10000	C	3	2	2	2	2	2	2	2	2	2	2	2	2	2	9	1	2	2	
22	Aravind	HW	4	10	TV	A	15000	B	3	0	0	2	2	2	2	2	2	2	2	2	2	2	4	2	2	2	
26	Aleena	HW	4	10	TV	A	15000	B	1	0	0	2	2	2	2	2	2	2	2	2	2	2	9	1	2	2	
26	Ramecy	HW	6	BSc	Fridge	A	20000	A	1	0	0	1	2	2	2	2	2	2	2	2	2	2	7	1	2	2	
29	Sujatha	HW	5	12	WM	A	10000	A	2	1	0	1	2	2	2	2	2	2	2	2	2	2	9	1	2	2	
29	Kulavanni	HW	4	10	Fridge	A	10000	A	2	1	0	2	2	2	2	2	2	2	2	2	2	2	7	1	2	2	
24	Syed Ali	HW	5	12	WM	A	9500	B	3	1	1	2	2	2	2	2	2	2	2	2	2	2	6	1	2	2	
23	Sugantibhrya	HW	6	BSc	WM	A	9000	C	2	0	0	3	2	2	2	2	2	2	2	2	2	2	7	1	2	2	
34	Farsana	HW	2	5	TV	B	6000	C	2	1	0	1	2	2	2	2	2	2	2	2	2	2	10	1	2	2	
20	Pavithrantra	HW	4	10	TV	A	14000	A	1	0	0	3	2	2	2	2	2	2	2	2	2	2	11	1	2	2	
22	Swarthi	HW	5	12	WM	A	10000	A	1	0	0	3	2	2	2	2	2	2	2	2	2	2	9	1	2	2	
20	Pritya	HW	5	12	TV	A	10000	B	4	0	0	3	2	2	2	2	2	2	2	2	2	2	12	1	2	2	
28	Shesha	HW	3	12	Fridge	A	15000	B	2	1	0	3	2	2	2	2	2	2	2	2	2	2	1	2	2	2	
38	Kamaladevi	HW	4	9	WM	A	7000	B	2	0	0	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	
21	A.Ramya	HW	6	BSc	Fridge	A	18000	A	3	0	0	3	2	2	2	2	2	2	2	2	2	2	14	2	2	2	
23	Nareeen	HW	5	10	TV	A	10000	C	3	0	0	2	2	2	2	2	2	2	2	2	2	2	9	1	2	2	
27	Sathya	HW	5	10	WM	A	12000	A	2	0	0	3	2	2	2	2	2	2	2	2	2	2	8	1	2	2	
29	Selvi	HW	6	BA	Fridge	A	10000	B	2	1	0	1	2	2	2	2	2	2	2	2	2	2	10	1	2	2	
25	chellammal	HW	4	10	TV	A	10000	C	4	3	2	0	1	2	2	2	2	2	2	2	2	2	10	1	2	2	
28	Vaishali	HW	6	BCOM	Fridge	A	10000	B	1	0	0	1	2	2	2	2	2	2	2	2	2	2	12	1	2	2	
26	Vijaya Jhansi	HW	4	10	Fridge	A	7000	B	2	1	0	1	2	2	2	2	2	2	2	2	2	2	10	1	2	2	
28	Sengani	HW	6	MPhil	WM	A	11000	A	1	0	0	1	2	2	2	2	2	2	2	2	2	2	10	1	2	2	
28	Varalakshmi	HW	3	7	Fridge	B	5000	C	4	2	2	2	2	2	2	2	2	2	2	2	2	4	1	2	2	2	
25	Varitha	HW	3	7	Fridge	A	10000	B	2	1	0	3	2	2	2	2	2	2	2	2	2	2	0	1	2	2	2
24	Vipvalakshmi	HW	7	BA BL	TV	A	15000	B	1	0	0	3	2	2	2	2	2	2	2	2	2	2	6	1	2	2	2
25	Muthachagi	HW	3	7	Fridge	A	7500	B	1	0	0	2	2	2	2	2	2	2	2	2	2	2	6	1	2	2	2
25	Mithana	HW	6	BSc	WM	A	10000	A	1	0	0	3	2	2	2	2	2	2	2	2	2	2	6	1	2	2	2
27	Maha	HW	4	10	Fridge	A	10000	A	2	1	0	3	2	2	2	2	2	2	2	2	2	2	6	1	2	2	2
25	Deepalakshmi	HW	6	BCOM	Fridge	A	18000	B	2	1	0	3	2	2	2	2	2	2	2	2	2	2	12	1	2	2	2
23	Jayamma	HW	4	10	Fridge	A	12000	B	1	0	0	3	2	2	2	2	2	2	2	2	2	2	13	2	2	2	2
21	Padmini	HW	5	12	FAN	A	8000	B	2	1	0	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
24	Sujitha	HW	5	12	Fridge	A	15000	B	1	0	0	1	2	2	2	2	2	2	2	2	2	2	7	1	2	2	2
33	sulfhana	HW	6	BSc	WM	B	6000	A	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2
30	Vipvalakshmi	HW	4	10	TV	A	11000	B	2	1	0	1	2	2	2	2	2	2	2	2	2	2	2	8	1	2	2
30	Rohasrani	HW	6	BA	WM	A	10000	A	2	1	0	3	2	2	2	2	2	2	2	2	2	2	9	1	2	2	2
28	Ravathy	HW	4	10	Fridge	A	19000	B	2	1	0	1	2	2	2	2	2	2	2	2	2	2	2	7	1	2	2
20	Bharani	HW	5	12	TV	A	7000	B	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2
21	Prayaska	HW	4	10	WM	A	15000	B	2	1	0	2	2	2	2	2	2	2	2	2	2	2	12	1	2	2	2
24	Ravitha	HW	4	10	WM	A	10000	A	2	1	0	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2







