PSYCHOSOCIAL PREDICTIVE AND PROTECTIVE FACTORS FOR DEPRESSION IN PREGNANCY AND POSTPARTUM PERIOD

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PSYCHIATRY

GOVERNMENT STANLEY MEDICAL COLLEGE & HOSPITAL

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THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI, TAMILNADU

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CERTIFICATE

This is to certify that this dissertation entitled **"PSYCHOSOCIAL PREDICTIVE AND PROTECTIVE FACTORS FOR DEPRESSION IN PREGNANCY AND POSTPARTUM PERIOD"** submitted by **Dr. BHARATHI. P.** to the faculty of PSYCHIATRY, The Tamil Nadu Dr. M.G.R. Medical University, Chennai, in partial fulfilment of the requirement in the award of degree of M.D. Branch - XVIII (PSYCHIATRY), for the April 2013 examination is a bonafide research work carried out by her during the period of June 2012 to November 2012 at Government Stanley Medical College and Hospital, Chennai, under our direct supervision and guidance of **Prof**. **Dr. G.S.CHANDRALEKA**, Professor and Head, Department of Psychiatry at Stanley Medical College, Chennai.

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This is to certify that the dissertation presented herein **"PSYCHOSOCIAL PREDICTIVE AND PROTECTIVE FACTORS FOR DEPRESSION IN PREGNANCY AND POSTPARTUM PERIOD",** by **Dr. BHARATHI. P.,** is an original work done in the Department of Psychiatry, Government Stanley Medical College and Hospital, Chennai in partial fulfilment of regulations of the Tamilnadu Dr. M.G.R. Medical University for the award of degree of M.D. (PSYCHIATRY) Branch XVIII, under my supervision during the academic period 2010-2013.

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DECLARATION

I, **Dr. BHARATHI. P.**, Solemnly declare that the dissertation **"PSYCHOSOCIAL PREDICTIVE AND PROTECTIVE FACTORS FOR DEPRESSION IN PREGNANCY AND POSTPARTUM PERIOD",** is a bonafide work done by me during the period of June 2012 to November 2012 at Government Stanley Medical College and Hospital, under the expert supervision of **Prof. Dr. G.S. CHANDRALEKA, M.D, D.P.M.,** Professor and Head of Department of Psychiatry, Government Stanley Medical College, Chennai.

This thesis is submitted to The Tamil Nadu Dr. M.G.R. Medical University in partial fulfilment of the rules and regulations for the M.D. degree examinations in Psychiatry to be held in April 2013.

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CONTENTS

Psycho-social Predictive and Protective factors for Depression in Pregnancy and Post partum period

Introduction:

Women's mental health during pregnancy and postpartum period is a public health priority due to its impact on both maternal and child health. Antenatal and postpartum period are characterized by multiple changes in physical, hormonal, psychic and social milieu which have a direct effect on their mental health. Consequently this period is considered as high risk times for the onset of psychiatric illness or exacerbation of preexisting psychiatric illness.[1]

The interplay of factors like family type, economic state, education, marital relationship, social support, culture regulate the intensity of these mental health alterations in pregnancy and postpartum period.

Pregnancy either induces or worsens(exacerbates) pre-existing stress. This in turn has a negative impact on pregnancy. Sustained stress can activate the Hypothalamo-Pituitary axis and further compromise the maternal and fetal health.

Depression is the most prevalent mental disorder in pregnancy and postpartum period[2].Although pregnancy is considered a time of emotional well-being, there have been studies to describe rates of depression around 20% in developing countries,10-15% in developed countries. Depression whether in pregnancy or postpartum is categorized by the same criteria as in DSM-4 TR as for any depressive episode in the general population. Depression with postpartum onset is only used as a specifier carrying additional information regarding the onset. It can be due to major depressive disorder or bipolar disorder.

In about one third of depressed pregnant females, current episode represents the first episode of major depression. While women with previous diagnosis of depression maintained on antidepressant medication happen to be at an especially increased risk for relapse during pregnancy or postpartum.

Frequently, depression during pregnancy can remain undetected. Distinguishing symptoms of depression from normal responses to stressful experiences of pregnancy can be difficult. Such difficult -to - distinguish symptoms include insomnia or hypersomnia, significant decrease or increase in appetite, moderate to severe anxiety, somatic

complaints, low energy, etc. Clinical features confirming the diagnosis of major depression include anhedonia, feelings of guilt, poor self-esteem, worthlessness, hopelessness and suicidal thoughts. However, risk of self –injurious or suicidal behaviour appears to be low in antenatal depression.[6,7]

Antenatal depression is a non –psychotic depressive episode arising anytime during pregnancy. Antenatal depression significantly contributes to the psychiatric morbidity during pregnancy and adverse obstetric and neonatal outcomes[3,4]. It is also identified as a serious risk factor for postpartum depression. Undiagnosed antenatal depression, in the long term can disrupt maternal-child relationship and family functioning[5].Important reasons for antenatal depression remaining undiagnosed ,untreated or undertreated are social stigma, embarrasement to disclose low mood at a period of family rejoice by women, failure to integrate questions regarding psychiatric symptoms and previous treatment into the obstetric history, incomplete or lack of definitive treatment due to associated potential risks with fetal exposure to psychotropic drugs.

Postpartum is considered the period of increased physical and emotional demands and a time of risk for the development of

depressive symptoms. Postpartum depression falls along a continuum of mood disturbances with milder forms diagnosed as postpartum blues, severe episodes as postpartum psychosis. The prevalence of postpartum depression is described as falling between 10% and 15%.[8,9] In postpartum depression symptoms persists beyond two weeks ,of mild to moderate severity and causing functional impairment and indistinguishable from characteristics of MDD that occur at other times in a woman's life. Risk factors for postpartum depression are antenatal depression, anxiety features during pregnancy and history of depression previously. Depression during this period can impact negatively on a wide range of outcomes like maternal deaths due to suicide[10], maternal-infant relationship[11], child psychological development[12], infant nutrition and growth of the child[14].

Above all women with postpartum depression are at significant risk with high rates of recurrence; as high as 50% in future pregnancies[15].Sequelae of untreated mood symptoms can lead to chronic depression or recurrence with greater severity. However medical causes for mood disturbances like thyroid dysfunction and anaemia needs to be excluded prior to initiation of psychiatric treatment. Hence in these women a thorough history, physical

examination and lab investigations pave way for confirming the diagnosis of depression in postpartum period.

Since the last decade there has been a shift from the narrow concept of postpartum depression to detailed evaluation of the spectrum of depressive symptoms arising in pregnancy in women.

There are very few studies examining how antenatal depression and postpartum depression vary with respect to the demographic and psychosocial characteristics. Analysis and comparison of the correlation factors of depression during and after pregnancy will throw more light than exclusively focusing on postpartum depression. So we have decided to investigate the psycho-social and demographic factors as to evaluate their predictive and protective effects on depression in pregnancy and postpartum in a tertiary care obstetric setting.

REVIEW OF LITERATURE

In 2005, prevalence study by Gavin et al on psychiatric morbidity in developed countries showed 18% of women having depressed mood during antenatal period using structured clinical interview for diagnosis and 13% fulfilled the DSM-4 diagnostic criteria for a major depressive episode[18].

According to a prospective study by Kendel et al, depression during pregnancy was rated to be 10% approximately.[78]

In a cohort study by Najman and colleagues involving 8556 pregnant women, depression rates were highest during pregnancy and at five year follow up and lower during the postpartum period[16].

Bennett et al' study assessing for depression starting from second trimester of pregnancy estimated point prevalence of depression to be 12.8% in second trimester, 12% in third trimester;(2004)[2].

Among developing countries a study by Imran et al, 2009 from Pakistan using EPDS found 42.7% of the pregnant women(n=213) with antenatal depression[27]

Gausia et al, 2009 from Bangladesh in a similar study, consisting of 361 pregnant women assessed using EPDS, the prevalence of antenatal depression as 33%. In this study, 14% of the women having antenatal depression, harboured suicidal thoughts during pregnancy[28].

The follow up study done on 349 women during their prenatal and postnatal period for depression revealed adolescent behavioural and emotional problems in both genders, Marie Korhonen, (2011)[82].

A study to measure the predictive value of risk factors in the three possible outcome measures as depression during pregnancy, postpartum and parenting stress was carried out by Milgrom et al[83]. Antenatal depression was predicted by factors like antenatal anxiety, low social support, negative cognitive style, major life events, low income and history of abuse, low self-esteem. For postnatal depression predictive factors were antenatal depression and concurrent parenting stress.In this study antenatal depression was considered as a conduit between stressful life events and later postpartum depression.

A large sample(10,967) for a longitudinal study by Jonathen Evans to assess the evidence for low birth weight in babies born to antenatal depressed patients, showed there was little evidence of an

independent association between depressive symptoms during pregnancy and birth weight.[84]

Among previous researches on depression in pregnant women and possible causes, study by O'Hara et al revealed discontinuation of antidepressants as one of the causes in known patients with depression[8,24].According to a study by Cohen et al relapse rates during pregnancy following discontinuation of antidepressants was 75%, approximately.[80]

Another study by Newport et al pointed that one third of pregnant patients with depression had their first episode of major depressive disorder during pregnancy.[79]

Murray et al, 2000 studied the effect of antenatal depression on mother-infant interaction and later occurrence of postnatal depression[20].

Misri et al studied the effect of antenatal depression or anxiety on postpartum parenting stress. The study revealed the direct impact of depression in pregnancy on parenting stress[75].

Previous studies by Rahman et al, 2004 and Patel et al, 2003 had shown associations between depression in pregnancy and poor infant outcomes in the form of low birth weight, preterm delivery or both[21,22].

Women with undetected depression can cause risks to themselves in the form of self injurious behaviour, suicides, inadequate self-care, poor compliance for obstetric care as reported by Pearson[81].

A study by Kazi et al, 2009 from Pakistan found depression during pregnancy to influence social and personal adjustment, marital relationship.[34]

In 2006, the United States population study by Rich-Edwards et al on 1662 pregnant women investigated for antenatal depression using EPDS during mid pregnancy and found the prevalence of depression during pregnancy to be 9%. The same study also found out that the strongest predictor of antenatal depression was a past history of depression[19].

A qualitative study in England (N=24) by Furber et al found motherhood related adjustment problems, sense of loss due to curtailment of social activities, past history of fetal loss, history of

distress in pregnancy and current concerns about pregnancy as primary risk factors for depressive symptoms during pregnancy[17] .

A Nigerian study found single polygamous mothers with previous history of still birth and perceived lack of social support as factors closely associated with antenatal depression .This study also showed 42% prevalence of significant depressive symptoms in peri-urban pregnant women during their third trimester in Nigeria and 8% prevalence for depressive disorder.[29]

Studies from sub-Saharan African clinical settings showed several psychosocial predictors associated with antenatal depression. Of which conflicts in marital milieu, inadequate social support and single motherhood were common causes[29,30].

The Australian study (n=421) tested the protective factors associated with antenatal distress. This study revealed social support and self confidence as protecting females from suffering distress.[35] Among developing countries the Jamaican study involving 452 pregnant women with similar methodology replicated the same findings on protective factors.[36]

According to a prospective study on 192 financially impoverished, inner city pregnant women by Hobfoll et al, during assessment for clinical depression twice during pregnancy and once in postpartum period revealed antenatal depression as a weak but significant risk factor for postpartum depression. The prevalence of depression during second and third trimester was found to be 27.6% and 24.5% respectively. Postpartum depression was found in 23.4% of the women.[31]

Metaanalysis of the Agency for Healthcare Research and Quality estimated that the prevalence of major or minor depression in pregnancy ranging from 8.5% to 10% .While, in the first postpartum year it ranged from 6.5%-12.9% as found in a study by Gayens et al, 2005[23].

Studies by Josefesson et al, 2001 found rates of antenatal depression higher or comparable to rates in the postnatal period when assessed using screening [32] or diagnostic interviews[33]

According to studies by Evans et al,2001 and Anderson et al,2006,depression symptoms were found to be more common and

severe during pregnancy than in the post natal period. Same findings were concurred by a study in 2010 by Banti et al, 2010[24,25,26].

Kitamura et al, 2006 using diagnostic interviews assessed rates of depression in pregnancy and postpartum period and revealed postnatal depressive episodes as a continuation of depression from the antenatal period in about a third of the women[33].

Study by Felice et al,2004 reported a rate of 8.7% for postpartum depression , 3.9% as incidental- beginning during the postnatal period. The other 4.8% represented cases that had started in gestational period or before[37]

Existing studies estimate the prevalence of postpartum depression to be 12%-16% among women. Among developed countries, a Swedish study (2007) with sample size of 1580 reported the point prevalence of depression using EPDS to be 12.5% at eight weeks and 8.3% at twelve weeks postpartum. The period prevalence for eight to twelve weeks postpartum was 4.5%[39]

An Australian study (n=12,361) revealed 7.5% of the women having a high likelihood of depression between six and eight weeks postpartum[40]

A review of literature done by Klainin and Arthur in 2009 from 17 Asian countries found prevalence of postpartum depression ranging from 3.5%-63.3%[41]

An international study exploring levels of postpartum depressive symptomatology done in 11 centers showed depression was most frequent in countries like Taiwan(61%), Guyana(57%), India(32%), Korea(36%). Predominant causes being previous and family history of depression, life events and disturbed relationships[42].

There were studies displaying unique associations with respect to psychosocial and obstetric factors in postnatal depressed women. In Turkey, a study by Gurel reported grand multiparity to be increasingly associated with depression[43]; In Hong Kong study, postnatal depression was associated with mother's disappointment with the sex of the child[44]; Immigration as a factor leading to depression in a study from Israel[45].

In a Moroccan study(n=100) by Alami et al,(2009) 17% of the mothers reported depression on MINI International Neuro Psychiatric Interview and EPDS[46].

In India, studies by Patel et al,2002[47] using EPDS, Chandran et al, 2002[48] using CIS-R and Savarimuthu et al,2010[49] using EPDS revealed estimated prevalence of postpartum depression in the range of 11%-26.3%. Patel et al showed high rates of postpartum depression compared to antenatal depression, while other studies showed antenatal depression with higher rates than postpartum depression. In 1982,Gautam et al's study revealed during analysis of 100 post partum women,14% experienced brief depressive reaction ,5% suffered depressive psychosis.[87]

A meta analysis by O'Hara and Swain revealed the nature of assessment, ie, using larger samples with self-report measures and length of postpartum period taken under study were influencing the prevalence rates. This study mirrored the same risk factors ,namely past psychological illnesses, family history of mental illness, marital problems as reported in other studies in postpartum depression.[86]

A Danish study involving 5252 women revealed 5.5% of women as depressed at 4 months postpartum, and identified following as main risk factors for PND-previous history of psychiatric illness, high parity, prepartum psychological distress, social isolation[72].

