STUDY OF CORRELATION BETWEEN POSTPARTUM DEPRESSION, SERUM THYROID LEVELS AND SIGNIFICANT LIFE EVENTS

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CERTIFICATE

This is to certify that the dissertation titled, **"STUDY OF CORRELATION BETWEEN POSTPARTUM DEPRESSION, SERUM THYROID LEVELS AND SIGNIFICANT LIFE EVENTS"**, submitted by **Dr. VINOTH. V,** in partial fulfilment for the award of the **MD degree in Psychiatry** by the Tamil Nadu Dr. M. G. R. Medical University, Chennai, is a bonafide record of the work done by him in the Institute of Mental Health, Madras Medical College during the academic years 2010 – 2013.

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DECLARATION

I, **Dr. VINOTH. V**, solemnly declare that the dissertation titled, **"STUDY OF CORRELATION BETWEEN POSTPARTUM DEPRESSION, SERUM THYROID LEVELS AND SIGNIFICANT LIFE EVENTS",** is a bonafide work done by me at the Institute of Mental Health, Chennai under the guidance and supervision of Dr. JEYAPRAKASH. M.D, D.P.M, Professor of Psychiatry, Madras Medical College.

The dissertation is submitted to The Tamilnadu Dr. M. G. R. Medical University towards partial fulfilment for M.D. Branch XVIII [Psychiatry] examination.

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ABBREVIATIONS	
CES-D	Centre of Epidemiological Studies in Depression
DSM	Diagnostic and Statistical Manual
EPDS	Edinburgh Post Natal Depression Scale
HRDS	Hamilton Rating Scale for Depresssion
ICD	International Classification of Diseases
PPD	Post Partum Depression
PSLES	Presumptive Stressful Life Events Scale
T3	Tri iodo thyronine
T4	Thyroxine
TSH	Thyroid Stimulating Hormone

INTRODUCTION

Pregnancy and child birth are complex events and it is associated with physical and psychological events. And during this period, profound biological and emotional transition occurs in mother. To become a mother is a major life event and it is not only important for the particular family but also for the society and survival of the mankind.

Postpartum period was surrounded by magical and mythical thinking. During this postnatal period there is a substantial increase in the risk for the psychiatric problems particularly mood disorders.

The three classifications of postpartum illness are the blues, postpartum depression and puerperal psychosis. Around 70 to 80% of women experience transient depressive symptoms after child birth that can be resolved without any treatment; they are called as baby blues [1]. These depressive symptoms persist for 10 to 20% of women and they require intervention. These kinds of individuals meet the criteria of Postpartum Depression (PPD).

Studies show that 13% of women can get affected and have complicated health issues due to postpartum depression. More importance

has been placed on the detection and treatment of postnatal depression since it causes increased maternal morbidity.

Postpartum depression affects not only the women but the Infants also will emotionally and even cognitively get affected. Sometimes severe outcomes of postpartum depression include high risk of marital disturbance and divorce, maternal suicide and causes emotional and behavioural problems in their child. Some standard treatments like psychotherapy and antidepressants are available to recover from postpartum depression. Such depression is under diagnosed and so more screening is needed.

Depending upon the count of the sample and the nature of the assessment done, rate of depression will vary [2]. It is most important to diagnose the depression in the postnatal period since it can produce the adverse long term effects and there is a chance of recurrent depression to occur. Identification of risk and protective factors are needed to avoid postpartum depression.

Identifying postpartum depression is difficult since many women who delivered the baby will have the problem of sleep disturbance, lack of appetite and low energy. Severe Postpartum depression can be easily

noticed but mild depressive symptoms can be easily missed out since it may be considered as normal consequences of child birth.

There is a paucity of Indian studies on the subject of postpartum depression which interested us to take up this study.

REVIEW OF LITERATURE

Epidemiology

Postpartum psychiatric disorders differ in the severity. The least severe type and commonest is postpartum blues. This occurs in 2.9% to 50% of women in the postpartum period. Indian study found that about 36% of women in their postpartum period suffering from depression. Severe depression is seen in 10% of women.

In India, the prevalence of Postpartum Depression is 15.1%. Meta analytic studies done by O'Hara and swain found that prevalence rate worldwide is 13%, following that two Swedish studies were conducted also show the same results. About 1 in 4 of women has a lifetime risk of depression and it is mostly common in their reproductive years.

Postpartum psychiatric disorders are more common during their first delivery. And the risk is higher during the first four weeks. 50% of the cases have an onset in the first 7 days.

Classification of postpartum psychiatric disorders

Inwood had subclassified the postpartum psychiatric disorders into three categories.

Type 1: Postpartum psychosis also called as puerperal psychosis or brief reactive psychosis.

Type 2: Adjustment reaction with depressed mood. Also called as postpartum blues, maternal blues or postnatal blues.

Type 3: Postpartum major mood disorder. Also called as major depression, postpartum neurosis or neurotic reaction.

This classification is new and is yet to stand the test of time and prospective study.

Historical aspects of Postpartum Mental disorders

Postpartum psychiatric illness was first described by Hippocrates in the 4th century. The phenomenon of postpartum mental illness was reported by Jean Etienne Dominique Esquirol in his book Mental Sickness [3] during 19th century. In Esquirol's study postpartum mental illness was classified into three categories.

- Those developing during pregnancy
- Those developing soon after childbearing
- Those occurring several weeks or longer after delivery [4].

Later Louis Victor Marce a French physician worked in this study and published a book called Trait of the madness of pregnant women. He explained about the onset of postpartum illness. The psychiatric community tried to find the consistent nomenclature for postpartum mental illness, but this search process got into vain during earlier 20th century.

The Psychiatric Association of America first published Diagnostic and Statistical Manual (DSM) in 1952. Postpartum mental illness was omitted in DSM –I till 1968. Later, the diagnostic classification of

psychosis associated with childbirth was included in DSM –II. Postpartum psychosis was listed in DSM –III and DSM –III –R as an organic psychosis. The DSM –IV and DSM-IV-TR used “postpartum onset” as a modifier for brief reactive psychosis and mood disorders.

Diagnostic Definitions of postpartum depression

It can be defined as a non psychotic depressive episode that occurs in the postpartum period. Paffenbarger and Arentsen[5] defined that PPD occur within six months after childbirth. But Brockington[6] argued that PPD starts within 2 or 3 weeks after delivery.

Many epidemiological studies revealed that postpartum onset of illness occur within 3 months after childbirth and lasts upto 12 months. This type of depression was defined in many ways in past research but new researches have defined standardized diagnostic criteria for depression in DSM –IV and ICD -10. Postpartum depression is not a separate entity and now it's diagnosed as part of mood disorder in both DSM –IV and ICD 10.

In DSM –IV the "Postpartum onset specifier" quotes that postpartum illness occurs within the first four weeks after childbirth. On the same way, In ICD 10 the postpartum illness is included in behavioural syndromes associated with physiological disturbances and physical factors and coded as F53. Mental and behavioural disorders associated with puerperium (commencing within 6 weeks of delivery), not elsewhere classified. Postpartum Depression is coded as F53.0

A synopsis of DSM-IV-TR criteria for major depressive episode with postpartum onset

1. Atleast one of the following symptom present for 2 weeks time period.

a) Depressed mood or b) Anhedonia

2. Atleast 5 of the other symptoms must be present for 2 weeks.

- Feeling depressed most of the time.
- Decrease in interest in almost all daily activities.
- Appetite changes.
- Disturbance in sleep.
- Lack of energy.
- Excessive guilt.
- Difficult in making decision.
- Frequently occurring thoughts of death.

3. Symptoms causes significant impairment in social and occupational functioning.

4. “Postpartum onset specifier” if the onset of symptoms occurs within 4 weeks following delivery.

Why postpartum depression occurs?

Feminist approach (Berggeren-Clive, 1998) [7] – Phases of postpartum depression

PHASE 1: She says that in a patriarchal society, there are some myths of motherhood i.e., the social structure impose some expectations for motherhood which are impossible to satisfy. This may lead to serious consequences on the woman's emotional health which predisposes to postpartum depression. Hence, according to Clive, postpartum depression is not a pathological disease but a natural response to the above mentioned societal stressor.

PHASE 2: ("Spirally downward"): Major features of this phase are development of a depressive outlook on life, relationship changes, disenchantment with motherhood, feelings of helplessness and of losing control.

PHASE 3: ("Getting to the other side"): It is the phase of recovery when the woman seeks help and is characterized by the hope that she can come out of the depression and lead a normal life again.

Non-Western theory (Hayes, Roberts and Davare, 2000)

In contrast to non-western societies, western societies are lacking in social support for the mother during the periods of childbirth and puerperium. This maybe due to the modern trends in medical care practices. Deficient social support coupled with neuropsychological factors may play a causative role in postpartum depression in these societies where women are expected to resume their roles within a short period after childbirth and are not given sufficient time to recuperate.

They told that pre and postnatal needs of the mother are poorly met and this may interact with maternal psychological functioning. Hayes argued that lack of social support in western societies is responsible for increase in the incidence of postpartum psychosis in the past 20 years. Women in western societies are independently take care of their child, they lack support from their relatives friends after delivery once they return to their home they had a sense of social isolation. Extended families in the western countries tend to have greater distances from each other difficult for the family members to give support to the mother needed in the postpartum period.

Sociodemographic profile in PPD

Maternal Age

Research found that teen mothers in the age 14 to 18 are more prone to postpartum illness (Troutman & Cutrona, 1990) [8]. In this young population, pregnant during adolescent period causes more risk factor in their postpartum. Further research is needed to determine the exact risk factors in this younger population.

Parity in postpartum depression

In a Danish study for first psychiatric admissions, Videbech and Goulieave [9] found that in 630 women of postpartum depression, 58% of them were primiparous and the effects of parity on decreased risk were found to be in the age group of 25 years of age.

Beeghly (2002)[10] reported that whole primiparous mothers scores average on CES-D scale and shows that higher level of depressive symptomatology presented in 2 months. And those mothers were at increased risk of depressive symptoms in first year postpartum. Large number of studies conducted between primipara and multipara women and tried to find the relation between breastfeeding and depressive symptoms which was assessed by CEDS (Centre of Epidemiological Studies in Depression). They found that breastfeeding by multiparas

women was assessed to have slightly decreased odds of having depression compared to that of women who have not breastfed (Esibolboro, Mezzcappa).

