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INTRODUCTION

Psychiatric illness following childbirth has been an area of concern to medical profession for a long time. Volumes of literature have accumulated on this subject since the past 100 years. There is converging evidence that risk of development of a psychiatric problem in women is increased, particularly in postnatal depression. Postnatal depression also known as postpartum depression (PPD) is defined as depression with onset usually within 6 weeks of delivery. Symptoms appear at any time from immediately after delivery or up to a year post-delivery.

10% - 15% of women are affected by the most common complication of childbearing caused by non-psychotic postpartum depression. The relationship of the mother with her family and her children could be very much affected because of the effects of postnatal depression. This makes it a highly important to diagnose, treat and prevent it.

PPD is not classified as a separate disease but diagnosed as an affective disorder according to Diagnostic Statistical Manual of Mental Disorders (DSM-V). The prevalence of depressive symptoms among the postpartum women has been found in developing countries, including India and Pakistan to be ranging from 11 to 40%. Studies in India have found the prevalence of postnatal depression ranging from 11 to 26.3%. Untreated postpartum depression can have adverse long-term effects. Earlier studies found that risk factors for depressive symptoms are clustered into five categories; biological, including changes in hormone levels and the age of mother; physical, including chronic health problems and antenatal depression; psychological, including prenatal anxiety, stress, lack of social support and bad obstetric history and sociocultural, including status of mother and poverty. Postpartum depression has been associated with tragic outcomes such as maternal suicide and infanticide. For the postpartum depression to be prevented in childbearing mothers clinically or through public health

intervention, it's quite important to identify the risk factors of post-partum depression. The EPDS (**Edinburgh Postnatal Depression Scale**) is self-reporting questionnaire intended to measure depressive symptoms intensity experienced by participant within seven days, which is screening tool for postpartum depression.

REVIEW OF LITERATURE

1. Introduction

2. Historical review

3. Epidemiology

4. Indian perspective

5. Validation studies of Edin burgh postnatal depression scale (EPDS)

6. Factors associated with postpartum depression

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8. Untreated postpartum depression -Risks to children

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INTRODUCTION

A woman giving birth to a baby is a positive event scientifically and socially. For bringing in a new life to this world. Such a beautiful journey has its problems too, which can affect the mother for a longer time. Analysing such a problem can help improve the physical and mental health of the mother.

Psychiatric illness following childbirth has been an area of concern to medical profession for a long time. There is converging evidence that risk of development of a psychiatric problem in women is increased, particularly postnatal depression.

Postpartum depression is a common and complex phenomenon that can cause relevant negative outcomes for children, women and families.

In this section literature relevant to postpartum depression is reviewed.

HISTORICAL OVERVIEW:

The literature pertaining to childbirth and its association with psychiatric disorders dates back to 4th century B.C. In fourth century B.C. Hippocrates first described postpartum depression. Hippocrates described a woman, who gave birth to twins, experienced sleeplessness and restlessness six days after delivery, later become delirious and then comatose and died on seventeenth day.

In 11th century, Tortula of salemo, wrote a book called “diseases of women”. She attributed postpartum blues to the womb being moist and brain getting filled with moisture and this ran over to eyes compelling women to shed tears. In 1838, Esquirol published two volumes, ‘des maladies mentales’ and hypothesized that several factors could be responsible for postnatal psychiatric disorders.

Nicolson (1990) and Beck (2002) argued that because society perpetuates these myths of the perfect motherhood as a totally fulfilling and happy experience, the women believed that and no mother shared their negative reactions to childbirth. Therefore, they viewed themselves as bad to abnormal mothers which led to fear of moral condemnation and being labeled by others as failed mothers.

Mauthner (1998) identified 3 kinds of conflict in mother's narratives, all of which centered on their desire to be the 'perfect mother'. One area of conflict concerned how to care for their infant regarding topics such as breastfeeding and being employed. The second set revolved around women's depression and unhappiness, which was in direct conflict with their expectations that they would be happy with their infants. The third concerned expectations that they could cope with their new infants, when the reality was that they needed help.