According to the study by Oppo, Mauri et al, risk factors for postpartum depression using Postpartum depression predictors inventory- revised studied during third and eight months of pregnancy and first month after delivery. This scale evaluated prenatal risk factors for postpartum depression. This study also revealed history of depression prior to pregnancy, prenatal depression, prenatal anxiety, childcare stress, lack of social support as strong predictors of postpartum depression[38].

According to Misri et al,2000, the involvement of babies fathers had a positive effect; the impact of partners support in early postpartum period conferred protection against a depressive episode both in mothers and fathers[50].

A prospective study by Hamdan et al,2010(n=137) using BDI,BAI, stressful life events inventory and measure of religiosity, breastfeeding, employment status after delivery assessed risk and protective factors in postpartum depression in UAE women. Depression was screened using EPDS and MINI was used as a diagnostic scale. 10% of the 137 women in the study had postpartum depression. The predictive factors were depression during pregnancy in both the second and third trimesters, number of children, religion and

use of formula feeds. Variables of borderline significance were mother's education, lack of breastfeeding, personal stressful life events and post delivery employment status[51].

In India a prospective study by Mamta sood et al, at a service hospital on 84 consecutive females attending outpatient department during their third trimester of pregnancy and again during early postpartum period and at four to eight weeks postpartum. Depression measured using Beck measuring inventory revealed prevalence of depression in third trimester to be 8.3%. , 10 to 20% during early postpartum period and 12.8% at late postpartum period. Incidence was 16% and 10% in the early and late postpartum period respectively. This study also showed significant correlation in pregnancy with depression in early postpartum period but not with late postpartum depression. Early postpartum depression correlated with late postpartum depression[52].

Using a new UK Interview measure the Contextual Assessment of the Maternity Experience (CAME) and SCID, major risk factors for depression during pregnancy and postpartum was done by Bernazzani et al, involving ten study sites. This was a cross-cultural research study showing significant association between severe adversity and onset of

perinatal depression. Risk factors of poor prenatal quality of partner relationship contributed to three times higher risk for antenatal depression. Poor quality of other significant relationship was associated more with antenatal depression than postnatal[53].

A consecutive sample of 357 Chinese antenatal women attending an obstetric clinic in Hong Kong were assessed for psychosocial risk factors and psychiatric morbidity using hospital anxiety and depression scale longitudinally at four stages of pregnancy-first, second and third trimesters and six weeks postpartum. In this study past history of substance use, younger age 18 and below and parity were significant factors. 37.1% of women had antenatal depression[54].

A study by Lee and Chung on the Chinese population (n=959) in HongKong investigated the socio-cultural risk factors of postnatal depression using ethnographically informed epidemiological methods. Predictive factors of PND were independently identified as marital dissatisfaction, conflict with mother-in-law, past depression and antenatal depression. Cultural practice of mandatory family support in the postpartum period was identified as a protective factor in the chinese population[70].

Study by B. Figueiredo et al (2007) comparing depression during pregnancy and postpartum in adolescent and adult Portuguese women using EPDS showed adolescent women(age less than 18 years) at high risk for depression during both times(n=108) [55].

Same findings were replicated in studies by Quin Livan and Condon,2005 and another Brazilian study by Freitas and Botega,2002 stating high rates of depression (20.8%) and suicidal ideations in 16.7% of the depressed adolescent pregnant women[56,57].

There are many studies that consider poverty as a risk factor for postnatal depression. Community based studies in rural India conducted by Chandran et al,2002, identified low income as a significant risk factor for the onset of postnatal depression in multivariate analysis. This study was useful to plan policy interventions when poverty is considered a predictor of postnatal depression[48].

The predictive role played by socio economic and demographic factors in antenatal and postpartum depression is a debatable issue according to the study by Rich-Edwards ,Kleinman et al.A report from impoverished areas conducted by 13-18 others show depression rates

as high as 25% during pregnancy and 20% or more during postpartum period[19,73,74].

A Systematic review of previous studies on antenatal depression and postnatal depression , between 2005 and 2009 involving developed and developing countries showed the Edinburgh postpartum Depression scale as the most commonly used scale.[19,25,27,28,71].

The Edinburgh postpartum Depression scale has been validated to measure depression during pregnancy also[59,60]. In 2005,the Tamil version of the EPDS was validated by Benjamin et al, by its use as a screening instrument to identify depression in postpartum period.

Studies by Agoub and Alami from Morocco used the EPDS and MINI international Neuropsychiatric interview for diagnosis of depression in the postpartum period[46].

Studies on postpartum depression showed the EPDS as the most commonly used scale[71].The EPDS was used by Massoudi , 2007 in the Swedish study, showing PND in 12.5% and 8.3% of delivered women at 8 and 12 weeks respectively. In the Indian study by Patel et al, postpartum depression at 6-8 weeks was 23%. Savarimuthu et al in 2010 showed postpartum depression in 26.3% of women using the

EPDS[49].Postpartum studies from 18 other countries including Thailand, Morocco, Nepal, Indonesia, Brazil administered the EPDS.

According to Gibson et al (2009), there was heterogeneity of prevalence rates due to differences in the study methodology, language of administration of the EPDS and diagnostic criteria used[64].

AIMS AND OBJECTIVES

AIM :

To study the psycho-social predictive and protective factors for depression in antenatal and post partum period.

OBJECTIVES:

1. To compare psycho-social, obstetric and demographic profiles in women with antenatal and post partum depression.

2. To analyse the factors that are predictive or protective in antenatal and postpartum depression.

3. To assess the implication of stressful life events in the development of depression in antenatal and postpartum women.

HYPOTHESIS:

1. Psychosocial factors are the same for antenatal depression and postpartum depression.

2. Psychosocial factors are different for antenatal depression and postpartum depression.

3. Postpartum depression is the continuation of antenatal depression.

4. Antenatal depression and postpartum depression are different.

5. The influence of obstetric factors on Antenatal depression and postpartum depression is the same.

MATERIALS AND METHODS

STUDY SETTING:

The study was carried out at the Department of Obstetrics and Gynaecology at Govt. Raja Sir Ramasamy Mudaliar Hospital, Chennai. This is a tertiary care hospital serving the maternity needs of women from north Chennai and surrounding areas.

STUDY PERIOD:

The study was carried out over an eight month period, February 2012 to October 2012.

STUDY SAMPLE

All pregnant women presenting for antenatal check-up at five months of their pregnancy(2 TM) were the potentially eligible persons for the study. Following their antenatal examination, in the first phase of recruitment, along with the obstetrician we explained the aims of the study and asked women if they were willing to participate. Women who agreed to take part accepted by signing a consent form. They were contacted by a phone call from us to schedule the baseline assessment.

DESIGN OF STUDY

The present study was a Prospective study done during women's antenatal and postpartum period starting from 5months to 6 weeks postpartum. Pregnant women were interviewed twice each during their antenatal and postpartum phases.

Inclusion criteria:

1. To be included in the study, women had to be at their five months (20 weeks) of pregnancy, as confirmed in the antenatal records; willing to sign an informed consent and available to be contacted by phone.

2. Patients must also be willing for follow up interview at 9^{th} month, 14 days of delivery and 6 weeks postpartum.

3. Primi and multi- parous women.

Exclusion criteria:

1. Women not planning delivery at the hospital where study is undertaken.

2. Women and caregiver not desiring to take part in the interview.

The Ethics Committee of the College approved the study protocol and assessment procedures.

Procedure and timing of assessment:

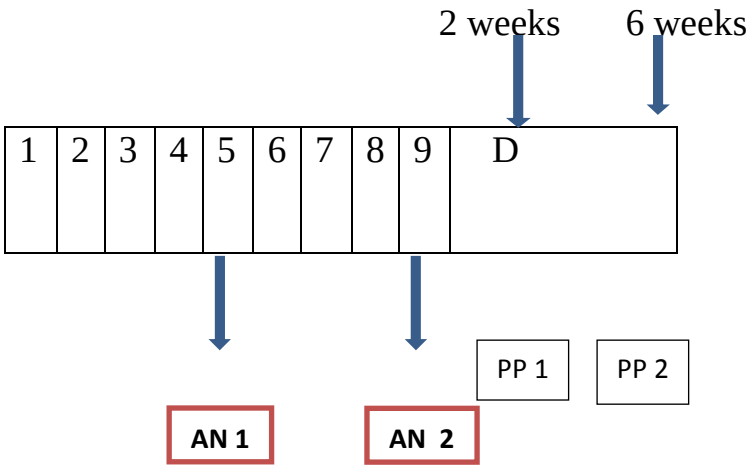
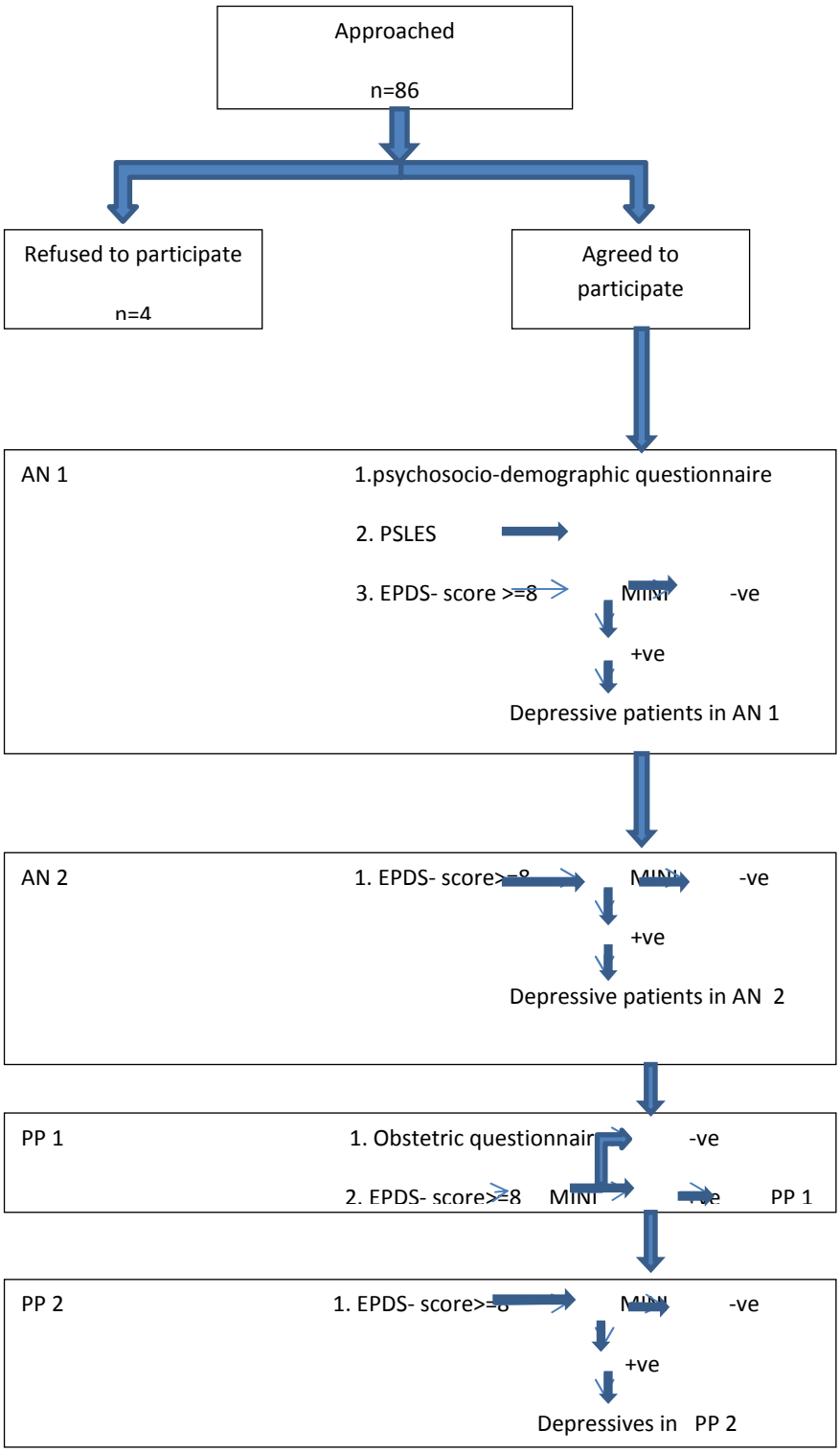


Figure above describes the timing of first antenatal assessment at 5months during which, all women consenting for study are given questionnaire for demographic and psychosocial details, the Presumptive stressful life events scale.

All women during the 4 visits were given the self report version of the Edinburgh Postnatal depression scale (Tamil version) as a screening tool. Both administration of EPDS and psychiatric interview was performed during the same day for each woman. When the EPDS score was greater than or equal to 10, the MINI International Neuropsychiatry Interview for depression module administered to determine whether the subject met DSM 4 diagnostic criteria for depression.

MINI identified true depressives (16 of the 82)in this sample.These patients were compared for the variables with the other group of non-depressives(n=66).


Approached
n=86
Refused to participate
n=4
Agreed to participate
AN 1
1.psychosocio-demographic questionnaire
2. PSLES
3. EPDS- score >=8
MINI
-ve
+ve
Depressive patients in AN 1
AN 2
1. EPDS- score>=8
MINI
-ve
+ve
Depressive patients in AN 2
PP 1
1. Obstetric questionnair
-ve
2. EPDS- score>=8
MINI
+ve
PP 1
PP 2
1. EPDS- score>=8
MINI
-ve
+ve
Depressives in PP 2

TOOLS:

ASSESSMENT FOR PREDICTIVE AND PROTECTIVE FACTORS:

We constructed a semi structured questionnaire for the assessment of predictive (risk factors) and protective factors for AN and PP depression based on previously reported risk factors and factors identified as being of putative significance for our setting and type of study.

This questionnaire was administered to all our participants during the first visit at 5 months; Details regarding current obstetric outcome was added in the 1 PN visit at 14 days after delivery.

The AN questionnaire covered the following areas:

1. Demographic details- Mother's age, education, employment status

   Spouse's age, education and occupation.

   Family whether nuclear or joint.

2. Psychosocial details- Marital status, marital relationship, separations if any, duration of Separation.

   Financial debt

   Substance abuse- spouse

3. Presumptive stressful life events scale

4. Social support care given by parents, husband or both.

5. Previous history- medical illness, psychiatric illness- treatment and hospitalization.

6. Family history of psychiatric illness.

   Family history of suicides; if present seen in 1 degree/2 degree/3 degree.