Lactation is associated with decreased stress response and the studies also shows that lactation had an anti depressant and anti anxiolytic. Recent findings suggest that parity having associated breastfeeding and stress response. Decreased stress response, decreased onset of depression appears on multiparas women who breastfed her child. If the mother breastfed immediately and intensely after child birth, intimacy between mother and baby continues for long time.

Socioeconomic Status

Socioeconomic status plays important role in postpartum depression. There are some indicators of socioeconomic status that have been mentioned in previous literature as important risk factors for mental health problem. Such indicators are joblessness, poor salary and low educational qualification (Bartley, 1994; Jenkins, 1985; Patel et al., 1999; Weich et al., 1997; World Health Organization, 2001)[11].

In 2002, World Health Organization conducted a study among western societies and found that the occurrence of postpartum depression is more in poorer countries. In 2001, Beck conducted eight studies with

1732 people and determined low effect (0.19 to -0.22) size in statistical analysis. But the indicators used in the meta analysis were not clearly described by Beck, O'Hara and Swain (1996) conducted fourteen studies having 1650 people and he also told a low effect size (-0.141). Both of them came to conclusion that indicators such as poor income, occupation of the mother, and lower social status had a low effect size but important statistical significance can be obtained from the study.

Married status, parity had no predictive relationship to postpartum depression recent studies shows that unemployment and financial problems shows significant relation to postpartum depression (lee et al. 2000; Patel et al. 2002[12]; Studies conducted by Lee and Patel in the year 2002 shows low income population nations like India had an increased risk since financial strain plays very important role in causing postpartum depression

Breastfeeding and PPD

Warner et al (1996) [15] found that women who do not breastfed their child had a significant risk of developing postpartum depression in the initial six weeks after delivery. He conducted a study among 2375 women and gave the result. These findings were supported by Hannah (1992). He conducted a study among 217 females in the postpartum period. There was no significant correlation between between breast

feeding and postpartum depression in the studies conducted by Formann et al [16] he conducted the studies among 5292 individuals. Variations in the results between the studies due to women preference or hospital policy rather than aetiological relationship.

Type of delivery and Postpartum Depression

There is a significant association between LSCS and postpartum Depression at 3 months (Boyce and colleagues at 1992)[13]. He stated that women who had an emergency LSCS will have six times more risk to have depressive episode in the postpartum period. In 1992, Hannah [14] found that there is a significant correlation between LSCS and Postpartum Depression at 6 six weeks. Both of the above studies are cross sectional in nature. The meta analytic studies did by O'Hara and Swaine (1996), Warner et al [15] (1996), Forman (2000) [16] Johnson (2000) [17] found that no statistical significant relationship between LSCS and Postpartum Depression.

Undesired pregnancy and PPD

The impact of undesired pregnancy and the persons developing depression in the postpartum was studied by Beck. She conducted six studies among 1200 subjects and found that there is significant relationship between undesired pregnancy and postpartum depression.

The study conducted by Warner et al supported Beck's result. He conducted study among 2375 women with postpartum depression and he correlates with undesired pregnancy which was found to be statistically significant. Risk factor due to unplanned or unwanted pregnancy should be carefully interpreted. It measures the situation in which the pregnancy occurred rather than the woman's thinking towards the growing fetus.

Marital Relationship & Postpartum Depression

Marital conflicts occurring during the time of pregnancy had an impact on the woman and she had a possible risk of developing postpartum depression Braveman & Roux, 1978; Kumar et al., 1984)[18]. Above finding was not confirmed by Hopkins and his colleagues. In clinical interviews women having postpartum depression told that they receive less support from their husband. The significant differences are observed only during postpartum period (O'Hara et al 1983)[19].

Varieties of instruments were used to assess the marital relationship. Instruments most commonly used are Likert scale, Dyadic adjustment scale (Spanier, 1976). Their level of satisfaction with their husband can be assessed by Likert scale which is used as a standard measure to assess the quality of relationship between husband and wife.

Potential reporting bias was eliminated in the meta-analytical study since the data were collected from pre partum itself. If the data were collected only during postpartum period, there will be difficulty in assessing the women perception on their relationship. Studies conducted by Beck and O'Hara found that there is an association existing between poor marital relationship and depression in the postpartum period.

Risk factors for postpartum depression

Classification of risk factors as moderate-strong, moderate and weak has been proposed by Robertson and colleagues (2004)[20].

Strong risk factors:

- Symptoms of depression or anxiety during pregnancy.
- Past history of depression or other psychiatric disorder (Ryan et al, 2005). Postpartum depression is five times more likely if there is a past history of major depression (Bender).
- Poor social support (Collins, Dunkel-Schetter, 1993)
- Stressful life events

Moderate risk factors:

- Maternal personality – especially neuroticism
- Negative cognitive attributional style
- Low self-esteem

Weak risk factors:

- Socioeconomic status
- Obstetric factors

Risk factors not associated: [21]

- Maternal age
- Parity
- Level of education
- Sex of the child
- Length of relationship with the partner

Hormonal changes have been implicated in the etiology of postpartum depression but research evidence regarding this is in conclusive. Changes in progesterone, estradiol, prolactin, thyroid hormones and adrenal steroids have been thought to play a causal role (Bloch, Schmidt, Halbreand, 2008).

Psychosocial Factors of Postpartum Depression

Many women felt pleasurable feeling following the delivery of the child, few of them face the postpartum depression (Swendsen & Mazure, 2000)[22]. In 2001, Beck found some factors like prenatal depression in mother, childcare stress and marital dissatisfaction responsible for postpartum depression. Women who perceived less support from their spouse or lack in their intimacy will cause distress after the delivery of the child (Muslow, Caldera, Pursley, Reifman, & Huston, 2002)[23]

In 2000, Elliot and his colleagues[24] did a study and reported the susceptible factors that include joblessness, birth event and period of change that the women going to establish a role as mother play a important role in postpartum depression.

Many etiological factors on social, cultural, psychological and biological levels are found in the recent literature on postpartum depression (Beck, 2001; Forman, Videbech, Hedegaard, Salvig & Secher, 2000; Robertson, Grace, Wallington, & Stewart, 2004).[25]

Importance of social relationship plays a main role in people's lives. The quality of social support offered by the spouse, friends and family members of a woman has a significant impact on psychosocial functioning in the postpartum period (Fisher, Feekery, & Rowe-Murray,

2002)[26]. Caring relationships may develop the feeling of comfort, personal control and positive affect.

Bruga and colleagues [27] found that perceived social support during stressful period is a positive factor against Postpartum Depression. Social support is a multi dimensional concept and it is classified into Informational support, Instrumental support and emotional support. The researchers found the effects of perceived social support (a person belief that person in that social network help in terms of need and received support). Perceived social isolation is considered to be an important risk factor for postpartum depression [Forman et al 2000][28]

Logsdon also mentioned the same. Cutrona (1984)[29] assessed the various dimensions of social support that are perceived during pregnancy and decrease in depressive symptom during postpartum period. O'Hara and Swaine [30] found relationship between social support and Postpartum Depression. They told that both are negatively correlated.

Life events and postpartum depression

We cannot imagine life without stress. Death is the only thing where we can get a complete freedom from stress. Psychological stressors are inseparable part of life and upto a degree may be essential for adequate personality development.

The normal state of individual is one form of homeostasis and that life events which requires change are crisis to the extent that they require time and energy to return to steady state of functioning. Stress is assumed to be a mediator between an event and adaptation to the event, causing damage to physical and psychological systems an accumulation of life events in succession produces vulnerability for either development or precipitation of physical or psychiatric illness.

The concept that stressful life events predispose and precipitate illness is not new. One of the ancient medical text Sushrut Samhita describes a kind of insanity Shokja after stressful life situation. Tuke described dramatic life events, giving rise to several diseases, leading even to death by evoking strong emotions.

Selye in his classical work postulated that any type of life change can act as a stressor causing psychological arousal and enhanced

susceptibility to illness. Holmes and Rahe in 1967[31] invoked interest in this area by construction of an inventory social re adjustment scale.

A number of studies have revealed a clustering of events during the two year period preceding the onset of depression. Many studies have found that life events are closely related to postpartum depression (Brown and Harris, 1978) [32]. Negative life events such as job loss, bereavement, marital conflict, alcohol abuse by husband have been shown to predispose to postpartum depression in those who have not had any episodes of mood disturbance in the past.

Holmes and Rahe found that pregnancy is itself a stressful life event which may lead to depression. But, other researchers are of the view that pregnancy and puerperium are vulnerable periods and if additional stressful life events occur during this time, they may predispose to postpartum depression.

Chronic stress and significant life events during pregnancy causes increase in the level of cortisol in the HPA axis (Sandman in 1997). Dysregulation and rapid decline in cortisol level occur in the postpartum period. These changes lower the maternal responsiveness to infant postpartum and predispose the women to postpartum depression.

Increased probability of a diagnosis of depression was associated with negative life events seen in the retrospective study (Paykel et al, 1980)[33]. However, drawback of the study is subjects try to attribute the cause of depression to some stressful event which can lead to over reporting of such events. This can be avoided by a prospective study design.

High levels of depressive symptoms and increased chance of a diagnosis of postpartum depression were found to be linked to increased exposure to life events from the time of conception till 12 weeks postpartum (O' Hara, Rehm, Campbell)[34]. One study found no correlation between life events and postpartum depression (Hopkins, Campbell and Marcus, 1987) [35]. Similar findings are reported in two other studies. Self-report measures produced significantly stronger relationship between life events and postpartum depression compared to interview-based assessments. This explains the variation in the findings.

Thyroid and postpartum depression

The days following child birth are at a time of increased vulnerability for mood changes particularly depression this happens mainly due to abrupt and dramatic changes in the hormonal levels. Changes in the thyroid function have also been linked to postpartum depression. One of the study conducted by Bloch and Schimdt shows women had differential sensitivity to thyroid hormones and even normal changes in the endocrine system causes an affective episode.