For each women, the conflicts she experienced depended on what her notion of what makes a good mother and what aspects of motherhood were especially significant to her. Parity influenced the conflicts that some of the women struggled with the conflicts that the 12 first time mothers struggled with centered on trying to live up to their image of the perfect, ideal mother (Mauthner,1999). In contrast, the 6 multiparas were well aware that there was no such thing as the perfect mother and their conflicts resolved around trying to live up to their expectations of being able to cope with their newest child.

It appears that cultural context can intensify these conflicting expectations and experiences of motherhood. If there are high cultural expectations of motherhood, then this could exacerbate women's feeling of helplessness and being a bad mother. This may have particular relevance for women who are no longer living in their home country and are separated from their immediate family who would usually provide practical and emotional support during the postpartum period.

In 1913, kraeplin noted mania in postpartum period could be precipitated in childbirth if already latent. Modern epidemiological studies have shown that there is significant risk of serious mental illness not only in the puerperium but also for nine months after delivery, although risk is greater nearer to the time of giving birth.

EPIDEMIOLOGY THE ONSET

The prevalence of nonpsychotic postpartum depressive disorder is about 10%. The incidence of psychiatric disorders is more during the early postpartum period i.e. first three months of postpartum period.

DEFINITION, INCIDENCE AND ASSESSMENT OF POSTPARTUM DEPRESSION

Psychiatric disorders which are prevalent during antenatal period and up to one-year postpartum period defined as perinatal psychiatric illness. Most investigators consider first four weeks to three months after delivery to define postpartum period. International Statistical Classification of Diseases and Related Health Problems (ICD -10; WHO ,2007) and Diagnostic and statistical Manual of Mental Disorders (DSM VTR; APA 2013) define postpartum depression.

According to DSM -5 postnatal depression is not a separate diagnostic entity, rather the patients should have characteristic features of Peri-natal onset specifier and major depressive episode. The definition is therefore a major depressive episode. Its onset marked in pregnancy or first four weeks postpartum. The DSM -5 criteria are as follows:

A) More than or equal to five out of nine symptoms (including loss of interest or pleasure and depressed mood) in 2- week period observation period. Symptoms mark a change from previous state of normalcy.

- Depressed or irritable mood may be present in adolescents and children, most of the day.
- Loss of pleasure or loss of interest
- Weight gain or weight loss or change of appetite
- Insomnia or hypersomnia
- Psychomotor agitation or retardation (observed);
- Fatigue or loss of energy
- Feeling of guilt or worthlessness
- Impaired decision-making capacity or concentration
- Repeated suicidal thoughts or attempt or repeated thoughts of death

B) Symptoms cause marked impairment or significant distress.

C) Episode is not attributable to a substance or medical condition.

D) Episode is unlike a psychotic disorder.

E) Maniac or hypomanic episode never seen.

Postpartum depression is a mild form of mental and behavioral disorder according to the ICD-10. It usually commences within 6 weeks of delivery according to the ICD-10. Clinically presents as depressed mood, excessive sleepiness or insomnia, markedly diminished pleasure, significant change in weight, loss of energy, psychomotor agitation or retardation, feelings of worthlessness, excessive guilt, reduced confidence and self-esteem, impaired concentration and suicidal thoughts (APA,2013;WHO,2007).

Screening for postnatal state of mind can be problematic given the number of signs of bodily illness symptoms typically associated child bearing that are also symptoms of major postpartum depression (Nonacs et al.,1998). Distinguishing between postpartum depressive

symptoms and the supposed normal symptoms of childbirth, such as changes in body weight, sleep, and energy levels is a challenge that further complicates clinical diagnosis (Hoster & Stowe,2002).

Further confounding the factors of PPD is the possibility of physical causes (including anemia, diabetes, and thyroid dysfunction) that could potentially add to the depressive symptoms (Pederson et al.,1993).

Schizophrenia, mood disorders and specific anxiety disorders among reproductive age group women contribute to seven percent of the global burden of disease (GBD) for women of all ages.