7. Previous obstetric history- number of living children, previous child male/ female or both, presence of bad obstetric history, if so which trimester loss (1/2/3), Infertility, duration.

8. Current obstetric details- parity, planned or unplanned pregnancy, high risk or normal.

Postnatal questionnaire

- Delivery mode
- Sex of newborn
- Weight of newborn
- Neonatal problems
- Postpartum complications
- Breastfeeding pattern

EPDS

The EPDS is an internationally well established and validated 10 item scale for the screening of depression in pregnancy and postpartum period[58], designed by Cox et al,1987. This self rating scale assesses mental state during the previous 7 days.Each item is scored on a 4 point scale (0-3) with minimum score being 0 and maximum score of 30.

This scale has also been validated to measure depression during pregnancy(Ortega et al,2001, Murray and Cox 1990)[59,60]. In 2005 validation of the Tamil version of EPDS by Benjamin D et al, as a screening instrument to identify depression in postpartum period[61]. The optimum threshold for screening was 8 to 9 as it showed sensitivity of 94% and a specificity of 90.2%. This scale has been validated in other Indian languages like Konkani (Patel et al,2002)[47], Assamese (Kalita et al,2008)[62], Gujarati (Nimisha et al,2011)[63] and Tamil (Benjamin et al,2005)[61].EPDS focuses on the cognitive and affective parameters of depression rather than the somatic symptoms which are common in pregnancy and postpartum period. The EPDS ranks as an effective instrument since it avoids misinterpreting biological symptoms that may be mistaken for normal physiological responses[77].

MINI

The MINI International Neuro Psychiatric Interview is one of the standardized diagnostic interview used frequently based on DSM 4 criteria. It had 26 modules designed to generate diagnosis for the major axis 1 psychiatric disorders in DSM 4 and ICD-10. This scale has been used extensively in field research in India and found to have good inter-rater and test-retest reliability[65,66]. It is fully structured to allow administration by non specialised interviewers. There are one or two screening questions in the beginning to rule out the diagnosis when answered negatively. The reliability, sensitivity and specificity have been investigated in clinical studies against or versus the Composite International Diagnostic Interview (CIDI) [68]; versus the structured clinical interview for DSM-4 SCID[67]. In all these studies MINI was found to be a validated diagnostic scale.

Presumptive stressful life events scale (PSLES)

This scale measured 51 life events relevant to the Indian study over the past one year and lifetime of the individual. These events were differentiated as desirable(10 items), undesirable(31 items) and ambiguous(10 items). The PSLES has been standardized in Indian population[69]. Based on the original scale, the authors reported that an adult person in India was likely to experience on an average two stressful events in the past year and ten events in a lifetime without suffering any physical or psychological events. The least score of 20 was assigned for a planned trip or pilgrimage and highest score of 95 for death of spouse.

STATISTICAL ANALYSES:

Data entry for the sample (n=82) done into a Microsoft Excel sheet, and then transferred to SPSS-21 version .This software was useful for data management and analyses. Descriptive analyses were carried out for the categorical variables(age, PSLES scores, EPDS scale scores) by calculating the number and frequency percent. The continuous variables were calculated for mean and standard deviation. The risk and protective factors for depression in pregnancy and postpartum(confirmed by MINI scale, depressives Vs non-depressives) were identified for their significance using chi square tests, Students t test for continuous variables, Pearson's correlation co-efficient for continuous variables as required .A p value of 0.05 or less was considered statistically significant.

RESULTS:

Approximately 86 antenatal women were recruited during their antenatal visit at 5 months of pregnancy. Of which 82 women showed their willingness to take part in the study and for interviews during 4 different visits.While,4 of the 86 pregnant women declined to take part as they were not willing for the follow up. All the 82 women were interviewed during their antenatal visits at 5 and 9 months of pregnancy(AN1,AN2 respectively) and after prior phone appointments during their visit for postnatal checkups at 2 weeks and 6 weeks postpartum (PP1,PP2 respectively).

Table.1. Frequency distribution

Variables	N	Mean	Median	Std. Deviation	Minimum	Maximum
Age	82	24.13	24	3.887	18	36
Education	82	2.68	2	0.992	1	5
Occupation	82	1.12	1	0.329	1	2
Husband's age	82	28.72	28	4.161	21	41
Education	82	2.54	2	0.984	2	5
Occupation	82	3.21	3	0.698	3	5
PSLES	82	230.15	216	130.673	40	589
EPDS-AN1	82	9.17	9	4.745	0	25
EPDS-AN2 EPDS-PP1	82 82	9.68 9.64	9	4.548	0 0	25 22
EPDS-PP2	82	7.94	7	3.72	1	22

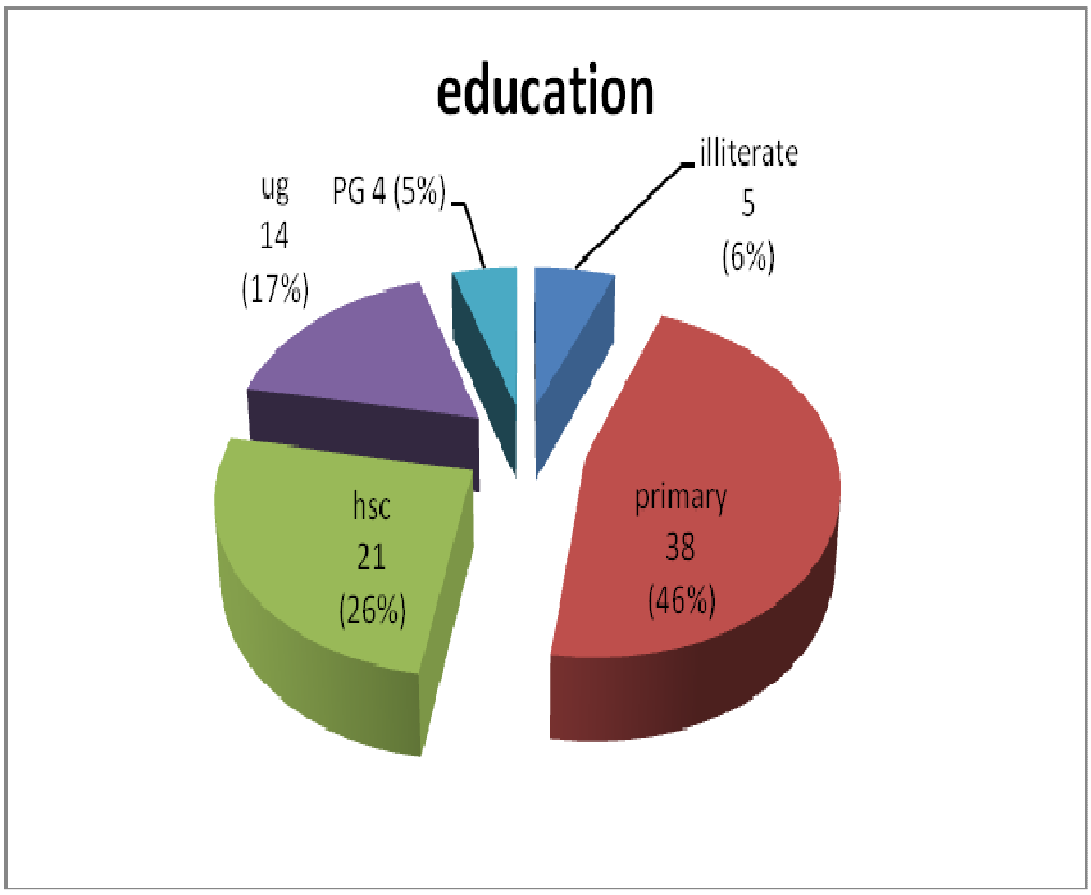
During their first visit, besides administering the questionnaire for demographic, psycho-social factors, the EPDS scales were administered and subjects with scores greater than 10 were given MINI and patients with depression identified. Similarly the EPDS and MINI were used to detect depression during the subsequent three visits.

Consequently, it was found out that 7 of the 82 or 8.5%women had depression in antenatal period; 4 cases in Antenatal visit 1 and 3 during second Antenatal visit at 9 months of pregnancy.In the postpartum, 9 of the 82 were found to show depression(6 in PP1 and 3 in PP2). Depression in Postpartum period was seen in 10.9% of the sample studied. None of the Antenatal depression patients showed depression during their assessment in postpartum period. But 1 patient was found to show depression during PP1 and continued in PP2 also.

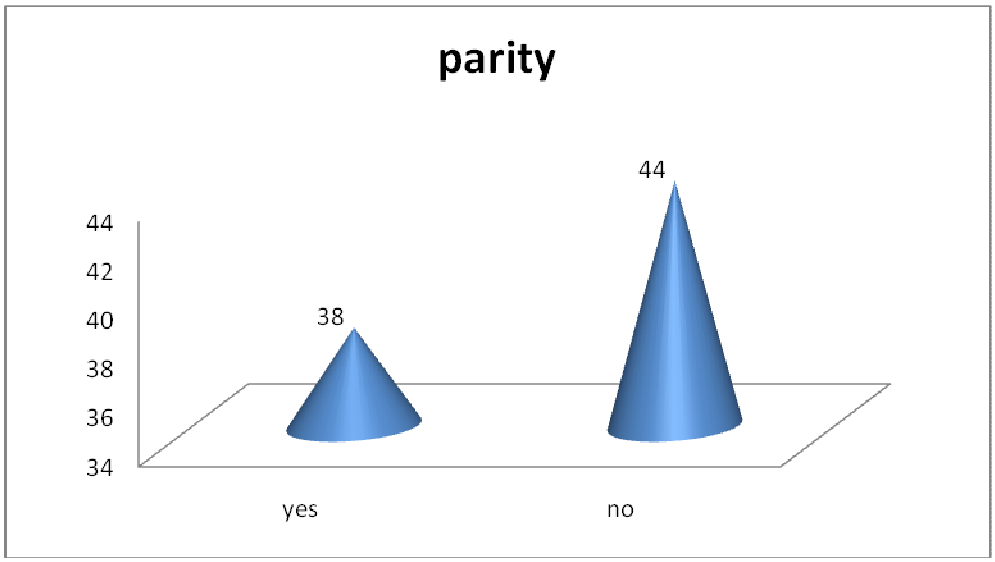
Demographic details of the sample:

Demographic characteristics of the sample as shown in table 1 ,has the mean age of women to be 24.13 (SD=3.887), husband's mean age being 28.72 (SD=4.161);

Majority of the women had primary level of education, 14% were graduates. Of these 82 women, 87% were unemployed, 12.2% employed.



Husband's educational status showed 51% of them with primary level education,58.5% of husband's were skilled labourers,3.7% were professionals. None of the spouses were unemployed in this study sample. 46.3% had financial debts; 54.9% lived as nuclear families;



In this study primi gravida were 38 (46.3%) and multi 44 (53.7%). Majority had access for checkup (95.1%). Above 50% of women delivered by normal delivery; 45% by LSCS.

PSYCHO-SOCIAL VARIABLES:

Psycho-social characteristics of the sample along with other variables were stratified as those with depression during one or more visits as Group-1(n=16) and those without depression during any of the visits as Group-2 (n=66).

Table 1 shows the demographic details of sample n=82.

DEMOGRAPHIC & PSYCHOSOCIAL VARIABLES	**GROUP 1 (n-16)**	**GROUP 2 (n-66)**	**TOTAL (n-82)**	**SIGNIFICANCE**
EDUCATION				
Illiterate	1(6.2%)	4(6.1%)	5(6.1%)	0.052
Primary	10(62.5%)	28(42.4%)	38(46.3%)	
Higher secondary	5(31.2%)	16(24.2%)	21(25.4%)	
Graduate	0	14(21.2%)	34(17.1%)	
Post graduate	0	4(6.1%)	4(4.9%)	
EMPLOYEMENT				
Employed	14(12.5%)	58(87.9%)	10(17.2%)	0.625
Unemployed	2(87.5%)	8(12.1%)	72(87.8%)	

DEMOGRAPHIC & PSYCHOSOCIAL VARIABLES	GROUP 1 (n-16)	GROUP 2 (n-66)	TOTAL (n-82)	SIGNIFICANCE
HUSBAND EDUCATION				
Illiterate	2(12.5%)	6(9.1%)	8(9.8%)	0.464
Primary	9(56.2%)	33(50%)	42(51.2%)	
Higher secondary	2(12.5%)	11(16.7%)	13(15.9%)	
Graduate	3(18.8%)	15(22.7%)	18(22%)	
Post graduate	0	1(1.5%)	1(1.2%)	
HUSBAND EMPLOYEMENT				
Unemployed	0	0	0	0.355
Unskilled	3(18.8%)	7(10.6%)	10(12.2%)	
Skilled	9(56.2%)	39(59.1%)	48(58.5%)	
Self employed	4(25%)	17(25.8%)	21(25.6%)	
Professional	0	3(4.5%)	3(3.7%)	
FAMILY				
Joint	7(43.8%)	30(45.5%)	37(45.1%)	0.564
Nuclear	9(56.2%)	36(54.5%)	45(54.9%)	
FINANCIAL DEBT				
Yes	7(43.8%)	31(47%)	38(46.3%)	0.521
No	9(56.2%)	35(53%)	44(53.7%)	

DEMOGRAPHIC & PSYCHOSOCIAL VARIABLES	GROUP 1 (n-16)	GROUP 2 (n-66)	TOTAL (n-82)	SIGNIFICANCE
MARITAL SEPERATION				
Yes	3(18.8%)	2(3%)	5(6.1%)	0.049
No	13(81.2%)	64(97%)	77(93.9%)	
DURATION OF SEPERATION				
3months	1	0	1	0.021
6months	0	2	2	
12months	1	1	2	

Table showing psycho-social variables in the sample.

Alcoholism in the spouse showed significance in the depressives compared to non depressives by chi square analysis.

ALCOHOLIC SPOUSE	**MINI Positive**	**MINI negative**	**TOTAL**	**SIGNIFICANCE**
Yes	9(56.2%)	10(15.2%)	19(23%)	**0.001**
No	7(43.8%)	56(84.8%)	63(76.8%)	

Table showing alcohol abuse in MINI Positive subjects (p value-0.001).

OBSTETRIC VARIABLES:

Obstetric details of previous infertility, BOH, pregnancy with high risk, booking, parity, planned or unplanned pregnancy, type of delivery, sex of newborn did not show any significance to depressed and non depressed group.