## ANNEXURE XI

### Descriptive Study On The Prevalence Of Antenatal Depression In a Rural Area in Tamilnadu

#### Patient Consent Form In Tamil

சுய ஒப்புதல் படிவம்

ஆய்வு செய்யப்படும் தலைப்பு :

பங்கு பெறுபவரின் பெயர்:

பங்கு பெறுபவரின் வயது:

பங்கு பெறுபவரின் எண் :

பங்கு பெறுபவர் இதனை (✓) குறிக்கவும்  
மேலே குறிப்பட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது.  
என்னுடைய சந்தேகங்களை கேட்கவும், அதற்கான விளக்கங்களை பெறவும்  
வாய்ப்பளிக்கப்பட்டுள்ளது என அறிந்து கொண்டேன்.

நான் இவ்வாய்வில் தன்னிசையாக தான் பங்கேற்கிறேன். எந்த  
காரணத்தினாலோ எந்த சட்டசிக்கலுக்கும் உட்படாமல் நான்  
இவ்வாய்வில் இருந்து விலகி கொள்ளலாம் என்றும் அறிந்து கொண்டேன்.

இந்த ஆய்வு சம்பந்தமாகவோ , இதை சார்ந்து மேலும் ஆய்வு மேற்கொள்ளும்  
போதும் இந்த ஆய்வில் பங்கு பெறும் மருத்துவர் என்னுடைய மருத்துவ  
அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என  
அறிந்து கொள்கிறேன்.

இந்த ஆய்வின் மூலம் சிடைக்கும் தகவலையோ , முடிவையோ பயன்படுத்திக்  
கொள்ள மறுக்கமாட்டேன்.

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக் கொள்கிறேன். இந்த ஆய்வை  
மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன்  
என்றும் உறுதியளிக்கிறேன்.

பங்கேற்பவரின் கையொப்பம் : \_\_\_\_\_ இடம் \_\_\_\_\_ தேதி \_\_\_\_\_

பங்கேற்பவரின் பெயர் மற்றும் விலாசம்:

சாட்சியாளரின் கையொப்பம் : \_\_\_\_\_ இடம் \_\_\_\_\_ தேதி \_\_\_\_\_

சாட்சியாளரின் பெயர் மற்றும் விலாசம்:

ஆய்வாளரின் கையொப்பம் : \_\_\_\_\_ இடம் \_\_\_\_\_ தேதி \_\_\_\_\_

ஆய்வாளரின் பெயர் : \_\_\_\_\_