There is a link between thyroid dysfunction and mood changes. Pop et al (1991)[36] reported that 30% of women was found to be depressed during the initial twelve months. Amino et al (1976) [37] first described transient postpartum thyroid dysfunction. He described 6 cases of women in the postpartum period with signs of mild hypothyroidism. He found that those patients also had increased levels of thyroid antibodies [38]. Longitudinal studies conducted among five hundred postpartum individuals for thyroid status. Among them most common being mild hypothyroidism and next one is hyperthyroidism.

Since thyroid dysfunction associated with mood disturbances, there is possibility of correlation occurs between transient changes in the level of thyroid and postpartum depression. Anecdotal reports told that postpartum thyroid abnormalities imitates like severe depression with

psychotic features. Hayship et al [39] reported that those patients who are antibody positive for thyroid shows significant problems in the postpartum period and more prone to develop transient thyroid dysfunction.

Recent reviews told that emotional disturbance and psychological symptoms causes alteration in central nervous system and immune system [40] which causes changes in the thyroid levels.

After delivery, the removal of the placenta, levels of Estrogen and Progestrone will reach the normal level within the 5^{th} day of postpartum. During pregnancy, High Estrogen levels are responsible for the increased production of thyroid hormone binding globulin and increase in the level of T3, T4 and decrease in the level of free T3, T4. TSH levels increases as a compensate measure follow that T3 and T4 maintains with the normal range. After delivery, there is a fall in the thyroid binding globulin. T3 and T4 decreases and free T3 and T4 remains constant (Rodin 1989)[41]

During the initial Postpartum period, transient hypothyroidism present in 5% of the subjects and it reaches the peak within 5 months and it is associated with depression Amino et al(1981) & Jersten (1990)[42]. In 1977, Hamilton [43] found that thyroxine levels decrease after child

birth and therapeutic benefit can be obtained by administering thyroxine during the initial few weeks.

George and Willson [44] found that no correlation between postpartum depression and thyroid function tests levels. Harris [45] compared 110 antibody positive women with 132 antibody negative women and found that depressive illness occurs with majority of the individuals who are antibody positive.

Steiner found the withdrawal of gonadal hormones in predisposed individuals causes changes in the serotoninergic cascade that leads to postpartum depression. Thyroid dysfunction has been led to postpartum depression which was detected by Epperson [46] and his colleagues. He tested postpartum women with depressive symptoms for thyroid abnormalities to find out the possible biological cause.

Hypothyroidism includes low mood, weight gain, anxiety and fatigability. Hyperthyroidism includes rapid weight loss, agitation and panic attack. Both of the above condition affect 5% of the women and sometimes cause misdiagnosis and delay in treatment. Hayes and Robert in 2000 found that there was no adequate evidence to link postpartum depression with hormonal levels.

Other hormonal changes during postpartum

Change in the hormonal levels occurs dramatically during the postpartum period. Many of the authors indicate the important role of hormones such as Estrogen, Prolactin, Cortisol, Thyroid and Vasopressin in Postpartum Depression. The evidence for etiological role is still lacking. Estrogen and Progestrone increase during the period of pregnancy due to the increased placental production of these hormones.

Proposed model exist between the postpartum depression and women biology. Psychological dysfunction and physiological changes of late pregnancy contribute postpartum depression. Attempt to reveal the hormonal levels of Estrogen, Progestrone, Thyroid hormones and its relation with postpartum depression not yield positive findings because of inadequate sample size and inappropriate controls used.

Dopamine is an important neuro chemical transmitter which involves in arousal and motivation. It plays a role in Maternal responsiveness and postpartum depression. Regulation of Dopamine plays good function and smooth the progress in the stability of psychological stability of the patient and adaptation to the postpartum women.

Decline in Estrogen level and dopaminergic response to the postpartal decreased Estrogen associated with the recurrent postpartum psychosis. Flemming examined the cortisol level during pregnancy and following child birth in a person who had significant life events. Those women with higher cortisol levels had heightened attached response with their children. Perrys told that elevated cortisol, increases the sensitivity to infant cues. Flemming Rule found that hightened status of arousal of new mothers mediated by elevated cortisol. Disregulation of hypothalomo pituitary axis secretion occurs in pregnancy. These changes will get continued in postpartum.

Cultural differences in Psychosocial stress:

Western society people may be unresponsive and not much concerned about the post birth needs of the recovering parturient women. Atkinson and Richalle[47] found that increased level of postpartum depression has been associated with child care related stress.

Cohn and Camphell[48] found that delivery related complications and O'Hara and Swaine[49] found that stressful life events since delivery increases the risk of postpartum depression. Neter and his colleagues[50] found the effects of stress, social support and incidence of postpartum depression.

Socio cultural model predicts the importance of social support in western countries to protect them against postpartum depression. Women who suffering from postpartum depression receives partner support less likely to have detoriation. Deficient spousal support was found in the women who experience PPD(Hachel and Rube 1991)[51]. Difficulty in marital relationship and lack of social support are also important predictors of postpartum depression.

O'Hara did a longitudinal study and subjects were given presumptive stressful life events index. And patients were interviewed before and after child birth. He also found that postpartum depression was present in persons who had a depressive episode in their past, stressful life events after child birth and not enough social support.

Crickenberg and Leed (2002)[52] found that childhood parental acceptance was one of the factors for preventing postpartum depression. Positive perception of social support and caring relationship may influence the maternal well being and positive perception of new born. Cross cultural studies of non western countries shows that following child birth, there will be high levels of family and community support (Jordan and Garcia 1980)[53]. The incidence of postpartum psychiatric disorder is difficult to interpret in cross sectional study in non western societies due to reporting bias and focus on this issue has been linked.

Oakley and Ball (1980)[54] found that peripartal psycho social support is lacking in western society. Western women who recently delivered not get enough time for complete recovery during the postpartal period. Sleep deprivation in the form of leaving the bed for night feeding and chronic day time isolation responsible for psychological problems

Many of the researches associated with postpartum depression did at developed countries (kumar, 1994)[55].very few studies were conducted in developing countries. Gautam, Nijhawan and gehlot, 1982[56] told that postpartum illness was rare in developing countries. But they told many of the postpartum depression cases will go unrecognised and underreported. Stern and kruckman(1983)[57] told that operational criteria for depression varied significantly across different cultures.cross cultural research aimed to detect variation in clinical presentation across many countries. Cox (1999)[58] described about Ugandan women who had postpartum depression. He termed as ‘amikiro’ where women had intense urge to eat their child.in western clinical interviews there is no specific question like ‘intense desire to eat their child’ Results from cross cultural studies when it done in a large scale found that rates of postpartum depression across cultures will have a similar rates compared to that of western countries. Ugandan study conducted by Cox found that rate of depression in African mothers had a identical rate compared that of developed countries.

Dennerstein et al 1989 and Thorpe et al 1992[59] found that rate of depression will be the same in Australian,Italian and dutch mothers.shah et al(1971) found that Indian women were identify to have neurotic disorders with postpartum onset.

Interviewer should know the importance and limitations of assessment tools across different ethnic groups.

Presentation of psychiatric symptoms varied across culture.kleinman(1996) found that somatic symptoms were common in some groups. Upadhyaya et al (1989)[60] there is no significant difference in depression rate or somaic and psychological symptoms levels between native white and Asian women in India. But the reasons for consultation differ between this two. Asian women consulted their doctors predominantly for their somatic symptoms whereas white mothers for depressive symptoms.this is due to unwillingness of women to confess that she had depression and cultural expectations of motherhood.certain rituals in some cultures protect the person from the development of postpartum depression.okano et al(1992)[61] found that Japanese custom ‘ satogaeri bunben’in which mother after giving birth stay along with her mother for some months.he told that there is a definite link between the depression onset and postpartum mothers left the maternal home.

Detection of Postpartum Depression

Postpartum depression is considered to be a major health problem which affects most of the women. Even though the postpartum depression was recognised, it causes increased maternal morbidity. There are two reasons and the foremost reason is, women are not willing to get help from the professionals (Small, Astbury, Lumley & Brown 1994)[62]. The other reason is they are reluctant to disclose their emotional troubles particularly depression (Lumley & Brown in 2000)[63]. After child birth, there is a strong myth that every woman will be blissful and so their unhappiness is minimised.

Many women could not understand the nature of the problems they experience. For some women, the onset of symptoms such as fatigability and relationship difficulty may leads to depression (Small and colleagues by 1994, Whitton, Appleby, & Warner by 1996)[64] Some women identified the symptoms but fail to go to hospital and take treatment because she might have a fear of being labelled as mentally ill. Even if they get help from doctors, and reporting to have aggressiveness, displeasure and humiliation, their family members will disagree with the women who seeks help since it is not acceptable in some cultures to admit to any depressive symptoms (Elliott, Matthey & Barnett in 1997 and Okano, Hasegawa, Nagata, Nomura, & Kumar in 1998)[65]

Health professionals may also play a part of diagnosing postpartum depression. Most of the health professionals do not have enough training in assessing and managing postpartum depression. And so, they do not find the symptoms properly and they feel unsure about the issues. Research shows that screening can help these health professionals to detect postpartum depression.

There are various self report scales available all over for accessing depressive symptomatology and also to measure treatment response. However, some of the questionnaires are under copyright and are unavailable for public use. These measurements thus obtained by these self-report scales, only depict the depressive symptom's frequency or severity and are not able to obtain a diagnosis. In-depth assessment is suggested for high scores.

The Montgomery-Asberg Depression Rating Scale (MADRS) was found as an observer rating scale. Though it contains 10 items, major concern deals with the depression psychological symptoms and also the global ratings of disturbance and social functioning. Individual items are rated on a scale of 0 to 6 and the total score lies within 0 and 60. Although scores generally seem to be between 7 and 18 for mild depression, quite a few researches have used 11 as cut off value. Despite

being used by several postpartum depression researchers, its high false positive rate demands some other method for reliable scores.

In a US study (2000), 391 mothers were taken to postpartum screening test. They were examined using Edinburgh Postnatal Depression Scale (EPDS) and then with routine clinical examination (Galvin, Theofrastous & Evins)[66].