Obstetric details	group-1 n=16	group-2 n=66	Total n=82	Significance
PREVIOUS H/O INFERTILITY				
Yes	6	13	19	0.12
No	10	53	53	
BOH				
a.)Yes	5	11	16	0.165
No	11	55	66	
b.)1st trimester	3	7		0.163
2nd trimester	1	0		
3rd trimester	1	4		
RISK ASSOCIATED				
High risk	8	23	31	0.388
Normal	8	43	51	
BOOKED/UNBOOKED				
Booked	14	63	78(95.1%)	0.26
Unbooked	2	3	4(4.9%)	

ACCESS				
Yes	13	62	75(91.5%)	0.131
No	3	4	7(8.5%)	
PARITY				
Primi	9	29	38	0.272
Multi	7	37	44	
PLANNED				
Yes	13	60	73	0.241
No	3	6	9	
DELIVERY				
LSCS	7	30	37(45.1%)	0.545
Normal	8	35	43(52.4%)	
Instrumental	1	1	2(2.4%)	
SEX OF NEWBORN				
Male	8	38	46	0.809
Female	8	28	36	

Occurrence of neonatal complications did show direction as a risk factor for depression in the study sample.

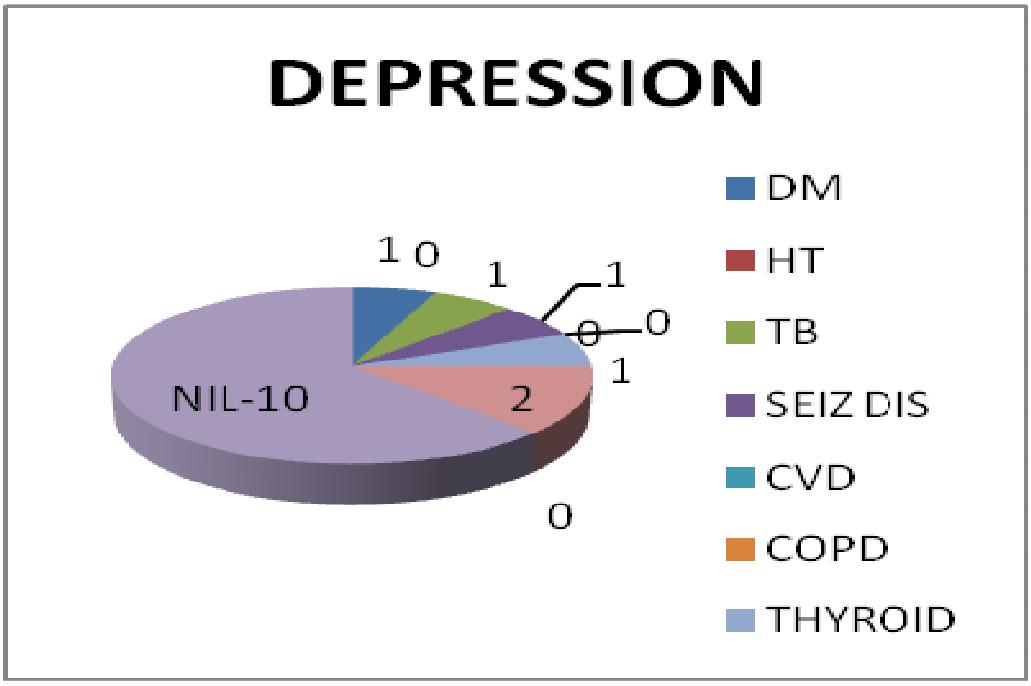
NN PROBLEMS				
Yes	7	13	20	0.050
No	9	53	62	
PP COMPLICATIONS				
Yes	5	14	19	0.292
No	11	52	63	

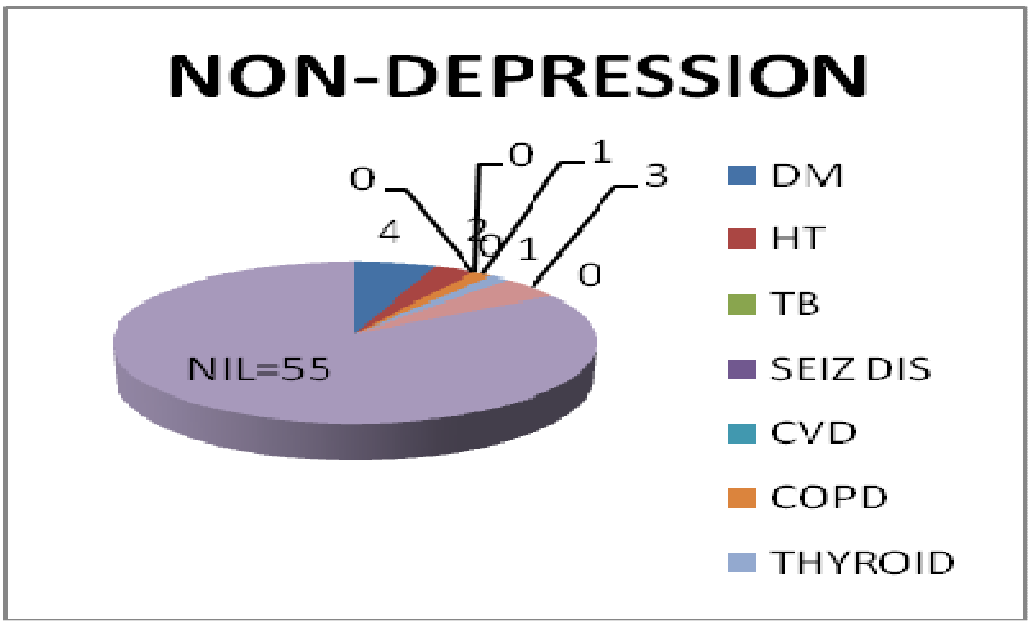
MEDICAL AND PSYCHIATRIC ILLNESSES:

Among the women, history of medical illness did not contribute as a risk factor for depression during comparison between the depression positive and negative women. Among women who were depressed during antenatal period there was one each with history of seizure disorder, thyroid dysfunction and anaemia. Postpartum depressives were one each with the previous history of Diabetes mellitus, treated Koch's infection, anaemia.

Medical and psychiatric illness details	MINI positive n=16	MINI negative n=66	Significance
1-DM	1	4	
2-HT	0	2	
3-TB	1	0	
4-Seizures	1	0	
5-CVD	0	0	0.094
6-COPD	0	1	
7-Thyroid dysfunction	1	1	
8-Anemia	2	3	
9-Drugs	0	0	
10-Nil	10	55	

Figure showing medical illnesses in depressed and non-depressed individuals:





Previous history of psychiatric illness showed significance (p value= o.022) as a risk factor for depression in the sample. Features of depression found in study sample in their past was self-harm and suicide attempt, seen in 3 of 16 depressed women; 1 grief reaction following IUD in a woman falling in the non- depressed group.

Patients with previous psychiatric treatment, though a brief period of less than 3 months and hospitalization for suicidal attempts did show significance as a risk factor for depression using chi-square tests (p value=0.036).

TABLE SHOWING PSYCHIATRIC ILLNESSES IN STUDY SAMPLE

VARIABLE	MINI POSITIVE	MINI NEGATIVE	SIGNIFICANCE
Psychiatric illness			
1-yes	3	1	0.022
2-no	13	65	
Previous psychiatric history			
1-DSH	2	0	0.012
2-Grief	0	1	
3-Suicide	1	0	
History of psychiatric treatment			
1-yes	1	0	0.041
2-no	15	16	
History of psychiatric hospitalization			
1-yes	2	0	0.036
2-no	14	66	

FAMILY HISTORY OF PSYCHIATRIC ILLNESS AND SUICIDE

Family history of psychiatric illness 1-yes 2-no	 4 12	 5 61	 0.045
Relationship 1° 2° 3°	 3 1 0	 4 1 0	 0.050
Family history of suicides Yes No 1° 2° 3°	 4 12 3 0 1	 4 62 1 2 1	 0.043 0.019

Family history of psychiatric illness and the relationship with respect to subjects as 1°/2°/3° relative showed significance as a risk factor for depression (p value=0.045). family history of psychiatric illness, their relationship (p value=0.050), family history of suicide attempted by 1°/2°/3° again showed relevance as a risk factor for depression in pregnancy and post partum.

Lack of any support from husband or other relations was not observed in our sample as all had either the husband or their parents caring and supporting them

CARE GIVER	**MINI POSITIVE**	**MINI NEGATIVE**	**significance**
Parents	6	15	0.351
Husband	1	11	
Both	9	40	

Breastfeeding as a risk factor showed an association with depression (p value=0.036), formula feeds (p value=0.001) and dissatisfaction about breast feeding in women did contribute as a significant risk factor for depression. Correlation analysis showed obstetric factors, neonatal factors and mothers' attitude towards breast feeding to have association with depression.

BREAST FEEDING			
Yes	14	66	0.036
No	2	0	
USE OF FORMULA FEEDS			
Yes	6	2	0.001
No	10	64	
SATISFIED-BF			
Yes	13	64	0.049
No	3	2	

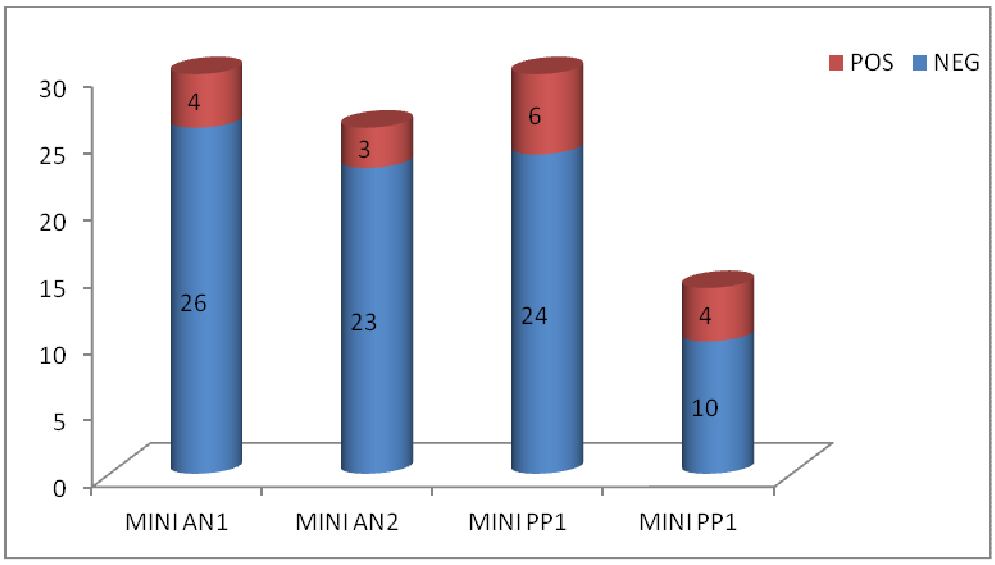
Correlation Analysis for obstetric variables

		PSLES	high risk	check up	access	deliv mode	NN problem	pp compli	breast fed	formula fed
high risk	Correlation Coefficient	-0.112								
	Sig. (2-tailed)	0.318								
	N	82								
check up	Correlation Coefficient	-0.072	-0.119							
	Sig. (2-tailed)	0.521	0.286							
	N	82	82							
access	Correlation Coefficient	0.083	-0.122	**.463****						
	Sig. (2-tailed)	0.459	0.276	**0**						
	N	82	82	82						
Delivery mode	Correlation Coefficient	0.185	0.21	0.021	-0.079					
	Sig. (2-tailed)	0.096	0.059	0.852	0.48					
	N	82	82	82	82					

NN problem	Correlation Coefficient	-0.091	**.260***	-0.09	0.072	0.178				
	Sig. (2-tailed)	0.418	**0.018**	0.423	0.521	0.109				
	N	82	82	82	82	82				
pp complication	Correlation Coefficient	-0.005	**.287****	0.14	-0.039	**.454****	0.159			
	Sig. (2-tailed)	0.961	**0.009**	0.21	0.727	**0**	0.153			
	N	82	82	82	82	82	82			
breast fed	Correlation Coefficient	0.114	0.123	**.286****	**.235***	-0.019	-0.094	-0.101		
	Sig. (2-tailed)	0.31	0.27	**0.009**	**0.034**	0.865	0.399	0.369		
	N	82	82	82	82	82	82	82		
formula fed	Correlation Coefficient	-0.201	0.083	**-.255***	**-.488****	0.119	0.1	**.306****	**-.481****	
	Sig. (2-tailed)	0.071	0.46	**0.021**	**0**	0.286	0.37	**0.005**	**0**	
	N	82	82	82	82	82	82	82	82	
satisf -BF	Correlation Coefficient	0.179	-0.117	0.145	**.287****	0.172	-0.093	**-.222***	**.290****	**-.431****
	Sig. (2-tailed)	0.108	0.297	0.192	**0.009**	0.121	0.408	**0.045**	**0.008**	**0**
	N	82	82	82	82	82	82	82	82	82

Individuals with EPDS above 10, administered the MINI atleast once were 38.Of which 16 were found to be depressed,7 during pregnancy and 9 in the postpartum period.

Table showing subjects with EPDS scores>10 and MINI findings



Comparing the mean PSLES scores in women who were depressed during antenatal (7) period with those depressed during postpartum (9) showed difference relating to high average scores of PSLES scores in antenatal depression patients(mean score of 401.4),while postpartum depressed patients had mean score of 284.

Table showing MINI results in Antenatal and Postpartum depression patients

MINI-AN1	N=16	N=66	
positive	4	0	0.001
negative	12	66	
MINI-AN2			
positive	3	0	0.006
negative	13	66	
MINI-PP1			
positive	6	0	0.000
negative	10	66	
MINI-PP2			
positive	4	0	0.001
negative	12	66	

When the correlation was run with the EPDS scores as a continuous variables, there was significance with the PSLES scores as in AN1,PP1 rating (significance of 0.01,0.014 respectively).