Among causes, contributing to global burden of diseases for women, depression ranks fourth. Systematic review of 64 studies conducted in 17 Asian countries showed prevalence rates of 3.5% to 63.3%. Postpartum psychiatric disorders are popularly classified in to three major clinical categories: Postpartum blues, Postpartum depression, Postpartum psychosis.

Although research thesis focuses on postpartum depression, the blues and postpartum psychosis are described briefly in order to clearly differentiate them from postpartum depression.

DISORDER	**PREVALENCE**	**ONSET**	**DURATION**	**TREATMENT**
Postpartum Blues	30-75%	Day3 or 4	Hours - days	Reassurance
Postpartum depression	10-15%	Within 12 months	Weeks-months	Usually requires counseling

Postpartum psychosis	0.1-0.2%	Within 2 weeks	Weeks-months	Requires hospitalization

POSTPARTUM BLUES (The maternity blues)

Postpartum blues is the most universally observed puerperal psycohological disturbances, with estimates of prevalence of ranging from 15-85%. Onset is usually within a some days of birth, peak incidence is usually observed on day 4 or 5. Symptoms involve sudden irritability, mood swings, tearful-ness, anxiety, mood elation, easy fatiguability, confusion, and sleep and appetite disturbances. Biologic factors are not found to be associated with postpartum blues. Antenatal depression, previous history of depression, and previous premenstrual syndrome have been reported as risk factors. This condition is by clinical definition time bound and mild and do not call for a treatment other than reassurance. Postpartum blues reported to be a risk factor for subsequent development of PPD. The chances to develop blues is not related to previous psychiatric history, environmental psychological stressors, traditional factors, breastfeeding, or parity, however those factors may affect whether the blues turn into a major depression (Miller,2002). A maximum of 20% women with postpartum blues will go on to develop major depression with in the first year postpartum.

PUERPERAL PSYCHOSIS

Puerperal psychotic disorder is the most severe form of postpartum depression. The onset is often dramatic occurring within the first 48 to 72 hours of postpartum usually seen in first two to four weeks postnatally. Puerperal psychotic disorder occurs in 1 of 500 mothers. Puerperal psychosis may resemble rapidly evolving affective psychosis with mixed, depressive or maniac symptoms. The presenting symptoms are typically depression and sudden mood elation. The earliest signs are typically irritability, restlessness and insomnia. They experience a labile

mood, disorientation, depersonalization and disorganized behavior. Follow-up studies shows that the majority of mothers with puerperal psychosis become a good fit for bipolar disorder.

Due to the nature of psychotic and depressive symptoms, new mothers are at risk of harming their children because of neglect, practical incompetence or hallucinations or delusions. Infanticide is rare, occurring in 1-3/50,000 births, however mothers with PPD and psychotic disorders contribute to a significant percentage of these, estimates suggest that 62% of mothers who commit infanticide also go on further to become suicidal. Because of such serious problems, early stage diagnosis and treatment or interventions of postnatal illnesses are imperative for the physical health and well-being of the mother and child. Women are prone to psychiatric disorders after birth, especially after one month of delivery. Mostly there will be a previous history of puerperal psychosis, maniac or psychotic episode, primiparity, withdrawal of mood stabilizing drugs, sleep deprivation, obstetric complications and a family history of postpartum psychosis or bipolar disorder. Most case need treatment by psychiatrists and hospitalization. Puerperal psychosis treated similar to non-puerperal psychosis. Although the affected women recover fully and prognosis is favorable, they are at high risk of being affected by further nonpuerperal and puerperal episodes of bipolar affective disorder.

POST PARTUM DEPRESSION

O'Hara and Swain (1996) meta-analyzed 59 studies (12,810 subjects) and prevalence rate of postpartum depression of 13% was noted. These studies noted symptoms up to two weeks after delivery to avoid postpartum blues as confounding factors. Approximately 25-36% of these teens experience postpartum depression after delivery.