In that result, the depressive symptomatology detection was high (35.4%) as expected in that screening group than the unprompted detection group (6.3%). Similar research was conducted by other US study in 2002 (Fergerson, Jamieson, & Lindsay, 2002)[67] and found that women who finished EPDS were likely to be identified with postpartum depression than those in the routine clinical examination group. Some other researchers have found more or less comparable results (Hearn and his colleagues in 1998 and Georgiopoulos, Wollan, Bryan & Yawn in 2001)[68]

Indian studies on Postpartum Depression

In Postpartum Depression, Only few research have been undergone so far. The epidemiological data have been increased in the recent years. Community based studies and hospital based studies were conducted in the recent years in order to determine the clinical description on Postpartum Depression. Two prospective studies have been conducted in Goa and rural South India. The prevalence rate of depression found by the studies was 23% in Goa and 16% in rural South India. Poor marital relationship and antenatal depression were found to be the risk factors in both the studies.[69]

Chandran and his colleagues [69] found that the risk factors of Postpartum Depression in developing countries like India differ from western countries. Problems with Spouse and parental relationship have been implicated in Western studies as an important risk factor. But in rural South India, problems with mother in law and birth of a daughter when son was desired are considered to be a significant risk factor.

There is a correlation between Postpartum Depression and low maternal intelligence and low birth weight with malnutrition in children in the age 6 to 12 months (S. Anoop, B. Saravanan, A. Joseph)[70]. Another study was conducted in a district hospital and maternity child health care centre in South India in which a cross-sectional study was

done for 150 postpartum women and interviews were conducted immediately after delivery and 6 to 14 weeks after delivery. Prevalence of depression detected by the studies are 11.3% in the immediate postpartum and 15.8% at 14 weeks. Multiparity, poor social support, disappointment with the sex of the baby, stressful life events are considered to be the significant risk factors in this study. Gautam and his colleagues[56] studied 100 patients with Postpartum psychiatric syndromes and found that 14 % of the individuals suffered from brief depressive reaction and 5% suffered from depressive psychosis. In 2002, Patel with his colleagues found to have depression in 23% of mother delivered in 6 to 8 weeks.

A prospective study [71] conducted among 50 Indian women in the postpartum period who got admitted in a psychiatric institution. In this study, maternal aggression, infanticidal ideas and infanticidal behaviour were assessed among these individuals. About 43% of the mothers told that they had infanticidal ideas. 36% of the individuals reported infanticidal behaviour. And 34% had both. r value was found to be .8 in the persons who had both infanticidal ideas and behaviour. Infanticidal ideas present in the women who had postpartum depression for the mothers having female infant, psychotic ideas toward infant. Statistical analysis logistic regression revealed important predictors of infanticidal ideas and infanticidal behaviour. Presence of depression and psychotic ideas toward the infant are the important predictors.

Effects and Future perspectives of Postpartum

Depression in the child

Greig (1998) found that if the mother had Postpartum Depression, three quarters of the boys showed behaviour abnormalities in the form of hyperactivity and distractibility in the initial school period. Also he found an interesting fact that women delivering a baby girl will not show any behavioural problem. Lindgren (2001) found that children born on depressed mother will have insecure attachment than the children born on non depressed mother.

A Study conducted by Brennan (2000) found that there is an association between severity, chronicity of depressive symptoms and child behaviour at the age 5. Postpartum Depression in rare cases leads to infanticide. In Great Britain, Edebohls and Ecklund(2002) found that Postpartum Depression is considered to be a defence of infanticide until the child has reached two years of age.

In United States, Postpartum Depression can leads to 24 baby deaths in the last 20 years. It also affects the relationship between the mother and her partner. As an impact of Postpartum Depression for women, their Spouse also experiencing the same affects (Borell 1998). Postpartum depression may persist in some individuals for more than a year so researchers implicated the importance of long term effects of

maternal depression on child's growth and development. It is necessary to observe the mood status of mothers periodically to find out the persistence of depression. Recurrence rate and persistence of maternal depression was assessed and presented in marce society meeting (Australia, 2002).

Recurrence rate collected by the data shows 41%.results of Pilot studies showed that recurrent depression in mothers affects the development of the infant. But longitudinal studies on progressing effects of children's experience to depression are more important. Future directions aimed at how the child manage with long term exposure to depressive mothers, how their growth and development slowed down and how they develop depressive symptoms in later childhood period are important aspects in the field of research. It is not easy to measure depressive symptoms in childhood period but studies shows consistent results in adolescent age that anxiety and depression were increased in adolescent age whose mother had postpartum depression. The genetic predisposition also plays a role in these individuals.

Researches put forward some interesting facts if the child in the age group of 5 to 8 were exposed to depressed mother they had a difficulty in arithmetic calculations and problem solving exercises. in a card playing tasks studies were conducted by comparing children of

postpartum depressed mothers with the children of postpartum non depressed mothers. When they started to lose a game children of postpartum depressed mothers make

Internal global and stable attributions of failure (e.g. this is my fate) whereas other children had an unstable attributions (e.g. I will win tomorrow).mother and infant relationship were assessed by monitoring interactions on video. In order to find out the temperament and behaviour of the child many schemes were coded but they are not consistent across studies.

Maternal report on the observation of the children may be a confounding factor since mother who had depressive symptomatology would have negative cognitive distortions. So some studies focussed on the paternal report of child behaviour in order to avoid drawback of maternal report. In one such study, paternal reports were similar to that of maternal reports on child behaviour (Cicchetti, Rogosch, & Toth, 1998).

Other studies reported that paternal awareness on child-mother relationship and development of the child may serve as useful tool for the observations of trained practitioners (Kendall-Tacket, 1993) told that monitoring of infant factors helpful in assessing postpartum depression. The role of infant factors in postnatal depression studied by Murray et al(1996) in a sample of 200 mothers with postpartum depression and

observe maternal perception of infant behaviour. Marital disharmony is another important predictor of postpartum depression. Future research is important in establishing the role of father in postpartum depression (breiding-buss, 2001; welford’1996).

AIM AND OBJECTIVES

The aims and objectives of this study are

- To find the correlation between postpartum depression, serum thyroid levels and significant life events.
- To determine the socio demographic profile associated with severity of postpartum depression.

Null Hypothesis

To test the null hypothesis

- There is no significant association between postpartum depression and serum thyroid level.
- There is no significant association between postpartum depression and significant life events.

METHODOLOGY

THE SETTING

This study was conducted over a period of 6 months between June 2012 and November 2012 among patients who had postpartum depression. The study was conducted in Institute of Obstetrics and gynaecology, Chennai.

SUBJECTS

Subjects of this study were 30 patients with postpartum depression. More than 700 patients were screened in their postpartum period at well baby clinic and postpartum clinic in Institute of Obstetrics and gynaecology. Among them 30 patients found to have postpartum depression were included in this study initially.

Patients were screened in the postpartum period by using a specific tool Edinburgh postnatal depression scale using a cut off point of 12. Those who qualify for postpartum depression were given Hamilton depression rating scale to assess the severity of depression and sociodemographic profiles associated with the severity of depression were assessed. Presumptive stressful life event scale and thyroid function tests were done and correlation between significant life events, thyroid levels and Hamilton depression rating scales scores were done.

INCLUSION CRITERIA

- Age>18 yrs
- Both normal and caesarian section deliveries
- Women who give informed consent
- Able to read Tamil language

EXCLUSION CRITERIA

- History of psychiatric illness in the past
- History of medical illness like diabetes mellitus, hypertension, asthma and Tuberculosis.
- History of thyroid disorders.

STUDY DESIGN - Cross sectional study

MATERIALS USED

- Edinburgh Postnatal Depression Scale
- Presumptive Stressful Life Event Scale
- Hamilton Depression Rating Scale – 17 Item Scale
- Hormonal assays – Serum T3,T4 and TSH

Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale (EPDS) was initially introduced in Livingston and Edinburgh to screen the postnatal depression. It was initially developed to help the primary health care professionals as a screening tool to screen mothers for Postnatal Depression. This scale consists of 10 items. Each item is scored on the basis of four point scale (0 – 3). The maximum and minimum score of this EPDS scale vary from 0 to 30. This scale is very useful to access the intensity of depressive symptoms in the previous seven days of the patient. Among the 10 items, 5 items are related with dysphoric mood. 2 of the items are related to anxiety. And other items are related with guilt, suicidal ideas and not coping. It is translated in 11 languages.

The EPDS is not a confirmatory tool for the diagnosis of depression. When EPDS cut off is greater than or equal to 12, Cox found that the sensitivity is 86% and specificity is 78%. Positive predictive value is 73% for depression. Another study conducted using the same cut off value, on the sample of 702 subjects which found that sensitivity of 68 %, specificity of 96% and positive predictive value of 67%. In order to reduce the detection failure postpartum depression, another study has been conducted by using a cut off value of 10.

EPDS had a great potential to be used as research tool. It can be used in 2 ways. When selecting this threshold, the sensitivity for the detection of depression is 100% and specificity is 82%. The cut off point is greater than 12, the sensitivity for major depression was 100% and specificity is 87%. At first, it can be used as a screening tool for case finding in intervention study or epidemiological study.

Scores of EPDS are as follows

0 to 9-no depression

10 to 12-possibility of depression

13 to 14-possibility of depression likely high

Greater than 15- probability of significant depression

Cut off point of 12 is used as criteria for depression in our study.

Presumptive Stressful Life Event Scale

This scale used to assess the life time events in a short period within 6 months. It was introduced by Gurmeet Singh on 1981. It is composed of 51 items and each item had a mean stress score. It was first assessed in Indian patients with 200 samples of patients. All of the questions are open ended. This scale was based on the standardisation of social readjustment schedule made by Holmes and Rahe who found that commonly encountered stressors are more important than the unregulated process of taking an unstructured history.

He developed a list of Life events according to Indian conditions, varying from death of Spouse to going to pilgrimage. Death of Spouse had a mean score of 95 and going on to pilgrimage had a mean score of 20.

A cumulative score can be calculated by adding up all other individual scores. These items are classified into personal/impersonal & desirable/undesirable events.