Correlation analysis of PSLES scores with EPDS scores

		PSLES	EPDS AN1	EPDS AN2	EPDS PP1	EPDS PP2
PSLES	Pearson Correlation	1	**.282***	.217	**.285****	.145
	Sig. (2-tailed)		**.010**	.050	**.010**	.194
	N	82	82	82	81	82
EPDS AN1	Pearson Correlation	**.282***	1	**.706****	**.471****	**.447****
	Sig. (2-tailed)	**.010**		**.000**	**.000**	**.000**
	N	82	82	82	81	82
EPDS AN2	Pearson Correlation	.217	**.706****	1	**.513****	**.453****
	Sig. (2-tailed)	.050	**.000**		**.000**	**.000**
	N	82	82	82	81	82
EPDS PP1	Pearson Correlation	**.285****	**.471****	**.513****	1	**.786****
	Sig. (2-tailed)	**.010**	**.000**	**.000**		**.000**
	N	81	81	81	81	81
EPDS PP2	Pearson Correlation	.145	**.447****	**.453****	**.786****	1
	Sig. (2-tailed)	.194	**.000**	**.000**	**.000**	
	N	82	82	82	81	82

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Paired Samples Correlations using EPDS scores in AN and PP

		N	Correlation	Sig.
Pair 1	EPDS AN1 & EPDS AN2	82	.706	.000
Pair 2	EPDS PP1 & EPDS PP2	81	.786	.000
Pair 3	EPDS AN2 & EPDS PP1	81	.513	.000
Pair 4	EPDS AN2 & EPDS PP2	82	.453	.000

Paired t test showed significance with the EPDS scores PP1 and PP2.

To find out the protective factors operating in women who did not develop depression, age of the patient and husband's age, PSLES scores as variables affecting the EPDS scores were assessed. There were 66 women without depression; mean age of women was 24.18(SD-3.794); husband's mean age was 28.53(4.152).Mean score of the PSLES was 204.58.The EPDS mean scores during the 4 visits ranged from 6.90 to 8.70.

DESCRIPTIVE STATISTICS OF NON-DEPRESSIVES

	Mean	Std. Deviation	N
Age	24.18	3.794	66
Husband_age	28.53	4.152	66
PSLES	204.58	110.205	66
EPDS-AN1	7.92	3.876	66
EPDS-AN2	8.70	3.708	66
EPDS-PP1	8.23	3.577	66
EPDS-PP2	6.91	2.516	66

Correlation analysis of variables in non –depressive patients.

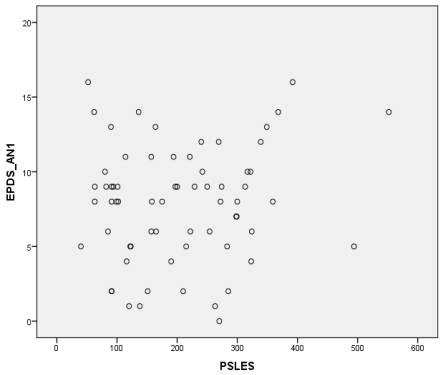
CORRELATION TABLE		age	Husband age	PSLES	EPDS_AN1
Age	Pearson Correlation	1	**.741****	.088	-.031
	Sig. (2-tailed)		**.000**	.484	.802
	N	66	66	66	66
Husband_age	Pearson Correlation	**.741****	1	.043	-.189
	Sig. (2-tailed)	**.000**		.730	.129
	N	66	66	66	66
PSLES	Pearson Correlation	.088	.043	1	.124
	Sig. (2-tailed)	.484	.730		.323
	N	66	66	66	66
EPDS-AN1	Pearson Correlation	-.031	-.189	.124	1
	Sig. (2-tailed)	.802	.129	.323	
	N	66	66	66	66
EPDS-AN2	Pearson Correlation	-.012	-.173	.018	**.731****
	Sig. (2-tailed)	.921	.164	.883	**.000**
	N	66	66	66	66
EPDS-PP1	Pearson Correlation	.018	-.094	-.040	**.453****
	Sig. (2-tailed)	.883	.452	.751	**.000**
	N	66	66	66	66
EPDS-PP2	Pearson Correlation	-.034	-.095	-.016	**.439****
	Sig. (2-tailed)	.788	.446	.900	**.000**
	N	66	66	66	66

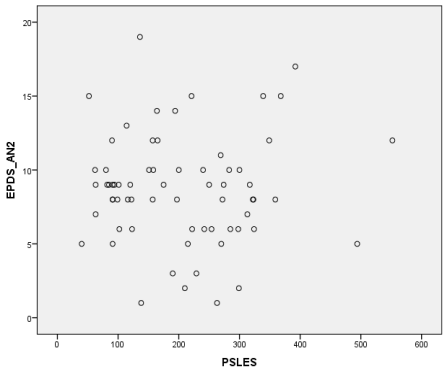
CORRELATION TABLE		EPDS_AN2	EPDS_PP1	EPDS_PP2
age	Pearson Correlation	-.012	.018**	-.034
	Sig. (2-tailed)	.921	.883	.788
	N	66	66	66
Husbnd-age	Pearson Correlation	-.173**	-.094	-.095
	Sig. (2-tailed)	.164	.452	.446
	N	66	66	66
PSLES	Pearson Correlation	.018	-.040	-.016
	Sig. (2-tailed)	.883	.751	.900
	N	66	66	66
EPDS-AN1	Pearson Correlation	.731	.453	.439
	Sig. (2-tailed)	**.000**	**.000**	**.000**
	N	66	66	66
EPDS-AN2	Pearson Correlation	1	.643	.525
	Sig. (2-tailed)		**.000**	**.000**
	N	66	66	66
EPDS-PP1	Pearson Correlation	.643	1	.796
	Sig. (2-tailed)	**.000**		**.000**
	N	66	66	66
EPDS-PP2	Pearson Correlation	.525	.796	1
	Sig. (2-tailed)	**.000**	**.000**	
	N	66	66	66

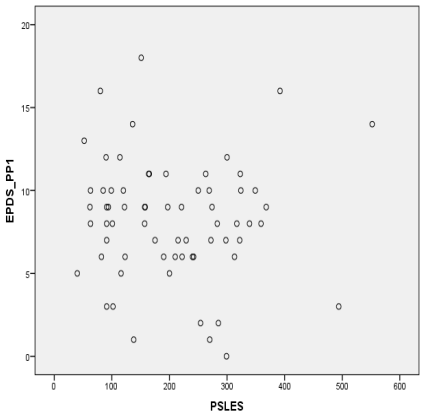
**. Correlation is significant at the 0.01 level (2-tailed).

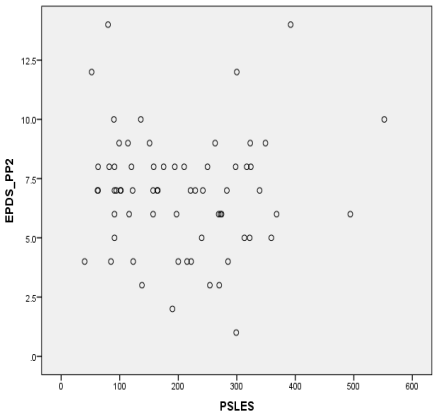
The following scatter plot diagram showed EPDS scores during 4 visits against the PSLES values.

SCATTER PLOT IN NON-DEPRESSIVES









Comparing the variables among the antenatal depression patients and postpartum patients in a descriptive way- individuals demographics did not show any difference.

Similarly among obstetric factors-infertility history preceding present pregnancy was seen frequently in postpartum depression patients.

DISCUSSION

The present study evaluated the psycho-socio demographic factors operating during pregnancy and Postpartum for depression. Previous studies have taken antenatal depression also as a risk factor for postpartum depression. But this study aimed to differentiate the factors which were predictive and protective for depression in both antenatal and postpartum period.

Depression in pregnancy or postpartum is categorically diagnosed based on DSM 4 guidelines. Depression during these two periods can have varied origin, either as first time occurrence or as a relapse of previous depressive disorder.

In this study factors which operate to influence the occurrence of depression in these two periods were studied in the entire sample of 82, both during pregnancy and postpartum; all subjects were assessed four times during the study; twice in pregnancy, (5th month Antenatal-1 and 9^{th} month Antenatal-2, and twice during the Postpartum period (two weeks after delivery Postpartum- 1 and 6 weeks after PostPartum-2,respectively).

The method of using the same subjects as control for the next assessment has been used in many prospective studies. Previous studies had assessed patients earliest from 1st trimester to maximum of 4 years (follow up) in the postpartum period. [52]

This study sample had all 82 women interviewed from 5 months of pregnancy until 6 weeks postpartum. In a similar prospective study by Mamtha Sood from last trimester of pregnancy till six weeks postpartum on 84 subjects, prevalence of depression during pregnancy was 8.3% and 20%in PP1, (one week of delivery), 16%were new cases. In PP2(4-8 weeks of dlivery) 13% were identified to have depression of which 10% were new cases of depression.

Combining both Postpartum1 and Postpartum 2, the prevalence of 10.9% during Postpartum period and 8.53% during Antenatal period found in our study. These findings were similar to other Indian studies which revealed antenatal depression with prevalence of 6-17%[32,58]; estimated prevalence of postpartum depression in the range of 11-26.3%[17,40,41].

Cross-tabulations of the MINI with Psycho-social variables ,the EPDS scores, PSLES are presented in tables 1and 2 for the entire sample stratifying as those with depression (n=16) and those without depression(n=66).The Psycho-social variables correlating with MINI results (P value< 0.05) included marital separation and duration of separation, alcohol abuse in spouse, previous history of psychiatric problems and related treatment and hospitalisation, family history of psychiatric illness and family history of suicides; obstetric variables like neonatal problems, breast feeding, use of formula feeds, satisfaction with breast feeds, EPDS scores, PSLES.

Spouse's alcoholism observed in 9 of 16 was again showing psycho-social factors as contributing for depression when combined (n=16, with p value of 0.002).In the previous study by Chandran and Thrayan et al, depressed postpartum women reported anguish about their husband's alcohol use than in those without depression[48] .

Previous study by Ryan et al, Robertson et al (2004,2005) graded predictors of postpartum depression as strongest for - previous depressive illness, depression in pregnancy ; moderate to severe were life stress ,lack of social support; moderate effect size-psychological

factors and marital problems; Obstetric factors and socio-economic status of small effect size.

In our study, demographic factors did not show any significance with respect to MINI findings. As a risk factor , financial debts also did not show significance in the study group(p value-0.561).Such findings of socio-economic status not typically related to postpartum depresssion have been observed in previous studies by Cutrona et al(1982), O'Hara and Zekoski(1988),Gotlib et al (1989). [31]

Indian study by Chandran et al, 2002 identified risk factors like low income, low level of education, female gender of new born, as a significant risk factor for onset of post partum depression. But in our study there were just two women of the non-depressed group who were upset about the female gender of the newborn. Poverty as a risk factor for depression needs further research at different levels to devise effective, broad scale policy interventions.

As our study has a 2 two stage assessment for depression, we used above 10 as cut off score, thinking as the more false positives (by EPDS with cutoff >10) could be detected as true depressives using the other inventory(MINI) and avoiding false negatives. One reason for

having more false positives was, EPDS measured the symptoms in last one week while MINI captured depression in pregnancy and Postpartum based on the DSM 4 duration criteria of 2 weeks.

Two interviews were taken up during antenatal period at 5 months of pregnancy and 9 months of pregnancy to see if depressive features were consistent in both the phases of pregnancy or if extending from antenatal to post partum period.

In our study 7 cases presented with MINI positive in antenatal period and did not reveal the same features in post partum period. Contrary to this, out of 6 cases of MINI positive in first post partum period, 5 cases did not reveal MINI positive in 2nd post partum visit. Only one patient along with 3 other patients became MINI positive in the 2nd post partum visit.

Patient presenting with depression in both the antenatal phases were duly referred for psychiatric intervention strategies and did not recur with depressive symptoms in the later visit. Brief psychiatric interventions in the form of psychotherapy, brief pharmacological therapy and emphasis on family support advocated. It is also observed that MINI positive patients in post partum phase did not have any

antecedent depressive profile in the antenatal period. Observing this strength it is construed that antenatal depression is a separate entity and post partum depression is another category with the interaction of complex factors. This observation is cognisance with the study by Kumar and Robson (1984)[88], but not replicating the findings of Kitamura[33] and Dennerstein.[89]

Previously AN depression was taken as a risk factor for PPD (Robertson et al, 2004) but in this study detection of antenatal depression prompted us to refer these patients for psychiatric consultation. Women who were thus identified as depressed in antenatal period were managed prior to delivery and they did not show up with depression in the postpartum period in the present Study. This could be one reason why no antenatal depression patient progressed to postpartum depression[51] .Comparison of PSLES scores in pregnant and postpartum depressed women revealed stressful events affecting them more during pregnancy than postpartum,(mean PSLES scores in Antenatal Depression Vs Postpartum depression was 401.4 Vs 284) .

PSLES scores were found to be correlating with EPDS-AnteNatal1 more than in EPDS- AnteNatal-2.This finding shows previous 1 year of stressful life events having an impact during the

mid pregnancy period when women are less troubled by somatic complaints of pregnancy, increasing the risk of depression. Contrary to previous study where PSLES scores failed to correlate with Postpartum Depression[51] .Postpartum depression patients EPDS scores correlated positively with PSLES score and this could be attributed to the cumulative effects of previous stressful life events and current demanding state of childbirth.

Previous psychiatric illness , family history of psychiatric illness, family history of suicides showed highly significant values under each category and confirms nature Vs nurture concept operating in depression of pregnancy and postpartum.

As in previous studies[72], evaluation of depression for medical illnesses found 6 of the 16 depression positive women with one or the other medical conditions, namely Diabetes, TB, Seizures, Thyroid dysfunction and anaemia. Among the non-depressives DM, COPD, anaemia, Hypertension were seen. However, medical illness did not show any significance for patients with depression. Postpartum complications & neonatal problems worsened the stress of childbirth culminating in a depressive episode.

Post natal factors of breast feeding was found to show significance in this study; clearly when newborns were formula fed the post natal women were significantly affected with reference to role confusion of motherhood.

As in previous studies, formula feeding shows significance as risk factor for Postpartum depression in this study. Women who did not breast feed because of their illness or Neonatal problems, formula feeding emerged as a definite predictive factor for depression in this phase.

Among the protective factors, in women without depression, their age and husband's age showed correlation with low EPDS Scores. As majority of the patients fell within normal range for age this demographic variable did not show any significance as such.

Other protective factors as observed in previous studies like subjects education did not show significance in the present study(p value of 0.052).Same with respect to employment status of the women (p value-0.625).

Another factor considered as protective against depression in both antenatal and postpartum period was social support .In this study

all patients had one or the other relation supporting them. Among the depressed group(n=16), 6 women had their parents supporting them,9 had both-husband and parents; while only one person had husband as the sole support. Research articles on social support suggests that rather than more social support being better, it was whether there was any social support at all for the women during pregnancy or postpartum that influenced as a predictive or protective factor for depression[31]. In future analysis the qualitative aspect of support by spouse and non-spouse relatives would help in designating this factor as predictive or preventive for depression in these two phases. Similarly the cross-cultural research study by Bernazzani et al showed significant association between severe adversity and onset of perinatal depression. Quality of social support-poor prenatal quality of partner relationship contributed to 3 times high risk for antenatal depression and postpartum depression(2 times high).Poor quality of other relationship was associated with antenatal depression than postpartum depression[53] .