The effects of postnatal depression on the mother-infant relationship, child neurocognitive development and her marital relationship are detrimental, hence it is important to prevent, diagnose and treat. PPD shows characters of tearfulness, despondency, emotional problems,

feeling of guilt, loss of appetite, suicidal ideation, sleep disturbances as well as feeling of inadequacy and inability to cope with the infant, poor memory fatigue and irritability. There is no obvious difficulty in diagnosing postnatal depression, as features of loss of weight, loss of libido, appetite change are normal postpartum phenomenon. Untreated PPD can have strong long-term effects. For the mother, the episode can be the a start of a chronic or reoccurring depression. For her children, a mother's continous depression can affect their emotional, behavioral, cognitive and interpersonal problems later in life. According to psychiatric nomenclature PPD is defined as major depressive disorder (MDD) with stressor present during antenatal period or within four weeks of delivery. However, postpartum depression may occur one month after delivery .Within seven days to six months after delivery is the optimal period for screening for postpartum depression .Various screening instruments have been validated to detect postpartum depression. The Edinburgh Postnatal Depression Scale is a self -reported 10-item questionnaire which is widely used and validated screening tool for PPD. Using the EPDS women who are over a threshold score of 10 (for family practices) and 12 (for research studies) have a higher chances of being depressed. The Postpartum Depression Screening Scale and Becks Depression Inventory (BDI) or the General Health Questionnaire (GHQ) are other self-report screening measures. Hanusha et al. compared effectiveness of above three screening scales in 135 women, reported that EPDS was significantly more accurate.

CLINICAL PRESENTATION

Postpartum depression usually occurs after delivery within one month to one year. Postpartum blues precede development of postpartum depression in some women, where as in others gradual onset of depression follows after a period of well-being. Insomnia, hypersomnia, emotional liability, loss of appetite, impaired concentration, fatigue, feelings of guilt, irritability, despondency and impaired memory are characteristic symptoms of postpartum depression.

INDIAN PERSEPECTIVE

Asian women were reported to have higher rates of postnatal depression compared to North American women. In this study 102 postnatal women between fourth to tenth week were screened using Edinburgh postnatal depression scale ,score 13 was used as cutoff for postnatal depression .The prevalence rate of 31.4% was noted. Poverty, antepartum complications, preference to male baby are independent predictors of PPD .Avitha Rose Johnson et al.. has done study on 123 women postpartum .Among those seventy four were screened in their first week of postnatal period ,and forty nine women were screened at 6-8 weeks postpartum using Edinburgh Postpartum Depression scale for postnatal depression .Cut off point 10 was used for postnatal depression .In first week postpartum 44.6% and 46.9% at 6-8 weeks postpartum were screened positive for postnatal depression .Mood swings prenatally, staying away from their husbands ,and a low self-esteem were significantly associated with postnatal depression. Ashish et al. screened 200 patients on the first day postnatal and re-screened at 6^{th} postnatal day and on 6^{th} postnatal week using Edinburgh postnatal depression scale in Gujarat. Cutoff point 12 was used for postnatal depression. Prevalence of postnatal depression was found to 11%, 7.4%, 3.2% on first postnatal day, sixth postnatal day and six weeks postpartum respectively. Birth of a female child, primiparity, history of pregnancy losses, negative feelings during pregnancy and past history of psychiatric illness were reported to have significant association with postpartum depression. The study also elicited risk factors associated with postnatal depression. Birth of female child, multigravida, past history of miscarriage and negative feelings during pregnancy were found to be the strongest predictors for developing Postpartum depression.

VALIDATION STUDIES OF EPDS

Ina S. Santos has done study on 378 mothers from Brazil to evaluate sensitivity and specificity of Edinburgh Postnatal Depression Scale (EPDS) in screening postpartum depression, three months after delivery .The sensitivity and specificity for different cutoffs scores were noted .The study found ≥ 10 as best cut-of score with 82.6% sensitivity and 74.7% specificity was reported to be the best cut-off score .They also found EPDS tool was valid only if prevalence rates ranged between 20-25%.The sensitivity of 59.5% with positive predictive value of 60% and specificity of 84.8% were noted for the ≥13 cutoff score.