Hamilton Rating Scale for Depression (HRSD)

It is a multiple item questionnaire used to detect depression. it is helpful for primary health care professionals. It is also used to assess the recovery of the patient from the depression. George Max Hamilton introduced the inventory first. It is initially designed to assess the severity of depression by identifying the mood status of individuals, feeling of guilt, suicidal ideation, somatic symptoms etc. since the scale focused more on insomnia than that of the suicidal ideas this instrument is criticized. It was earlier developed to detect the melancholic symptoms in the patients. One of the major limitations of this instrument is symptoms of atypical depression like hypersomnia etc cannot be made out.

The rating falls under either of the 2 scales.

1) 5-point (0-4)

2) 3-point (0-2)

Ratings for 5-point scale are as follows:

0 - absent

1 - doubtful to mild

2 - Mild to moderate

3 - Moderate to severe

4 - Very severe (reserved for extreme symptoms)

Scores for Ham D are as follows:

0 to 7- No depression

8 to 13-mild depression

14 to 18-moderate depression

19 to 22-severe depression

Greater than 22-very severe

Serum thyroid assays:

Thyroid function tests done are serum T3, serum T4 and TSH. Thyroid function test were done at standard laboratory in Chennai after getting informed consent from the patient. The standard reference values were calculated as per WHO reference values. Values for T3,T4 and TSH are as follows

T3-1.25 to 2.50nmol/l

T4-65 to 138nmol/l

TSH-0.36 to 3.98miu/l

Thyroid function test were done by using techniques of radioimmuno assay.

Approval was obtained from the ethical committee of Madras Medical College in Chennai.

Informed consent in written form was obtained for participation in the study from the patients.

Patients were administered through Edinburgh Postnatal Depression Scale, Presumptive Stressful Life Event Scale, Hamilton Depression Rating Scale and Hormonal assays.

The data thus collected were tabulated and discussed with reference to the objectives and aims of the study. Statistical analysis was done using Pearson’s correlation and Chi-square test. Statistical analysis was done using SPSS software version 20.

RESULTS

CORRELATION BETWEEN AGE AND SEVERITY OF DEPRESSION

AGE	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
18-25	18	5	6	7		
26-30	7	2	1	4		
31-35	3	2	1	0	-.066	.728
>35	2	0	0	2		
TOTAL	30	9	8	13		

p value is not significant (.728)

There is no significant correlation between age and Ham D score severity (r value -.066 and p value is .728).there is negative correlation exist between age and severity but does not show any statistical significance

CORRELATION BETWEEN PARITY AND SEVERITY OF DEPRESSION

PARITY	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
PRIMI	17	5	5	7		
PARA2	9	3	3	3		
PARA3	4	1	0	3	.095	.616
TOTAL	30	9	8	13		

p value is not significant (.616)

Regarding the parity and Ham D severity there is no significant correlation (r value .095 and p value .616).there is a positive correlation exist between parity and severity of depression but does not show any statistical significance

CORRELATION BETWEEN EDUCATION AND SEVERITY OF DEPRESSION

EDUCATION	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
UNEDUCATED/ ELEMENTARY SCHOOL	13	2	3	8		
HIGH SCHOOL	12	3	5	4		
HIGHER SECONDARY	2	1	0	1	-.478	.008
GRADUATES	3	2	0	0		
TOTAL	30	9	8	13		

p value is significant (.008)

There is significant correlation between education status and Ham D severity (r value -.478 ; p value .008) there is negative correlation exist between educational status and severity of depression and statistically significant.

CORRELATION BETWEEN OCCUPATION AND SEVERITY OF DEPRESSION

OCCUPATION	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
HOUSEWIFE	21	8	5	8		
UNEMPLOYED	9	1	3	5	0.241	0.200
TOTAL	30	9	8	13		

p value is not significant (.200)

There is no significant correlation between occupation and severity of postpartum depression (r value .241 and p value .200) there is a positive correlation exist between occupation and severity of depression but does not show any statistical significance

CORRELATION BETWEEN TYPE OF DELIVERY AND SEVERITY OF DEPRESSION

TYPE OF DELIVERY	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
LSCS	20	3	6	11	-.446	.014
NORMAL	10	6	2	2		
TOTAL	30	9	8	13		

p value is significant (.014)

Type of delivery shows significant correlation with Ham D severity. Those person undergone LSCS had an increased Ham D score (r value -.446 and p value .014) there is negative correlation exist between type of delivery and severity of depression and show statistical significance

CORRELATION BETWEEN CHILD GENDER AND SEVERITY OF DEPRESSION

CHILD GENDER	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
MALE	21	6	5	10	-.275	.141
FEMALE	9	3	3	3		
TOTAL	30	9	8	13		

p value is not significant (.141)

There is no significant correlation between the gender of the child and postpartum depression severity (r value -.275 and p value .141)assessed by Ham D. there is a negative correlation exist between gender of the child and severity of depression but does not show any statistical significance

CORRELATION BETWEEN DESIRED/UNDESIRED PREGNANCY AND SEVERITY OF DEPRESSION

DESIRED/ UNDESIRED PREGNANCY	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
DESIRED	20	7	6	7		
UNDESIRED	10	2	2	6	0.223	0.236
TOTAL	30	9	8	13		

p value is not significant (.236)

There is no significant correlation between undesired pregnancy and Ham D severity (r value .223; p value .236) there is a positive correlation exist between undesired pregnancy and severity of depression but does not show any statistical significance

CORRELATION BETWEEN TYPE OF FAMILY AND SEVERITY OF DEPRESSION

TYPE OF FAMILY	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
NUCLEAR	21	6	5	10	-.103	.589
JOINT	9	3	3	3		
TOTAL	30	9	8	13		

p value is not significant (.589)

There is no significant correlation between the type of family and postpartum depression (r value -.103 and p value.589). there is negative correlation exist between type of family and severity but does not show any statistical significance

CORRELATION BETWEEN BREASTFEEDING AND SEVERITY OF DEPRESSION

BREASTFEEDING	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
PRESENT	18	8	7	3		
ABSENT	12	1	1	10	0.595	0.001
TOTAL	30	9	8	13		

p value is significant (.001)

There is significant correlation between persons who were not breastfed their child and the severity of the postpartum depression (r value .595; p value .001) there is a positive correlation exist between breastfeeding and severity of depression and statistically significant.

CORRELATION BETWEEN SIGNIFICANT LIFE EVENT AND SEVERITY OF DEPRESSION

SIGNIFICANT LIFE EVENT	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
PRESENT	21	5	4	12		
ABSENT	9	4	4	1	0.612	0.001
TOTAL	30	9	8	13		

p value is significant (.001)

There is significant correlation between life events and severity of depression (r value .612 and p value .001) there is a positive correlation exist between significant life events and severity of depression and statistically significant.

SIGNIFICANT LIFE EVENTS EXCESSIVE ALCOHOL BY FAMILY MEMBER

Crosstab					
			EXCESSIVE ALCOHOL BY FAMILY MEMBER		Total
			1	2	
LIFE EVENTS	1	Count	14	7	21
		Expected Count	9.8	11.2	21.0
	2	Count	0	9	9
		Expected Count	4.2	4.8	9.0
Total		Count	14	16	30
		Expected Count	14.0	16.0	30.0

Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.250[a]	1	.001		
Continuity Correction[b]	8.731	1	.003		
Likelihood Ratio	14.722	1	.000		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	10.875	1	.001		
N of Valid Cases	30				

p value is significant (.001)

SIGNIFICANT LIFE EVENTS - MARITAL CONFLICT

Crosstab					
			MARITAL CONFLICT		Total
			1	2	
SIGNIFICANT LIFE EVENTS	1	Count	7	14	21
		Expected Count	4.9	16.1	21.0
	2	Count	0	9	9
		Expected Count	2.1	6.9	9.0
Total		Count	7	23	30
		Expected Count	7.0	23.0	30.0

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.913[a]	1	.048		
Continuity Correction[b]	2.272	1	.037		
Likelihood Ratio	5.863	1	.015		
Fisher's Exact Test				.05	.042
Linear-by-Linear Association	3.783	1	.047		
N of Valid Cases	30				

p value is significant (.05)

SIGNIFICANT LIFE EVENTS - FINANCIAL LOSS

			FINANCIAL LOSS		Total
			1	2	
SIGNIFICANT LIFE EVENTS	1	Count	6	15	21
		Expected Count	4.2	16.8	21.0
	2	Count	0	9	9
		Expected Count	1.8	7.2	9.0
Total		Count	6	24	30
		Expected Count	6.0	24.0	30.0

Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.214[a]	1	.073		
Continuity Correction[b]	1.677	1	.195		
Likelihood Ratio	4.897	1	.027		
Fisher's Exact Test				.141	.091
Linear-by-Linear Association	3.107	1	.078		
N of Valid Cases	30				

p value is not significant (.141)

SIGNIFICANT LIFE EVENTS – FAILURE EXAMS

Crosstab					
			FAILURE IN EXAMS		Total
			1	2	
SIGNIFICANT LIFE EVENTS	1	Count	5	16	21
		Expected Count	3.5	17.5	21.0
	2	Count	0	9	9
		Expected Count	1.5	7.5	9.0
Total		Count	5	25	30
		Expected Count	5.0	25.0	30.0

Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.571[a]	1	.109		
Continuity Correction[b]	1.143	1	.285		
Likelihood Ratio	3.981	1	.046		
Fisher's Exact Test				.286	.143
Linear-by-Linear Association	2.486	1	.115		
N of Valid Cases	30				

p value is not significant (.286)

CORRELATION BETWEEN THYROID FUNCTION TESTING AND SEVERITY OF DEPRESSION

THYROID FUNCTION TEST	DEPRESSED	MILD	MODERATE	SEVERE	r value	p value
EUTHYROID	25	7	8	10		
SUB CLINICAL HYPOTHYROID	3	1	0	2	0.252	0.210
HYPOTHYROID	2	1	0	1		
TOTAL	30	9	8	13		

p value is not significant (.210)

There is no significant correlation between thyroid function test and severity of depression. r value .252 and p value .210.there is positive correlaton exists but does not shows any statistical significance.