LIMITATIONS

There are certain limitations in the present study that needs to be considered while evaluating the findings.

As the present study was conducted with a small sample size and studied for only 8 months covering both pregnancy and Postpartum, the occurrence of depressive features in early pregnancy or before is not known .

As this study was conducted in tertiary care hospital setting ,it may have introduced a selection bias. Inspite of these limitations, the present study replicated findings of previous studies with respect to certain factors like spouse'alcohol abuse, previous psychiatric illness ,family history of psychiatric illness and suicides .The strengths of the study are the longitudinal design, application of EPDS ,well validated scale and use of MINI ,based on DSM-4 criteria. Antenatal depression may fall in the continuum with PPD .But comparing the interplay of these risk and protective factors in depressed and non-depressed subjects help us to anticipate and intervene in women during pregnancy when at risk for depression or any psychiatric illness.This will be a preventive measure in limiting the occurrence of antenatal and postpartum depression.

SUMMARY

This study which was carried out on 82 women to study the influence of Psycho-social and demographic factors as predictive and protective factors in depression of pregnancy and postpartum. Of the 82 women, 66 had no depression during pregnancy and postpartum using MINI international neuropsychiatric interview .16 subjects during pregnancy and postpartum were the total numbers identified with depression(19.5%). In antenatal period, 7 were having depression (8.53%), 4 in the 5^{th} month of pregnancy,3 patients in the 9^{th} . During first postpartum visit(2 weeks after birth) 6 were depressed and 2^{nd} postpartum visit(6 weeks after childbirth),3 were depressed and one person of the previous 6 at 2 wks continued into the 2^{nd} visit.

Comparing Depression positive by MINI with depression negatives (16 Vs 66), demographic features showed no difference. The Psycho-social risk factors found to be significant in both groups were marital separation ,duration of separation, alcohol abuse. Previous Psychiatric illness, family h/o Psychiatric illness ,especially suicides found to be significant. EPDS scores showed positive correlation with the PSLES scores for stressful life events. Differentiating factors in

antenatal depression and postnatal depression were high PSLES scores; financial constraints played a greater role in antenatal depression. While obstetric factors like infertility ,high risk pregnancy and postpartum complications showed greater significance for postpartum depression.Use of formula feeds in newborn played a significant role in PPD.

There is no significance for obstetric factors such as infertility, high risk pregnancy status for the ensuing depression during Antenatal period; but definitely they have a bearing on depression of postpartum period.

It is found that antenatal depression is a distinct entity from postpartum depression from our small study comprising of 82 patients. This has to be tested in larger samples.

There is no differentiating psychosocial factors for antenatal and postpartum depression. But, obstetric factors like high risk pregnancy, infertility, postpartum complications are instrumental in the culmination of postpartum depression.

Thus the importance given to women's mental health would become more fulfilling when the psychological evaluation for above factors start early after confirming pregnancy, for them to face the warranted stress of pregnancy and postpartum successfully. This comprehensive work up would also prevent psychiatric morbidity and mortality by way of practice of liaison psychiatry.

CONCLUSIONS

Depression with regard to pregnancy can occur in the following ways; It may be the continuation of pre-existing major depressive disorder-depressed phase-which may remit or continue to the postpartum period.

The individual may have a relapse/recurrence of the above mentioned disorder.It may occur as first episode of depression in a subdued or florid way either in antenatal or postpartum period.

Identifying the correlating factors and psychiatric screening is a must. It is evident in this study as with the identification and necessary management ,the antenatal depression cases had no identifiable problem during postpartum follow up. At the same time identifying the protective factors will lead to better intervention strategies. Identifying the risk factors like alcohol abuse, marital separation, spouse's supportive role in this challenging period of the women will help us to plan better intervention strategies for spouse's alcoholism. Obstetric complications have to be dealt in liaison with other specialists, may ensue a riskless psychological postpartum period. All antenatal cases with family history of psychiatric disturbances have to be identified as

at risk group as per the study and this goes a long way in prevention of depression in this high risk women's population.

Detection of antenatal depression by appropriate screening and confirmation not only prevents postpartum depression but also arrests further decline in the mental health of pregnant women and the growing fetus. Routine and effective screening for depression either as only symptoms or disorder makes antenatal checkups more comprehensive and improve pregnancy outcome and prevent severe psychiatric morbidity during this period.

Postpartum depression remains a mystery both for the delivered woman and the treating liaison team. Depression in antenatal and postpartum period is diagnosed by the DSM-4 criteria. Postpartum depression is the term given for moderate depression, without psychotic features occurring 4-6 weeks after delivery.PPD can significantly increase parenting stress ,cause appreciable distress and losses to the newborn, family and the society. Every woman entering into pregnancy deserves assessment for depression in the background of their psychological, social and biological factors.

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PSYCHO–SOCIO-DEMOGRAPHIC QUESTIONNAIRE

NAME: AGE: LMP-
EDD-

ADDRESS: CONTACT NO:

INFORMANTS:1.

2.

EDUCATION: 1.illiterate 2.primary 3.higher sec 4.graduate 5.postgraduate

OCCUPATION: 1.unemployed 2 .employed

Husband: age:

Education: 1. illiterate 2. primary 3.higher sec 4. graduate 5.post graduate

Occupation: 1.unemployed 2.unskilled 3.skilled 4. self employed 5.professional

Financial debt: yes/no

Husband-substance abuse: yes/no

Marital status: 1.unmarried 2.married 3.widowed 4.separated 5. divorced

Marital relationship: 1.good 2.fair 3.poor

Separations due to conflict: yes/no duration:

No of living children: gender: male-
female-

Family-joint/nuclear

Past medical history-

1.DM 2.HT 3.tb 4. seizures 5.cardio vascular disease 6.COPD 7.thyroid dysfunction

8.anaemia 9.drug intake 10.nil

Past h/ o psychiatric illness-yes/no; specify if yes

H/o treatment –

H/o previous psychiatric hospitalisation-

Family h/o psychiatric illness-

Family h/o suicide: yes/no if yes- relations- 1.i degree 2.ii degree 3.iii degree

obstetric history

Parity-primi/multi LMP- EDD-

Current pregnancy care given by-1. parents 2.husband 3.both

H/o infertility-Y/N-- duration:

Pregnancy-planned/unplanned/ unwanted

Previous h/o abortion/IUD/SB/loss of child/preterm –y/n

Pregnancy-high risk/normal risk

Having regular check up : yes/no

Access for periodic care: yes/no

Significant stressful life events during pregnancy in friends/relatives – Y/N.

POSTNATAL QUESTIONNAIRE

Delivery-mode: 1. LSCS 2. normal delivery 3.instrumental

Sex of child: 1.female 2.male

Wt- neo natal problems: y/n

Post partum complications-fever/PPH/anemia/others-y/n

Breast feeding: 1.breast feeding at any time during postpartum-

2. use of formula feeds- y/n
3. satisfied with breast feeding- y/n

PSLES SCALE

1. Going on pilgrimage or a pleasure trip – 20
2. Wife begins or stops working – 25
3. Change in eating habits – 27
4. Change in social activities – 28
5. Reduction in number of family functions – 29
6. Gain of a new family member – 30
7. Birth of a daughter – 30
8. Change in sleeping patterns – 33
9. Change in working conditions of transfer – 33
10. Retirement – 35
11. Begin or end schooling – 36
12. Outstanding personal achievement – 37
13. Change of expansion of business – 37
14. Change in residence – 39
15. Unfulfilled commitments – 40
16. Trouble with neighbor – 40
17. Getting married or engaged – 43
18. Appearing of exam or interview – 43
19. Failure in examination – 43
20. Death of pet – 44
21. Major purchase of construction of home – 46
22. Breakup with friend – 47
23. Family conflict – 47
24. Minor violation of law – 48
25. Marriage of daughter / dependent sister – 49
26. Large loan – 49
27. Lack of son – 51
28. Self or family member unemployed – 51
29. Sexual problems – 51
30. Conflict over dowry (self or spouse) – 51
31. Prophecy of astrologer / palmist – 52
32. Trouble at work with superior, subordinate or colleagues – 52
33. Illness of family member – 52
34. Financial loss or problems – 54
35. Son or daughter leaving home – 55
36. Major personal illness / injury - 56
37. Broken engagement / love affair – 57
38. Conflict with in laws (other than dowry) – 57
39. Excessive alcohol abuse or drug abuse by family members – 59
40. Robbery of theft – 59
41. Death of friend – 60
42. Property or crops damaged – 61
43. Martial conflicts – 64
44. Death of close family member – 66

45. Lack of child – 67
46. Detention in jail of self or close family member – 72
47. Suspension or dismissal from the job – 75
48. Marital separation or divorce – 7
49. Extramarital relationship of spouse – 80
50. Death of spouse – 95

EDINBURGH POSTNATAL DEPRESSION SCALE

TAMIL VERSION

1. வேடிக்கையான நிகழ்ச்சிகளை பார்த்து சிரிக்க முடியும்

   அ. எப்பொழுதும் என்னால் முடிந்த அளவு
   ஆ. எப்பொழுதாவது
   இ. கண்டிப்பாக எப்பொழுதாவது
   ஈ. முடியவே முடியாது

2. மகிழ்ச்சியான நிகழ்ச்சிகளுக்காக எதிர்நோக்கி கொண்டிருக்கிறேன்

   அ. முடிந்த அளவு செய்திருக்கிறேன்
   ஆ. முன்பைவிட சிறிது குறைந்துள்ளேன்
   இ. கண்டிப்பாக முன்பைவிட குறைந்துள்ளேன்
   ஈ. இல்லை

3. தவறான காரியங்கள் நிகழ்ந்த போது நான் என்னையே குறை கூறி உள்ளேன்

   அ. ஆம், எல்லா நேரத்திலும்
   ஆ. ஆம் சில நேரங்களில்
   இ. எப்பொழுதாவது
   ஈ. ஒருபோதும் இல்லை

4. தேவையற்ற காரணத்திற்காக நான் கவலைப்பட்டும், பயந்தும் உள்ளேன்.

   அ. இல்லவே இல்லை
   ஆ. எப்பொழுதாவது
   இ. ஆம் சில நேரங்களில்
   ஈ. ஆம், அடிக்கடி

5. ஒன்றுமில்லாத காரணத்திற்காக பயந்த உணர்வும் மற்றும் பதட்ட உணர்வும் அடைந்துள்ளேன்.

   அ. ஆம், நிறைய நேரம்
   ஆ. ஆம், சிலநேரம்
   இ. இல்லை எப்பொழுதாவது
   ஈ. இல்லவே இல்லை.

6. என் மீது சுமை ஃ பாரம் அதிகரித்து உள்ளது.

அ. ஆம், நிறைய நேரங்களில் என்னால் எதிர்த்து சமாளிக்க முடிவதில்லை
ஆ. ஆம், சில நேரங்களில் என்னால் முன்பு மாதிரி சமாளிக்க முடிவதில்லை
இ. இல்லை, நிறைய நேரங்களில் நன்றாக சமாளித்து உள்ளேன்
ஈ. இல்லை, எப்பொழுதும் சமாளித்து உள்ளேன்.

7. தூக்கமின்மையால் நான் மகிழ்ச்சியாக இல்லை.

அ. ஆம், எல்லா நேரமும்
ஆ. ஆம், அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

8. துக்கமான மற்றும் மகிழ்ச்சியற்ற நிலையை உணர்ந்துள்ளேன்.

அ. ஆம், எல்லா நேரமும்
ஆ. ஆம், அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

9. நான் அழுகையினால் சந்தோஷமின்றி இருக்கிறேன்ஃ

அ. ஆம், எல்லா நேரமும்
ஆ. ஆம், அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

10. நான் என்னையே கொள்ளும் மனநிலையை அடைந்துள்ளேன்

அ. ஆம், எல்லா நேரமும்
ஆ. ஆம், அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

M.I.N.I.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

English Version 5.0.0
DSM-IV
USA: **D. Sheehan, J. Janavs, R. Baker, K. Harnett-Sheehan, E. Knapp, M. Sheehan**
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A. MAJOR DEPRESSIVE EPISODE
(MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

A1 Have you been consistently depressed or down, most of the day, nearly NO YES
every day, for the past two weeks?

A2 In the past two weeks, have you been much less interested in most things or NO YES
much less able to enjoy the things you used to enjoy most of the time?

IS **A1** OR **A2** CODED **YES?** NO YES

A3 **Over the past two weeks, when you felt depressed or uninterested:**

a Was your appetite decreased or increased nearly every day? Did your weight NO YES *****
decrease or increase without trying intentionally (i.e., by ±5% of body weight
or ±8 lbs. or ±3.5 kgs., for a 160 lb./70 kg. person in a month)?
IF **YES** TO EITHER, CODE **YES**.

b Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up NO YES
in the middle of the night, early morning wakening or sleeping excessively)?

c Did you talk or move more slowly than normal or were you fidgety, restless NO YES *****
or having trouble sitting still almost every day?

d Did you feel tired or without energy almost every day? NO YES

e Did you feel worthless or guilty almost every day? NO YES

f Did you have difficulty concentrating or making decisions almost every day? NO YES

g Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead? NO YES
ARE **5** OR MORE ANSWERS (**A1-A3**) CODED **YES**?
NO YES *
MAJOR DEPRESSIVE
EPISODE, CURRENT
IF PATIENT HAS CURRENT MAJOR DEPRESSIVE EPISODE CONTINUE TO A4,
OTHERWISE MOVE TO MODULE B:
□
A4
a During your lifetime, did you have other episodes of two weeks or more when you felt NO YES
depressed or uninterested in most things, and had most of the problems we just talked about?

b In between 2 episodes of depression, did you ever have an interval
of at least 2 months, without any depression and any loss of interest?
NO YES
MAJOR DEPRESSIVE
EPISODE, RECURRENT
* If patient has Major Depressive Episode, Current, use this information in coding the corresponding questions on page 5 (A6d,

A6e).
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MAJOR DEPRESSIVE EPISODE WITH MELANCHOLIC FEATURES (optional)
(□ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)
IF THE PATIENT CODES POSITIVE FOR A CURRENT MAJOR DEPRESSIVE EPISODE (**A3** = **YES**), EXPLORE THE FOLLOWING:

A5 a During the most severe period of the current depressive episode, did you lose almost NO YES
completely your ability to enjoy nearly everything?

b During the most severe period of the current depressive episode, NO YES
did you lose your ability to respond to things that previously gave
you pleasure, or cheered you up?
IF NO: When something good happens does it fail to make you feel better, even temporarily?