Gibson J et al. has done systematic review of 37 studies validating Edinburgh postnatal depression in PPD. With the cut-off score of 9 or 10 for mild postpartum depression 12 or 13 for moderate postpartum depression, significant heterogenicity in sensitivity and specificity noted between different studies. Sensitivity ranged between 34 to 100% and specificity 44 to 100%. They reported this heterogeneity to be due to different study methodologies and diagnostic interviews used

FACTORS RELATED TO POSTPARTUM DEPRESSION

Mild to moderate postnatal depression is a clinically significant disorder .In view of its impact on women and its potential to clarify further the role of stress and psychiatric disorder, postpartum depression seems worthy of additional research .When interpreting studies of etiological factors of psychiatric illness, it is important to remember that it is highly likely that there is no one single cause. Genetic and biological studies of mood disorders indicate that they are complex disease, and even if an individual has a genetic vulnerability or predisposition to developing depression, there have to be experiential and environmental factors which interact to cause the illness. Hence it is likely that a number of these factors play a role in the

development of postpartum depression. The following section focus on various factors found to be influencing the occurrence of postpartum depression

Age

Several studies have specifically compared the age distribution of postpartum depressives with non-depressed postpartum.

Socio-economic factors

Socio-economic factors such as low income, unemployment, and low educational attainment have been reported to be risk factors associated with postpartum depression. Chandran et al. in their study of rural women from Tamil Nadu reported poverty to be an associated risk factor. This is important as socioeconomic deprivation in these countries is high, raising the risk of postnatal depression. Low educational attainment in women raises the risk of postnatal depression.

Social support through husband, relatives and friends is reported to be a protective factor. In Africa marital adjustment problems and lack of social support are more commonly associated with postnatal depression. A systematic review identified lack of social support and marital conflict to be associated with postnatal depression in high income countries. In a study of rural women from Tamil Nadu, birth of a female child was reported to be significantly associated with postnatal depression.

Past History and Family History

50% to 62% increased risk of recurrence is seen in women with previous history of depression in previous pregnancies or postpartum period. The risk of depression is higher with a positive family history. Thus eliciting previous history of depression and depression in family members play an important role in Postpartum depression.

Marital Relationship

Most of the studies conducted till date on predictors of postnatal depression has shown poor marital relationship to be significantly associated with PPD. Ohara and Swain has done a meta-analysis of seventy studies including 12,210 subjects found no association of marital status with postnatal depression and reported poor marital relationship has a small negative associated with PPD. Beck has done meta-analysis of 84 subjects including approximately 3000 subjects and reported poor marital adjustment to be a risk factor associate with PPD. Daniela mece has done a study to assess risk factors associated with postnatal depression in 398 women with an emphasis on marital relationship in Tirana. The study concluded marital relationship was negatively moderately correlated with postnatal depression.

Psychological factors

Previous history of major depression is associated with increased risk of PPD in 25% of cases, and postpartum depression has recurrence risk of 50%. A large prospective study identified previous history of depressive disorders lack of partner support as risk factors. Postpartum blues reported to be significantly associated with development of postpartum depression. Postnatal euphoria also found to be a risk factor for development of postpartum depression.

Mode of delivery

Most studies found no association between mode of delivery and postpartum depression. Kathryn Aet al conducted a study on 160 women and concluded that women wishing to deliver vaginally antepartum and delivered by caesarean later were found to be at increased risk for depression in early postpartum period. Patients antepartum delivery preferences may play a role in predicting postpartum depression

Obstetric and Biological Issues

Obstetric risk factors including antenatal complications such as hyperemesis gravidarum, hypertensive disorders of pregnancy, multiple pregnancy, diabetes complicating pregnancy, and intrapartum complications like instrumental delivery, preterm delivery, caesarean section and excessive intrapartum blood loss are associated risk factors of PPD.

Withdrawal of reproductive hormones at birth have been proposed as an etiological factor. During pregnancy, it is speculated that 100- fold increase in estradiol levels occurs, to which brain is exposed. Women who develop postpartum, depression can be explained by variable sensitivity to withdrawal of reproductive hormones at time of delivery. Bloch et al. in his study demonstrated withdrawal of estradiol and progesterone at birth can influence development of PPD. He gave leuprolide to eight women to induce hypogonadal state. Supraphysiological doses of reproductive hormones given for 8 weeks, followed by withdrawal of both steroids. Study concluded that five out of eight women developed postpartum depression. In central nervous system enzyme monoamine oxidase activity has been shown to decline with increases in estradiol levels. Serotonin, dopamine, norepinephrine is metabolized by monoamine oxidase. Hereditary factors have also been associated with postpartum depression.