DESCRIPTIVE STATISTICS

	N	Minimum	Maximum	Mean	Std. Deviation
LIFE EVENTS TOTALSCORE	30	0	245	97.97	78.14
T3	30	.56	2.24	1.5637	.45644
T4	30	24	112	75.8	2.344
TSH	30	.5	25	5.118	3.8348
HAM D	30	10	21	16.56	3.474
EPDS SCORE	30	12	20	15.74	3.006

CORRELATION BETWEEN SIGNIFICANT LIFE EVENTS, SERUM THYROID LEVELS AND POSTPARTUM DEPRESSION

		TOTAL SCORE	T3	T4	TSH	HAM D
SIGNIFICANT LIFE EVENTS TOTAL SCORE	Pearson Correlation	1	-.238	-.358	.463**	.855**
	Sig. (2-tailed)		.206	.052	.01	.000
	N	30	30	30	30	30
T3	Pearson Correlation	-.238	1	.432*	-.477**	-.191
	Sig. (2-tailed)	.206		.017	.008	.312
	N	30	30	30	30	30
T4	Pearson Correlation	-.358	.432*	1	-.511**	-.237
	Sig. (2-tailed)	.052	.017		.004	.208
	N	30	30	30	30	30
TSH	Pearson Correlation	.463**	-.477**	-.511**	1	.287
	Sig. (2-tailed)	.01	.008	.004		.124
	N	30	30	30	30	30
HAM D	Pearson Correlation	.855**	-.191	-.237	.287	1
	Sig. (2-tailed)	0	.312	.208	.124	
	N	30	30	30	30	30

DISCUSSION

- There is no significant correlation between age and Ham D score severity (r value -.066 and p value is .728) which is consistent with the previous metaanalytical study conducted by O'Hara and Beck in the year 2001 (26 studies n>10,000).

- Regarding the parity and Ham D severity there is no correlation (r value .095 and p value .616) which is in contrast to the studies conducted by Beeghly(2002) who found that primiparous mothers show the increased severity of depression in the initial two weeks to two months of time.

- Type of delivery shows significant correlation with Ham D severity. Those person undergone LSCS had an increased Ham D score (r value -.446 and p value .014) which is consistent with the previous studies conducted by Boyce and his colleagues (1992), Hannah (1992) and contrast with the previous studies of Warner et al (1996), Forman (2000) who found that no statistical significant relationship between LSCS and postpartum depression.

- There is significant correlation between education status and Ham D severity (r value- .478 ; p value .008) which is consistent with the metaanalytical studies collected by O'Hara and Swain (ten studies n>7000).

- There is no significant correlation between the gender of the child and postpartum depression severity (r value -.275 and p value .141)assessed by Ham D which is contrast to the study conducted by Patel et al (2002) (n=172) Lee et al (2000) (n=220). Spousal disappointment with the sex of the gender associated with significant risk for postpartum depression.

- There is no significant correlation between occupation and severity of postpartum depression (r value .241 and p value .200) which is contrast to the study of O'Hara and Swain who told that occupation of the mother had a low effects size but important statistical relationship to postpartum depression.

- There is no correlation between the type of family and postpartum depression (r value -.103 and p value.589).

- There is significant correlation between persons who were not breastfed their child and the severity of the postpartum depression (r value .595; p value .001) highly significant which is consistent with the findings of Warner (1986) and Hannah et al (1992) which is in contrast to findings of Forman (2000). It was found in recent studies, lactation is associated with decreased stress response, decreases the onset of depression in multiparous women who breastfed their child.

- There is no significant correlation between undesired pregnancy and Ham D severity (r value .223; p value .236) which is contrast to the findings of Warner et al who found a significant relationship between unplanned pregnancy and postpartum depression (total number of 2375 women).

- There is no significant correlation between thyroid function test and severity of depression. r value .252 and p value .210

- There is no correlation between T3, T4, TSH and Ham D score. For T3, r value is .191 and p value .312. For T4, r value -.237 and p value .208. For TSH, r value .287 and p value .124.

- There is significant correlation between life events and severity of depression (r value .612 and p value .001) which is consistent between the previous studies of Brown and Harris (1998), O'Hara, Rehm, Camphell which is contrast to previous studies of Hopkins and Marcus.

- The strong correlation between the postpartum depression and negative life events was demonstrated clearly in previous studies of Paykel et al (1969) and Tanner (1976).

- In the previous studies postpartum depression was associated with martial disharmony (Tod 1964; Kumar and Robson 1978) which is also consistent with our study (p value .05). In our study we find a significant relationship between alcohol used by the husband and postpartum depression. p value significant .001 determined by Chi square test.

- There is a significant correlation between total score of significant life events and TSH values and Ham D score. The r value between total score of significant life events and TSH was found to be .463 and p value is .01 and the r value between total score of significant

life events and Ham D score is .855 and p value is highly significant .000

- T3, T4 values are negatively correlated with total score of significant life events. But there is no statistically significant relationship which is consistent with the previous studies of George and Wilson.

In our study we found that those patients who had increased stress score on life event scale had some changes in thyroid values. In our study TSH values are abnormal in five patients. Among them two had hypothyroidism and three had sub clinical hypothyroidism. Recent review by Stain miller in his paper on depression immune system and mental health told that emotional and psychological disturbances causes alteration in immune system and causes changes in the thyroid level. The changes in the TSH level can also be explained by the fact because of changes in the cortisol levels. The falling cortisol levels after delivery is responsible for thyroid autoimmunity and it causes changes in thyroid levels and postpartum depression. And in our study we examined all cases at sixth week postpartum where transient hypothyroidism present in 5% of the subjects in the first postpartum year (Amino et al 1981).

Limitations of the study

- This study is done in institute of Obstetrics and Gynaecology and may not represent the whole population.
- The study is cross sectional in nature. Longitudinal study is required.
- Small sample size.
- In many studies, the role of thyroid and relation to postpartum depression can be assessed by determining thyroid auto antibodies. In our study, we lack auto immune assessment.
- Single sample of serum T3, T4 and TSH collected at six weeks is not enough. Serial estimations in the subsequent months will be needed.
- In significant life event scale we collect retrospective collection of data that may leads to over reporting of life events in the study.

CONCLUSION

Postpartum depression is a general complication of childbearing and it is an important healthiness problem with subtle effects on mother, baby and even the family. Depression in this crucial phase of life implies special meanings and risks to a woman. It is easily possible to identify women with increased risk factors. There should not be any delay in treating women having postpartum blues or the women who have low level risk factors, but those who have high level risk factors are need to be cultured and keenly monitored by their doctors and healthcare professionals and so more attention is needed to focus towards preventing such illness.

Many tools for screening are available, however the optimal time for screening mechanism and its applicability to various cultural populations are yet to be established. Treatments like psychotherapy, counseling, and support groups would also make a considerable change in the mother, child and entire family wellbeing.

As an impact, postpartum depression however affects the baby who is much dependent on mother’s care. There exists clear evidence on long term period of maternal depression which causes negative effects like

emotional, cognitive, behavioural and interpersonal development of young children, but these lasts for only a limited period of time. Conversely, prolonged or recurrent periods of maternal depression seems to cause longer term effects on offspring. Unfortunately PPD still remains under diagnosed and under treated. Research suggests that, as like general depression PPD is amenable to the same treatment but some randomized controlled trials exist to guide practice and policy for this population.

Biological basis of postpartum disorders not able to establish clearly in many studies. Several methodological problems that troubled the studies(Robinson et al.,2001). In many studies inaccurate measurements of the hormonal levels, false positive results in the laboratory settings, taking blood samples at inappropriate times, paying no attention to the activities such as breast feeding are responsible for wrong results. Seasonal variations also cause changes in hormonal levels and circadian rhythm changes were often missed in many studies. Studies that observe one hormonal change were inadequate due to multiple endocrine interactions.

Normal physical symptoms of the puerperium may mimic like depression and it is a confounding factor in many studies. Psychological rating scales varied in many studies due to confounding physical symptoms of puerperium. Postpartum depression is thought to have multiple causative factors. The role of environmental factors along with the changes in hormonal levels plays an important role in postpartum depression

Recommendations for Public Health professionals

- The symptoms of postpartum depression should be taught to the pregnant women and their partners in the prenatal classes.
- The changes following the child birth including the roles and responsibilities should be taught to the pregnant women along with their partners.
- All new parents should be informed about the symptoms of postpartum depression providing the written statements.
- Enquire all new parents about the depressive symptoms during check ups.
- Educate the Health care professionals who service the new parents.
- Postpartum depression awareness campaign can be provided bi-annually through social media.

REFERENCES

1. Bennett, S.S. & Indman, P. Beyond the blues : A guide to understanding and treating prenatal and postpartum depression. Moodswings Press, 2006
2. Gayne, Robert S : Rate of assessment in depression Am J Psychiatry
3. Esquirol, J. E. D. (1838). Des maladies mentales considerees sous les rapports medical hygienique et medico-legal: Vol. 1 , Paris: J. B. Bailliere.
4. Hamilton, J. A. (1992). Patterns of postpartum psychiatric illness. In J. A. Hamilton & P. N.
5. (Eds.), Postpartum Psychiatric Illness (p. 6). Philadelphia: University of Pennsylvania Press.
6. Brockington, I. F. & Cox-Roper, A. (1988). The nosology of puerperal mental illness. In I.F.Brockington & R. Kumar (Eds.), Motherhood and Mental Illness 2: Causes and Consequences London: Wright.
7. Berggren-Clive, K. (1998). Out of the darkness and into the light: Women's experiences with depression after childbirth. Canadian Journal of Community Mental Health

8. Troutman, B. R. & Cutrona, C. E. (1990). Nonpsychotic postpartum depression among adolescent mothers. Journal of Abnormal Psychology, 99, 69-78.
9. Videbech K, Collins : Parity and postpartum depression. British journal of psychiatry volume 2, 2000
10. Beeghly M, Weinbergh MK, Olson KL – Stability and chage in the level of maternal depressive symptomatology during first year postpartum year. J affect Disorder 2002.
11. Bartley, M. (1994). Unemployment and ill health: understanding the relationship. J Epidemiology. Community Health
12. Patel, V., DeSouza, N., & Rodrigues, M. (2003). Postnatal depression and infant growth and development in low income countries: a cohort study from Goa, India. Archives of Disease in Childhood
13. Boyce, P. M. & Todd, A. L. (1992). Increased risk of postnatal depression after emergency caesarean section. Med.J.Aust.
14. Hannah, P., Adams, D., Lee, A., Glover, V., & Sandler, M. (1992). Links between early post-partum mood and post-natal depression. British Journal of Psychiatry.
15. Warner, R., Appleby, L., Whitton, A., & Faragher, B. (1996). Demographic and obstetric risk factors for postnatal psychiatric morbidity.