IS EITHER **A5a** OR **A5b** CODED **YES**? NO YES

A6 **Over the past two week period, when you felt depressed and uninterested:**

a Did you feel depressed in a way that is different from the kind of feeling NO YES
you experience when someone close to you dies?

b Did you feel regularly worse in the morning, almost every day? NO YES

c Did you wake up at least 2 hours before the usual time of awakening and NO YES
have difficulty getting back to sleep, almost every day?

d IS **A3c** CODED **YES** (PSYCHOMOTOR RETARDATION OR AGITATION)? NO YES

e IS **A3a** CODED **YES** FOR ANOREXIA OR WEIGHT LOSS? NO YES

f Did you feel excessive guilt or guilt out of proportion to the reality of the situation? NO YES

ARE **3** OR MORE **A6** ANSWERS CODED **YES**?
NO YES
Major Depressive Episode
with
Melancholic Features
Current
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B. DYSTHYMIA
(MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)
IF PATIENT'S SYMPTOMS CURRENTLY MEET CRITERIA FOR MAJOR DEPRESSIVE EPISODE, DO NOT EXPLORE THIS MODULE.

B1 Have you felt sad, low or depressed most of the time for the last two years? NO YES

B2 Was this period interrupted by your feeling OK for two months or more? NO YES

B3 **During this period of feeling depressed most of the time:**

a Did your appetite change significantly? NO YES

b Did you have trouble sleeping or sleep excessively? NO YES

c Did you feel tired or without energy? NO YES

d Did you lose your self-confidence? NO YES

e Did you have trouble concentrating or making decisions? NO YES

f Did you feel hopeless? NO YES
□
ARE **2** OR MORE **B3** ANSWERS CODED **YES**? NO YES
B4 Did the symptoms of depression cause you significant distress or impair your ability to function at work, socially, or in some other important way?
NO YES
DYSTHYMIA
CURRENT
M.I.N.I. 5.0.0 (July 1, 2006) 8
C. SUICIDALITY
In the past month did you:
Points

C1 Suffer any accident? NO YES 0
IF NO TO C1, SKIP TO C2; IF YES, ASK C1a,:

C1a Plan or intend to hurt yourself in that accident either passively or actively? NO YES 0
IF NO TO C1a, SKIP TO C2: IF YES, ASK C1b,:

C1b Did you intend to die as a result of this accident? NO YES 0

C2 Think that you would be better off dead or wish you were dead? NO YES 1

C3 Want to harm yourself or to hurt or to injure yourself? NO YES 2

C4 Think about suicide? NO YES 6
IF YES, ASK ABOUT THE INTENSITY AND FREQUENCY OF THE SUICIDAL IDEATION:
Frequency Intensity
Occasionally □ Mild □ Can you control these impulses
Often □ Moderate □ and state that you will not act
Very often □ Severe □ on them while in this program?
Only score 8 points if response is NO. NO YES 8

C5 Have a suicide plan? NO YES 8

C6 Take any active steps to prepare to injure yourself or to prepare for a suicide attempt
in which you expected or intended to die? NO YES 9

C7 Deliberately injure yourself without intending to kill yourself? NO YES 4

C8 Attempt suicide? NO YES 10
Hoped to be rescued / survive □
Expected / intended to die □
In your lifetime:

C9 Did you ever make a suicide attempt? NO YES 4
IS AT LEAST **1** OF THE ABOVE (EXCEPT C1) CODED **YES**?
IF YES, ADD THE TOTAL NUMBER OF POINTS FOR THE ANSWERS (C1-C9)
CHECKED 'YES' AND SPECIFY THE LEVEL OF SUICIDE RISK AS INDICATED IN THE DIAGNOSTIC BOX:
MAKE ANY ADDITIONAL COMMENTS ABOUT YOUR ASSESSMENT OF THIS PATIENT'S CURRENT AND NEAR FUTURE SUICIDE RISK IN THE SPACE BELOW:
NO YES
SUICIDE RISK
CURRENT
1-8 points Low □
9-16 points Moderate □
> 17 points High

		age	education	occuptn	husbnd ag	educatn	occupatn	financial d	subst abus	marital st	marital rel	separation	duratn -se	no of chil	MALE/FEM	family	medical h/	psych h/o	SPECIFY	treatmnt h
1	JANANI	22	2	1	29	2	3	1	2	2	1	2	NA	1	2	2	10	2	NA	2
2	SHANTI	29	4	1	32	2	3	1	2	2	1	2	NA	0	0	1	10	2	NA	2
3	SUGANYA	19	2	1	25	3	4	1	2	2	1	2	NA	0	0	2	10	2	NA	2
4	BHUVANES	27	2	1	28	2	3	2	2	2	1	2	NA	1	2	1	10	2	NA	2
5	DEVI	19	3	1	27	2	3	2	2	2	1	2	NA	0	0	2	10	2	NA	2
6	NANDINI	20	2	1	28	4	3	2	2	2	1	2	NA	0	0	1	10	2	NA	2
7	MANJU	28	2	1	33	2	3	2	2	2	1	2	NA	1	1	2	7	2	NA	2
8	RENUKA	24	2	1	30	2	3	1	2	2	1	2	NA	1	1	1	10	2	NA	2
9	JEEVA	24	3	1	28	2	3	1	2	2	1	2	NA	0	0	2	10	2	NA	2
10	JEEVA	22	1	1	28	2	3	1	2	2	1	2	NA	0	0	2	10	2	NA	2
11	VERONICA	19	2	1	21	2	3	2	2	2	1	2	NA	0	0	1	10	2	NA	2
12	KAVITHA	30	4	1	33	4	3	1	2	2	1	2	NA	2	2	1	10	2	NA	2
13	PRIYA	21	1	1	22	2	4	1	1	2	1	2	NA	1	2	1	10	2	NA	2
14	NIROSHA	22	2	1	24	2	2	2	2	2	1	2	NA	1	2	2	10	2	NA	2
15	DEEPA	25	4	1	28	4	3	2	2	2	1	2	NA	0	0	2	6	2	NA	2
16	SRAVANI	20	4	1	28	2	4	2	2	2	1	2	NA	1	1	2	10	2	NA	2
17	chellama	22	2	1	32	2	3	2	2	2	1	2	NA	1	1	2	10	2	NA	2
18	BHAVANI	21	4	1	21	4	5	1	2	2	1	2		0	0	2	10	2		2
19	SIVAGAMI	22	2	1	26	4	3	2	2	2	1	2		0	0	1	10	2		2
20	SUGANTHI	22	2	1	30	2	4	2	2	2	1	2		1	2	1	10	2		2
21	EASWARI	26	3	2	28	3	3	1	2	2	1	2		1	2	1	10	2		2
22	DURGA	35	2	1	35	2	3	1	2	2	1	2		2	1,1		2	8	2	2
23	NIROSHA	22	2	1	25	2	4	1	1	2	2	2		0	0	2	10	2		2
24	KALAISELVI	28	4	2	30	2	4	2	2	2	1	2		1	2	2	1	2		2
25	SONIYA	20	2	1	23	2	4	1	2	2	2	2		1	1	1	10	2		2
26	DILLIRANI	19	2	1	26	4	3	1	1	2	1	2		0	0	1	10	2		2
27	RAJESWAR	26	2	1	30	1	2	2	2	2	2	2		1	1	1	10	2		2
28	VENKATAL	23	3	1	26	3	4	2	2	2	1	2		0	0	1	10	1	grief -iud	2
29	MALARVIZI	23	4	2	28	5	4	1	2	2	1	1	2 YRS	0	0	1	10	2		2
30	NATHIYA	27	5	1	33	4	3	1	2	2	1	2		0	0	1	10	2		2
31	PONNI	21	2	1	27	1	2	1	1	2	1	2		1	1	2	10	2		2
32	DEVI	26	1	1	30	2	4	2	2	2	1	2		1	1	2	10	2		2
33	NADHIYA	23	2	1	28	2	3	2	1	2	1	2		1	2	2	10	2		2
34	NANDINI	20	4	1	31	4	4	2	2	2	1	2		1	1	1	2	2		2
35	SANGEETH	25	3	2	27	2	3	1	2	2	1	2		0	0	2	10	2		2
36	amudha	24	2	1	34	2	3	2	1	2	2	2		1	2	1	10	2		2
37	MARIA	24	2	1	38	2	2	1	2	2	1	2		1	1	2	10	2		2
38	SHEELADEV	24	2	1	30	2	3	2	2	2	1	2		0	0	2	10	2		2
39	KALAIVANI	27	2	1	31	2	3	1	2	2	1	2		1	1	2	10	2		2
40	NAGAVALI	25	2	1	30	2	4	2	2	2	1	2		0	0	2	1	2		2
41	ASHENBAG	24	4	1	32	4	5	2	2	2	1	2		1	2	1	10	2		2
42	JAYAMATA	25	3	1	33	3	3	2	2	2	1	2		1	1	2	10	2		2
43	sivagami	26	3	1	29	4	3	2	2	2	1	2		0	0	1	10	2		2
44	ARULSELVI	22	4	1	24	4	3	2	2	2	1	2		1	1	1	10	2		2
45	THAMARAI	24	4	1	28	4	3	2	2	2	1	2		0	0	1	10	2		2
46	ANURADHA	31	3	2	33	2	4	2	2	2	2	2		1	1	2	10	2		2
47	ASMA	24	2	1	27	2	4	1	2	2	1	2		0	0	1	1	2		2
48	MANJU	20	2	1	25	1	3	2	2	2	1	2		0	0	2	10	2		2
49	SARALA	26	4	1	26	2	3	2	2	2	2	2		1	1	1	10	2		2

50	BACKYALAI	24	5	2	30	3	3	1	2	2	1	2		1	2	1	10	2		2
51	NAZEERA B	24	3	1	32	4	3	1	2	2	1	2		1	2	1	2	2		2
52	AISHWARY	22	2	1	28	2	3	2	2	2	1	2		0	0	1	10	2		2
53	SUDHA	21	3	1	23	1	3	1	2	2	1	2		0	0	1	10	2		2
54	NAGAVENI	28	5	2	30	3	3	1	2	2	1	2		1	2	1	10	2		2
55	VIJAYALAK	34	2	1	41	2	2	2	2	2	2	2		1	1	2	1	2		2
56	ROGIL	36	5	2	39	3	4	1	2	2	1	2		2	2	2	10	2		2
57	PAVITHRA	22	3	1	22	3	2	1	2	2	1	2		1	1	2	10	2		2
58	YAMUNA	22	2	1	29	2	3	2	2	2	2	2		1	1	1	10	2		2
59	SHOBANA	21	3	1	23	4	3	2	2	2	1	2		0	0	2	10	2		2
60	HEMAVATI	19	3	1	24	2	3	2	2	2	1	2		0	0	2	10	2		2
61	revathy	27	2	2	30	1	2	2	1	2	2	2		1	1	2	8	2		2
62	SOLAIEESW	25	2	1	28	2	2	1	1	2	2	2		0	0	1	10	1	IMPULSIVE	2
63	TAMIZHAR	18	2	1	26	2	3	1	1	2	1	2		1	1	2	10	2		2
64	ARCHANA	22	3	1	24	2	4	1	1	2	2	2		0	0	2	10	2		2
65	LAKSHMI	26	2	1	28	2	2	2	2	2	2	2		1	1	1	10	2		2
66	HEMALATA	26	3	1	29	2	3	1	2	2	1	2		1	2	1	10	2		2
67	DIVYA	21	2	1	22	1	2	2	2	2	1	2		1	1	2	10	2		2
68	PRIYA	22	2	1	37	3	3	1	1	2	1	2		1	2	2	10	2		2
69	NAZIRA	21	2	1	29	2	3	2	2	2	1	2		0	0	1	4	2		2
70	VEDAMAN	29	3	1	33	4	3	1	2	2	1	2		1	1	2	8	2		2
71	SUJA	29	1	1	33	2	3	1	1	2	2	1	3 MONTHS	1	1	2	7	1	SUICIDE	1
72	PUNITA	19	3	1	24	2	4	2	1	2	1	2		0	0	1	10	2		2
73	KAMACHI	20	1	1	25	1	3	1	1	2	2	2		0	0	2	10	2		2
74	punitha	32	2	1	37	4	3	2	1	2	1	2		1	1	2	1	2		2
75	HEMAVATI	21	3	1	28	1	4	2	2	2	1	2				1	3	2		2
76	BEULA	30	2	2	34	2	3	1	2	2	1	1	1YR			2	10	1	DSH	2
77	V.LAKSHMI	20	3	1	24	3	4	2	1	2	1	1	6 MONTHS			2	10	2		2
78	NIRMALA	29	4	1	32	4	4	2	1	2	1	1	6MONTHS			1	8	2		2
79	POOJA	26	2	1	28	3	3	1	1	2	1	2		2	1,2		2	8	2	2
80	PARVATHI	21	3	1	26	3	4	2	2	2	1	2		1		1	2	10	2	2
81	MEGALA	28	3	1	31	3	3	1	1	2	2	2		2	1,2		2	10	2	2
82	PRIYA	26	4	1	26	4	5	2	2	2	1	2					2	10	2	2

psych hosp	famly h/o	relatn	fam h/o su	1/2/3 DEG	parity	LMP	EDD	caregiver	h/o infert	duration	pland preg	BOH	TM loss	high risk	check up	access	delivr mod	sex of NB	wt	NN problm
2	2	NA	2	NA	2	6.8.11	13.5.2012	3	2	NA	1	1	1	1	1	1	2	2	2.5	2
2	2	NA	2	NA	1	10.09.11	17.6.12	3	2	NA	2	2	NA	1	1	1	1	1	3.5	1
2	2	NA	2	NA	1	20.09.11	27.06.12	3	1	1	1	2	NA	2	1	1	1	1	3	2
2	2	NA	2	NA	2	10.8.11	17.05.12	3	2	NA	1	2	NA	2	1	1	2	1	2.75	2
2	2	NA	2	NA	1	13.8.11	20.5.12	3	2	NA	1	2	NA	1	1	1	2	2	3	2
2	2	NA	2	NA	1	15.9.11	22.06.12	1	2	NA	1	2	NA	2	1	1	2	2	3	2
2	2	NA	2	NA	2	28.9.11	5.07.12	3	2	NA	1	2	NA	2	1	1	1	1	3.1	2
2	2	NA	2	NA	2	17.09.11	24.06.12	3	2	NA	1	2	NA	2	1	1	1	1	3	1
2	2	NA	2	NA	1	14.8.11	21.05.12	2	2	NA	1	2	NA	2	1	1	2	2	2.75	2
2	2	NA	2	NA	1	1.09.11	8.06.12	3	1	5	1	2	NA	1	1	1	2	1	2.75	2
2	2	NA	2	NA	1	20.09.11	27.06.12	3	2	NA	1	2	NA	2	1	1	2	1	2.9	2
2	2	NA	2	NA	2	8.10.11	15.07.12	3	2	NA	1	2	NA	2	1	1	2	2	3.5	2
2	2	NA	2	NA	2	15.08.11	22.05.12	3	2	NA	1	2	NA	2	1	1	1	2	2.6	2
2	2	NA	2	NA	2	21.09.11	28.06.12	1	1	1	1	2	NA	2	1	1	2	1	2.6	2
2	2	NA	2	NA	1	3.10.11	10.07.12	1	2	NA	1	2	NA	2	1	1	2	1	2.5	2
2	2	NA	2	NA	1	1.11.2011	8.8.12	2	1	2	1	2	NA	2	1	1	2	1	2.8	**2**
2	2	NA	2	NA	2	NK	NK	3	2	NA	1	2	NA	2	1	1	2	1	3	2
2	2		2		1	14.9.11	21.6.12	2	2		1	2		2	1	1	2	1	2.15	1
2	2		2		1	4.09.11	11.06.12	1	2		1	2		2	1	1	2	2	2.75	2
2	2		2		2	14.10.11	21.07.12	1	2		1	2		1	1	1	1	2	2.25	1
2	2		2		2	12.07.11	19.04.12	3	2		1	2		2	1	1	1	1	3	2
2	2		2		2	2.10.11	9.7.12	3	1	5	1	2		1	1	1	2	1	3.1	2
2	2		2		1	10.10.11	17.7.12	3	2		1	2		2	1	1	1	2	3.2	2
2	2		2		2	22.10.11	29.7.12	3	2		1	2		1	1	2	1	1	3.75	2
2	2		2		2	22.10.11	29.7.12	3	2		1	2		1	1	1	1	1	2.5	1
2	1	FATHER,1	2		1	14.09.11	21.06.12	2	2		1	2		2	1	1	1	2	3.5	2
2	2		2		2	23.08.11	30.05.12	1	1	9	1	2		1	1	1	1	1	3	2
2	2		2		2	2.9.11	9.6.12	1	2		1	1	3 TM	1	1	1	2	2	2.9	2
2	2		2		1	NK	NK	3	2		1	1	3TM	1	1	1	2	1	2.5	2
2	2		2		1	23.8.11	30.5.12	1	1	1YR	1	2		2	1	1	2	1	3	2
2	2		2		2	24.09.11	1.7.12	3	2		1	1	1TM	2	1	1	2	1	2.5	2
2	2		2		2	15.10.11	22.7.12	2	2		1	2		1	1	2	1	1,2	2.3,2.2	2
2	1	FATHER	2		2	22.9.11	29.6.12	3	2		1	2		2	1	1	1	1	2.75	2
2	2		2		1	20.10.11	27.07.12	3	2		2	2		2	1	1	2	1	3	2
2	2		2		1	12.10.11	19.7.12	3	2		1	2		2	1	1	1	2	3	2
2	2		2		2	07.08.11	14.05.12	3	2		1	2		1	1	1	1	2	2.2	2
2	2		2		2	13.1011	20.07.12	3	2		1	2		2	1	1	1	2	2.6	2
2	2		2		1	25.08.2011	1.06.2012	3	1	7	1	2		1	7	1	2	1,1	3,2KGS	2
2	2		2		2	29.9.11	06.07.12	1	2		1	1	1TM	2	1	1	2	1	3.2	2
2	2		2		1	05.9.11	12.6.12	1	1	2	1	1	3TM	1	1	1	1	1	2.6	1
2	1	PSYCHOSIS	2		2	21.8.11	28.5.12	2	2		1	1	1TM	2	1	1	2	2	3	1
2	2		2		1	20.09.11	27.6.12	3	2		1	2		2	1	1	1	1	3.19	2
2	2		2		1	10.10.11	17.7.12	3	2		1	2		2	1	1	1	1	3.4	2
2	2		2		2	21.9.11	28.6.12	3	2		1	2		2	1	1	1	1	2	2
2	2		2		1	3.11.11	10.8.12	3	2		1	2		1	1	1	1	2	2.75	1
2	2		2		2	20.11.11	27.8.12	2	2		1	2		2	1	2	1	2	2.8	2
2	2		2		1	7.10.11	14.7.12	3	1	1YR 6MNT	1	2		1	1	1	1	1	2.5	2
2	2		2		1	28.11.11	5.9.12	1	2		1	2		2	2	2	2	1	3	2
2	2		2		2	10.10.11	16.7.12	1	2		1	2		1	1	1	2	1	2.5	1

2	2		1	2	2	24.10.11	31.7.12	3	2		2	2	2	1	1	1	1	2.6	1
2	2		2		2	2.11.11	9.8.12	3	2		1	2	2	1	1	2	2	2.75	2
2	2		2		1	2.10.11	9.7.12	3	2		1	2	2	1	1	1	2	2.5	2
2	2		1	1	1	19.9.2011	26.6.12	3	2		1	2	2	1	1	1	1	3	2
2	2		2		2	21.11.11	28.8.12	3	2		2	1	3TM	1	1	1	1	1	2.35	2
2	2		2		2	8.10.11	15.7.12	1	1	9 YRS	1	2		1	1	1	1	2	3.4	2
2	2		2		2	7.08.11	14.5.12	1	1	9	1	2		2	1	1	2	2	2.7	2
2	2		2		2	20.9.11	27.6.12	3	2		1	2		2	1	1	2	1	2.4	2
2	2		2		1	16.10.11	23.7.12	3	1	3 YRS	2	2		1	1	1	3	2	2.8	2
2	2		2		1	30.8.11	6.6.12	3	2		1	2		1	2	1	1	1	2.95	1
2	2		2		1	22.9.2011	29.6.12	2	2		1	2		2	1	1	2	1	2.3	1
2	2		2		2	4.09.11	11.06.12	3	2		1	1	1TM,2TM	1	1	1	1	1	3.5	1
2	2		2		1	2.9.11	9.6.12	1	1	7YRS	1	2		1	1	1	1	1	2.5	1
2	2		2		1	27.10.11	3.8.12	1	2		1	2		2	1	1	2	1	2.7	2
2	2		2		1	21.11.11	28.8.12	3	2		1	2		2	1	1	2	2	2.6	2
2	2		2		2	23.9.11	30.6.12	1	2		2	2		2	1	1	2	1	3	1
2	1	UNCLE	1	2	2	1.10.2011	8.7.12	3	2		1	2		2	1	1	2	2	2.4	2
2	2		2		2	NOTKNOWN		1	2		1	1	1TM	2	1	1	2	2	2.5	2
2	2		2		2	16.10.11	23.7.12	2	2		1	1	3TM	1	1	1	1	2	1.5	2
2	2		2		1	26.8.11	2.6.12	3	2		1	1	1TM	1	1	1	1	1	2.5	1
1	1	BROTHER-I	1	1	2	25.10.2011	1.08.12	3	2		1	2	1TM	2	2	2	2	1	1.5	1
1	1	SISTER	1	1	1	2.11.11	9.8.12	1	1	8YRS	1	2		2	1	1	2	2	2.3	2
2	1	M.GR FATH	1	3	2	12.11.11	19.8.12	1	1	1 YR	1	1	1TM	2	1	1	2	2	4.1	1
2	1	FATHER	2	2	1	16.10.11	23.7.12	1	1	1YR	1	1	1TM	1	1	1	2	2	2.9	1
2	2		2		2	23.9.11	30.6.12	3	1	2yrs	2	2		1	2	2	1	1	3.5	2
2	2		2		1	23.7.11	30.4.12	3	2		1	2		2	1	1	1	2	2.6	2
2	2		2		2	20.8.11	27.5.12	3	1	5YRS	1	1	1TM	1	1	1	1	1	2.9	1
2	1	FATHER	1	1	1	8.8.11	15.5.12	3	2		1	2		1	1	2	2	2	2.75	2
2	2		1	3	2	10.7.11	17.4.12	3	2		1	1	1TM	1	1	1	3	1	2.5	2
2	2		2		2	23.9.11	30.6.12	2	2		2	2		2	1	1	2	2	2.9	2
2	2		2		2	3.8.11	10.5.12	2	2		1	2		2	1	1	2	2	3.8	2
2	2		2		2	22.8.11	29.5.12	2	2		1	2		2	1	1	2	1	2.4	2
2	2		2		1	7.9.11	14.6.12	3	2		2	2		2	1	1	2	2	2.8	2

pp compli	specify		breast fed	formul fed	satisf -BF	PSLES	EPDS-AN1	MINI-AN1	EPDS-AN2	MINI-2	EPDS-PP1	MINI-PP1	EPDS-PP2	MINIPP2
2	NA		1	2	1	210	2	NA	2	NA	6	NA	8	NA
2	NA		1	2	1	120	1	NA	9	NA	10	NA	8	NA
1		1	1	2	1	82	9	NA	9	NA	6	NA	8	NA
2	NA		1	2	1	101	9	NA	9	NA	8	NA	7	NA
2	NA		1	2	1	215	5	NA	5	NA	7	NA	4	NA
2	NA		1	2	1	120	16	NEG	17	NEG	15	NEG	22	neg
2	NA		1	2	1	99	8	NA	8	NA	10	NA	9	NA
1		1	1	2	1	158	8	NA	10	NA	9	NA	8	NA
2	NA		1	2	1	324	6	NA	6	NA	10	NA	8	NA
2	NA		1	2	1	313	9	NA	7	NA	6	NA	5	NA
2	NA		1	2	1	63	9	NA	9	NA	10	NA	8	NA
2	NA		1	2	1	274	9	NA	9	NA	9	NA	6	NA
2	NA		1	2	1	285	2	NA	6	NA	2	NA	4	NA
2	NA		1	2	1	91	9	NA	8	NA	8	NA	7	NA
2	NA		1	2	2	254	6	NA	6	NA	2	NA	3	NA
2	NA		1	2	1	272	8	NA	8	NA	7	NA	6	NA
2	NA		1	2	1	270	0	NA	5	NA	1	NA	3	NA
2			1	2	1	222	6		6		6		4	
2			1	2	1	123	5		6		6		4	
2			1	2	1	322	10		8		7		5	
1		1	1	1	1	317	10		9		8		8	
2			1	2	1	190	4		3		6		2	
2			1	2	1	197	9		8		9		6	
2			1	2	1	175	8		9		7		8	
1	3		1	2	1	359	8		8		8		5	
1	1		1	2	1	91	8		8		9		8	
1	4		1	2	1	157	6		8		9		7	
2			1	2	1	494	5		5		3		6	
2			1	2	1	40	5		5		5		4	
2			1	2	1	299	7		2		0		1	
2			1	2	1	283	5		10		8		7	
1	2		1	1	1	250	9		9		10		8	
2			1	2	1	138	1		1		1		3	
2			1	2	1	242	10		6		6		7	
2			1	2	1	91	2		5		3		6	
2			1	2	1	91	2		9		7		5	
2			1	2	1	102	8		6		3		7	
2	2		1	2	1	63	8		7		8		7	
2			1	2	1	94	9		9		9		7	
1	3		1	2	1	298	7		6		7		8	
2			1	2	1	263	1		1		11	NEG	9	
1	3		1	2	1	85	6		9		10		4	
2			1	2	1	90	13	NEG	12	NEG	12	NEG	10	
1	4		1	2	1	62	14	NEG	10		9		7	
1	4		1	2	1	221	11	NEG	15	NEG	9		7	
2			1	2	1	157	11	NEG	12	NEG	8		6	
1	1		1	2	1	349	13	NEG	12	NEG	10		9	
2			1	2	1	114	11	NEG	13	NEG	12	NEG	9	
2			1	2	1	392	16	NEG	17	NEG	16	NEG	14	NEG

2		1	2	1	165	6		12	NEG	11	NEG	7
2		1	2	1	552	14	NEG	12	NEG	14	NEG	10
2		1	2	1	194	11	NEG	14	NEG	11	NEG	8
2		1	2	1	368	14	NEG	15	NEG	9		6
1	1	1	2	1	240	12	NEG	10		6		5
2		1	2	1	164	13	NEG	14	NEG	11	NEG	7
2		1	2	1	323	4		8		11	NEG	9
2		1	2	1	269	12	NEG	11	NEG	10		6
2		1	2	1	245	11	NEG	12	NEG	11	NEG	15 POS
2		1	2	1	80	10		10		16	NEG	14 NEG
2		1	2	1	52	16	NEG	15	NEG	13	NEG	12 NEG
1	2	1	2	1	475	14	NEG	14	NEG	19	NEG	22 **POS**
1	1	1	2	1	114	13	NEG	10		17	**POS**	18 **POS**
2		1	2	1	305	18	**POS**	16	NEG	7	NEG	5 NEG
2		1	2	1	524	19	**POS**	11	NEG	14	NEG	10
2		1	1	1	228	16	**POS**	10		11	NEG	7
2		1	2	1	339	12	NEG	15	NEG	8		7
2		1	2	1	136	14	NEG	19	NEG	14	NEG	10
2		1	2	1	471	25	**POS**	17	NEG	11	NEG	9
2		1	2	1	200	15	NEG	25	**POS**	12	NEG	10
2		2	1	2	491	12	NEG	21	**POS**	13	NEG	9
2		1	2	1	589	15	NEG	20	**POS**	22	NEG	10
2		1	2	1	547	6		9		20	**POS**	12 NEG
2		1	2	1	151	2		10		18	NEG	9
2		1	1	1	345	6		9		18	**pos**	12 neg
1	3	2	1	1	214	15	NEG	15	NEG	18	**POS**	11 NEG
1	2	1	1	2	217	16	NEG	11	NEG	20	**POS**	12 NEG
1	2	1	1	2	285	12	NEG	3		20	**POS**	11 NEG
1	1	1	2	2	300	8		10		12	NEG	12 NEG
2		1	2	1	229	9		3		7		7
2		1	2	1	116	4		8		5		6
2		1	2	1	122	5		8		9		7
2		1	2	1	200	9		10		5		4
										0		