16. Forman, D. N., Videbech, P., Hedegaard, M., Salvig, J. D., & Secher, N. J. (2000). Postpartum depression: Identification of women at risk. British Journal of Obstetrics & Gynaecology.
17. Johnson, Stewart Clarke; correlation between LSCS and Postpartum depression, cross sectional study : Am J Obstretics and gynaecology 2000
18. Braverman, J. & Roux, J. F. (1978). Screening for the patient at risk for postpartum depression. Obstetrics and Gynecology.
19. O'Hara, M. W. (1986). Social support, life events, and depression during pregnancy and the puerperium. Arch.Gen.Psychiatry, 43, 569-573.
20. Robertson, E.Grace [2004]:antenatal risk factors for post partum depression:a synthesis of recent literature.
21. O'Hara, M. W., Neunaber, D. J., & Zekoski, E. M. (1984). Prospective study of postpartum depression: prevalence, course, and predictive factors. Journal of Abnormal Psychology, 93, 158-171.
22. Swendsen, J., & Mazure, C. (2000). Life stress as a risk factor for postpartum depression: Current research and methodological issues. Clinical Psychology: Science and Practice,

23. Muslow, M., Caldera, Y. M., Pursley, M., Reifman, A., & Huston, A. C. (2002). Multilevel factors influencing maternal stress during the first three years. Journal of Marriage & Family.
24. Elliott, S. A., Leverton, T. J., Sanjack, M., Turner, H., Cowmeadow, P., Hopkins, J., & Bushnell, D. (2000). Promoting mental health after childbirth: A controlled trial of primary prevention of postnatal depression.
25. Beck, C. T. (2001). Predictors of postpartum depression: An update. Nursing Research.
26. Fisher, J. R. W., Feekery, C. J., & Rowe-Murray, H. J. (2002). Nature, severity and correlates of psychological distress in women admitted to a private mother-baby unit. Journal of Pediatric Child Health
27. Brugha, T. S., Sharp, H. M., Cooper, S. A., Weisender, C., Britto, D., Shinkwin, R., Sherrif, T., & Kirwan, P. H. (1998). The Leicester 500 Project. Social support and the development of postnatal depressive symptoms, a prospective cohort survey. Psychol Med
28. Forman, D. N. (2000). Postpartum depression: social support and postpartum depression. British Journal of Obstetrics and Gynecology.

29. Logsdon, Social support and the development of postnatal depressive symptoms, volume 1 British journal of psychiatry 2001.
30. O'Hara, M. W. (1986). Social support, life events, and depression during pregnancy and the puerperium Arch.Gen.Psychiatry, 43, 569-573.
31. Holmes, T. H. & Rahe, R. H. (1967). The Social Readjustment Rating Scale. Journal of Psychosomatic Research
32. Brown, G. W. & Harris, T. (1978). Social Origins of Depression: A Study of Psychiatric Disorder in Women. New York: The Free Press.
33. Paykel, E. S., Emms, E. M., Fletcher, J., & Rassaby, E. S. (1980). Life events and social support in puerperal depression. British Journal of Psychiatry, 136, 339-346.
34. O'Hara, M. W., Rehm, L. P., & Campbell, S. B. (1983). Postpartum depression. A role for social network and life stress variables. Journal of Nervous & Mental Disease, 171(6), 336-341.
35. Hopkins, J., Campbell, S. B., & Marcus, M. (1987). Role of infant-related stressors in postpartum depression. Journal of Abnormal Psychology, 96,
36. Pop VJ, Maartens LH, Leusink G, van Son MJ, Knottnerus AA,Ward AM, et al. are autoimmune thyroid dysfunction and depression related? J Clin Endocrinol Metab 1998;83:3194

37. Amino N, Miyai K, Onishi T, Hashimoto T, Arai K, Ishibashi K, et al. Transient hypothyroidism after delivery in autoimmune thyroiditis. J Clin Endocrinol Metab.

38. Pop et al 1999, postpartum depression and thyroid antibodies. J Clin Endocrinol Metab.

39. Hayslip CC, Fein HG, O'Donnell VM, Friedman DS, Klein TA, Smallridge RC. The value of serum antimicrosomal antibody testing in screening for symptomatic post partum thyroid dysfunction, American journal of Obstetrics and Gynaecology.

40. Stein M, Miller AH, Trestman RL. Depression, the immune system, and health and illness. Arch Gen Psychiatry 1991;48:171-8.

41. Rodin, A.: (1989) Thyroid disease in pregnancy. British Journal of Hospital Medicine

42. Amino, N., Mori, H., Iwaiani, Y., et al.: (1981) High prevalence of transient postpartum thyrotixicosis and hypothyroidism. New England Journal of Medicine

43. Hamilton, J. A.: (1977) Puerperal psychoses. Gynaecology and Obstetrics, Vol. 2. Harper Row, Hagerston, pp. 1–8.

44. Wilson, C. A. and Wise, J. C. M.: (1983) Plasma amine and hormone changes in ‘postpartum blues’. Clinical Endocrinology 19, 39–46

45. Brown, G. W. & Harris, T. (1978). Social Origins of Depression: A Study of Psychiatric Disorder in Women. New York: The Free Press.
46. Epperson, C. N. (1999). Postpartum major depression: Detection and treatment. *American Academy of Family Physicians* [Electronic version], 59(8), 1-11.
47. Atkinson and Richel, Postpartum depression in primiparous parent, J of abnormal psychology.
48. Conn and Campbell (1991) face to face interaction between depressed mothers and infants, Sanfrancisco.
49. O'Hara, M. W., Zekoski, E. M., Philipps, L. H., & Wright, E. J. (1990). Controlled prospective study of postpartum mood disorders: comparison of childbearing and nonchildbearing women. Journal of Abnormal Psychology, 99, 3-15.
50. Netter(1980): Life events and social support in puerperal depression. British Journal of Psychiatry, 136, 339-346.
51. Hachel and Ruben Harter, K. S. M., & Margand, N. Adult attachment stance and spouse's marital perceptions during the transition to parenthood. Attachment &Human Development, 4, 340-360.

52. crockenberg and Leerkes: parental acceptance, postpartum depression. J of Family psychology.
53. Jordan 1980 : Birth in four cultures (Montreal edapress)
54. Oakley 1980, Women confined towards a sociology of child birth : Oxford university material.
55. Kumar : maternal depression and emotional development of the child. British journal of psychiatry.
56. Gautham S, Nijhawan M postpartum psychiatric psyndromes. Analysis of 100 consecutive cases Indian journal of psychiatry
57. Stern, 1983 : Multidisciplinary perspectives on PPD (Anthropological literature review).
58. Cox J.L (1999) – Perinatal mood disorders in a changing culture. International review of psychiatry.
59. Thorpe 1992, postpartum depression in a cohort of women in Australia, International review of literature.
60. Uppadhaya 1989, comparative study between native white and Asian women on postpartum depression. British journal of psychiatry.
61. Okano, T., Koshikawa, N., Nomura, J., & Tatsunuma, T. (1992). Cross-cultural study of maternity blues and post-partum depression. Unpublished Work.

62. Small, R., Lumley, J., Donohue, L., Potter, A., & Waldenstrom, U. (2000). Randomised controlled trial of midwife led debriefing to reduce maternal depression after operative childbirth. British Medical Journal

63. Lumley, (2000) Randomised controlled trial of midwife led debriefing to reduce maternal depression after operative childbirth. British Medical Journal

64. Whitton, A., Appleby, L., & Warner, R. (1996). Maternal thinking and the treatment of postnatal depression. International Review of Psychiatry, 8(1), 73-78.

65. Elliott, S. A., Leverton, T. J., Sanjack, M., Turner, H., Cowmeadow, P., Hopkins, J., & Bushnell, D. (2000). Promoting mental health after childbirth: A controlled trial of primary prevention of postnatal depression.

66. Evins, G. G., Theofrastous, J. P., & Galvin, S. L. (2000). Postpartum depression: A comparison of screening and routine clinical evaluation. American Journal of Obstetrics & Gynecology, 182(5), 1080-1082.

67. Fergerson, S. S., Jamieson, D. J., & Lindsay, M. (2002). Diagnosing postpartum depression: can we do better? American Journal of Obstetrics & Gynecology, 186(5), 899-902.

68. Bryan : Validation of EPDS and postpartum depression. British journal of psychiatry.
69. Mani chandran prathap : post partum depression in acohort of women in rural areas of south India.
70. Anoop S, Saravanan B, Joseph A, Cherian A, Jacob KS. Maternal depression and low maternal intelligence as risk factors for malnutrition in children: a community based case.
71. Infanticidal Ideas and Infanticidal Behavior in Indian Women With Severe Postpartum Psychiatric Disorders. Chandra, Prabha S, M.D.1; Venkata Subramaniam, Ganesan M.D.1; Thomas, Tinku, M.Sc control study from South India.

Semi structured schedule

NAME

AGE

SEX

OCCUPATION

RELIGION

EDUCATION

1. **PRIMARY**
2. **SECONDARY**
3. **GRADUATE**

RESIDENCE

1. **RURAL**
2. **URBAN**

MONTHLY INCOME

MARITAL STATUS

TYPE OF FAMILY

1. **JOINT**
2. **NUCLEAR**

PAST H/O MENTAL ILLNESS

FAMILY H/O MENTAL ILLNESS

Edinburgh Postnatal Depression Scale (EPDS)

1. I have been able to laugh and see the funny side of things
   - As much as I always could
   - Not quite so much now
   - Definitely not so much now
   - Not at all

2. I have looked forward with enjoyment to things
   - As much as I ever did
   - Rather less than I used to
   - Definitely less than I used to
   - Hardly at all

*3. I have blamed myself unnecessarily when things went wrong
   - Yes, most of the time
   - Yes, some of the time
   - Not very often
   - No, never

4. I have been anxious or worried for no good reason
   - No, not at all
   - Hardly ever
   - Yes, sometimes
   - Yes, very often

*5 I have felt scared or panicky for no very good reason
   - Yes, quite a lot
   - Yes, sometimes
   - No, not much
   - No, not at all

*6. Things have been getting on top of me
   - Yes, most of the time I haven't been able to cope at all
   - Yes, sometimes I haven't been coping as well as usual
   - No, most of the time I have coped quite well
   - No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping
   - Yes, most of the time
   - Yes, sometimes
   - Not very often
   - No, not at all

*8 I have felt sad or miserable
   - Yes, most of the time
   - Yes, quite often
   - Not very often
   - No, not at all

*9 I have been so unhappy that I have been crying
   - Yes, most of the time
   - Yes, quite often
   - Only occasionally
   - No, never

*10 The thought of harming myself has occurred to me
   - Yes, quite often
   - Sometimes
   - Hardly ever
   - Never

The Hamilton Rating Scale for Depression (HAM-D)

1. Depressed Mood *(Sadness, hopeless, helpless, worthless)*

0 Absent
1 These feeling states indicated only on questioning
2 These feeling states spontaneously reported verbally
3 Communicates feeling states nonverbally—ie, through facial expression, posture, voice, and tendency to weep
4 Patient reports VIRTUALLY ONLY these feeling states in his/her spontaneous verbal and non-verbal communication

2. Feelings of Guilt

0 Absent
1 Self-reproach, feels he/she has let people down
2 Ideas of guilt or rumination over past errors or sinful deeds
3 Present illness is a punishment; delusions of guilt
4 Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations

3. Suicide

0 Absent
1 Feels life is not worth living
2 Wishes he/she were dead or any thoughts of possible death to self
3 Suicidal ideas or gestures
4 Attempts at suicide *(any serious attempt rates 4)*

4. Insomnia, Early

0 No difficulty falling asleep
1 Complains of occasional difficulty falling asleep—ie, more than 1/2 hour
2 Complains of nightly difficulty falling asleep

5. Insomnia, Middle

0 No difficulty
1 Patient complains of being restless and disturbed during the night
2 Waking during the night—any getting out of bed rates 2 *(except for purposes of voiding)*

6. Insomnia, Late

0 No difficulty
1 Waking in early hours of the morning but goes back to sleep
2 Unable to fall asleep again if he/she gets out of bed

7. Work and Activities

0 No difficulty
1 Thoughts and feelings of incapacity, fatigue or weakness related to activities, work, or hobbies
2 Loss of interest in activity, hobbies, or work—either directly reported by patient, or indirect in listlessness, indecision, and vacillation *(feels he/she has to push self to work or activities)*
3 Decrease in actual time spent in activities or decrease in productivity. In hospital, rate 3 if patient does not spend at least three hours a day in activities *(hospital job or hobbies)* exclusive of ward chores
4 Stopped working because of present illness. In hospital, rate 4 if patient engages in no activities except ward chores or if patient fails to perform ward chores unassisted

8. Retardation *(Slowness of thought and speech, impaired ability to concentrate, decreased motor activity)*

0 Normal speech and thought
1 Slight retardation at interview
2 Obvious retardation at interview
3 Interview difficult
4 Complete stupor

9. Agitation

0 None
1 Playing with hands, hair, etc.
2 Hand-wringing, nail-biting, hair-pulling, biting of lips

10. Anxiety Psychic

0 No difficulty
1 Subjective tension and irritability
2 Worrying about minor matters
3 Apprehensive attitude apparent in face or speech
4 Fears expressed without questioning

11. Anxiety Somatic

Physiological concomitants of anxiety such as:
Gastrointestinal—*dry mouth, wind, indigestion, diarrhea, cramps, belching*
Cardiovascular—*palpitations, headaches*
Respiratory—*hyperventilation, sighing*
Urinary frequency
Sweating

0 Absent
1 Mild
2 Moderate
3 Severe
4 Incapacitating

12. Somatic Symptoms, Gastrointestinal

0 None
1 Loss of appetite but eating without staff encouragement; heavy feelings in abdomen
2 Difficulty eating without staff urging; requests or requires laxatives or medication for bowels or medication for G.I. symptoms

13. Somatic Symptoms, General

0 None
1 Heaviness in limbs, back, or head; backaches, headache, muscle aches; loss of energy and fatigability
2 Any clear-cut symptom rates 2

14. Genital Symptoms

Symptoms such as:
Loss of libido
Menstrual disturbances

0 Absent
1 Mild
2 Severe

15. Hypochondriasis

0 Not present
1 Self-absorption (bodily)
2 Preoccupation with health
3 Frequent complaints, requests for help, etc.
4 Hypochondriacal delusions

16. Loss of Weight (Rate either A or B)

A. *When Rating by History:*
0 No weight loss
1 Probable weight loss associated with present illness
2 Definite (according to patient) weight loss
3 Not assessed

B. *On Weekly Ratings by Ward Psychiatrist, When Actual Weight Changes are Measured:*
0 Less than 1 lb. weight loss in week
1 Greater than 1 lb. weight loss in week
2 Greater than 2 lb. weight loss in week
3 Not assessed

17. Insight

0 Acknowledges being depressed and ill
1 Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest, etc.
2 Denies being ill at all

Total score: _____

Presumptive Stressful Life Events Scale

RANK ON	LIFE EVENTS	MEAN STRESS SCORE
1	Death of Spouse	95
2	Extra Marital Relation	80
3	Divorce	77
4	Dismissal from job	76
5	Dobontion in jail	72
6	Lack of child	67
7	Death of close family member	66
8	Marital conflict	61
9	Property or crops damaged	61
10	Death of friend	60
11	Robbery or Theft	59
12	Excessive alcohol by family member	58
13	Conflict with in laws	57
14	Broken engagement	57
15	Major personal illness	55
16	Son or daughter leaving home	55
17	Financial loss	54
18	Illness of family members	52
19	Trouble at working with colleagues	58
20	Prophecy of astrologer or palmist	52
21	Pregnancy of wife	51
22	Conflict over dowry	51
23	Sexual problems	51
24	Self or family member unemployed	51
25	Lack of son	51
26	Large loan	49
27	Marriage of daughter	49

28	Minor violation of law	47
29	Family conflict	47
30	Breakup with friend	46
31	Construction of house	46
32	Death of pet	51
33	Failure in examination	43
34	Appearing for exam	43
35	Getting marriage or engaged	43
36	Trouble with neighbour	40
37	Unfulfilled commitments	40
38	Change of residence	39
39	Change of workplace	37
40	Outstanding personal achievement	36
41	Beginning or end of schooling	35
42	Retirement	33
43	Transfer	33
44	Change in sleeping habits	30
45	Birth of daughter	30
46	Gain of new family member	29
47	Reduction in the number of family function	28
48	Change in social activity	27
49	Change in eating habits	25
50	Wife begins or stops work	20
51	Going on a pleasure trip	20

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI -3

Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Dr. Vinoth .V
PG in MD Psychiatric Medicine
Madras Medical College, Chennai -3

Dear Dr. Vinoth .V

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled "Correlation between postpartum depression, serum thyroid levels and life events" No.01082012.

The following members of Ethics Committee were present in the meeting held on 10.08.2012 conducted at Madras Medical College, Chennai -3.

1. Dr. S.K. Rajan. M.D.,FRCP.,DSc	-- Chairperson
2. Prof. Pregna B. Dolia MD Vice Principal, Madras Medical College, Chennai -3 Director , Institute of Biochemistry, MMC, Ch-3	-- Member Secretary
3. Prof. B. Vasanthi MD Prof of Pharmacology ,MMC, Ch-3	-- Member
4. Prof. C. Rajendiran, MD Director , Inst. Of Internal Medicine, MMC, Ch-3	-- Member
5. Prof. S. Deivanayagam MS Prof of Surgery, MMC, Ch-3	-- Member
6. Thiru. S. Govindsamy. BABL	-- Lawyer
7. Tmt. Arnold Soulina MA MSW	-- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/ Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

ஆராய்ச்சி ஒப்புதல் கடிதம்

ஆராய்ச்சி தலைப்பு :

பெயர் : தேதி :

வயது : உள் நோயாளி எண் :

பால் : ஆராய்ச்சி சேர்க்கை என் :

இந்த ஆராய்ச்சியின் விவரங்களும் அதன் நோக்கங்களும் முழுமையாக எனக்கு தெளிவாக விளக்கப்பட்டது.

எனக்கு விளக்கப்பட்ட விஷயங்களை நான் புரிந்துகொண்டு நான் எனத சம்மதத்தைத் தெரிவிக்கிறேன்.

இந்த ஆராய்ச்சியில் பிறரின் நிர்ப்பந்தமின்றி என் சொந்த விருப்பத்தின் பேரில் தான் பங்கு பெறுகிறேன் மற்றும் நான் இந்த ஆராய்ச்சியிலிருந்து எந்நேரமும் பின்வாங்கலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்துகொண்டேன்.

இந்த ஆராய்ச்சியின் விவரங்களைக் கொண்ட மருத்துவ ஆராய்ச்சியில் என்னை சேர்த்துக் கொள்ள சம்மதிக்கிறேன்.

நான் என்னுடைய சுயநினைவுடன் மற்றும் முழு சுதந்திரத்துடன் இந்த மருத்துவ ஆராய்ச்சியில் என்னை சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.

கையொப்பம்

STUDY OF CORRELATION BETWEEN

POSTPARTUM DEPRESSION, SERUM THYROID

LEVELS AND SIGNIFICANT LIFE EVENTS

27 *Dissertation submitted to the*

TAMIL NADU DR. M. G. R. MEDICAL UNIVERSITY

in part fulfillment of the requirements for

M. D (PSYCHIATRY)

BRANCH XVIII