Role of Obstetricians and Pediatricians

In current medical settings many studies quoted low rates of screening, diagnosis and treatment of perinatal psychiatric disorders. Postnatal checkups and baby immunization visits are opportunities for the obstetricians to screen and diagnose postpartum depression. Barriers to screening for postnatal depression by obstetric knowledge of impact of maternal mental health on cognitive development of child and lack of awareness about resources.

Untreated PPD -Risks to Children

Postnatal depression if not treated is associated with impaired child neurodevelopment. Excess crying spells, temper tantrums and sleep problems in infants & children are related to untreated with PPD. Aggressive behavior, conduct disorders and medical disorders in adolescence were found to be high in those born to mothers with untreated depression. Significant association between postnatal depression and negative mother-infant bonding has been reported. Postnatal depressed women were found to less likely initiate and, maintain breastfeeding.

Treatment of Postpartum Depression

Generally, reassurance, psych education, familial and social support, psychotherapy and pharmacologic treatment are options for PPD treatment.

Psychotherapy

Interpersonal psychotherapy (IPT) is a form of psychotherapy which is directed towards interpersonal issues like marital relationship, life stressors, familial and social support, and role change. It was initially formulated as a time-limited, weekly outpatient treatment for depression provided by a trained mental health professional. While this method makes no assumption about etiology, the connection between depressive symptomatology onset and interpersonal problems is used as treatment focus. The goals of IPT include 1) decreased neurovegetative symptoms of depression, and 2) resolution of interpersonal conflicts. Cognitive-behavioral therapy (CBT) also found to be effective in treating PPD.

Cognitive Behavioral Therapy:

CBT is an approach based on the notion that the way an individual perceives an event determines in part how they will respond, both affectively and behaviorally. According to

cognitive theory, dysfunctional beliefs and maladaptive information processing lie at the core of many psychiatric disorders. Hence it assists the individuals in identifying and correcting erroneous beliefs and systematic distortions in information processing with the hopes of reducing distress and enhancing coping efforts.

Individual IPT, psychodynamic therapy, and cognitive -behavioral therapy (CBT) were found to be effective for treating PPD as suggested by literature. Overall, psychotherapy proven to show moderate effects and antidepressants medications demonstrate larger effects in treating PPD.

Studies have shown that mild PPD in women may be treated by individual or group counseling, although severe PPD in women may need to be treated by IPT or CBT and /or antidepressant medication. Few studies have shown breastfeeding women prefer psychotherapy over antidepressant medications.

Mother-Baby Units

The first mother-baby admission unit established in United Kingdom. The rationale behind practicing this joint admission is to avoid disruption of mother-infant relationship during psychiatric treatment. Breast feeding need not to be disrupted by practicing this joint admission of mother and baby. Multidisciplinary treatment of postpartum depression, support, chance to study mother-infant bonding, and promotion and establishment of a healthy relationship between mother and child are advantages of mother-baby units.

Drug Treatment

Yonker et al conducted a randomized controlled trial on 70 women with postpartum depression. Paroxetine was compared with placebo. The study concluded paroxetine

superior to placebo. Remission rates were 37% and 15%, in paroxetine and placebo respectively. Another Randomized controlled trial compared fluoxetine with placebo in 87 postnatal depressed women and found fluoxetine to be superior compared to placebo. Limitations to this study were found to be exclusion of breastfeeding and inclusion of only mild to moderate depressive cases.

In a study of 35 women affected with PPD treatment with paroxetine was compared with combined paroxetine and cognitive behavioral treatment. Cognitive behavioral therapy administered in twelve individual sessions and paroxetine dose titrated over 12 weeks given. The study concluded no significant differences between two groups. This study included breastfeeding women and found no side-effects. Lack of a placebo control is the limiting factor, as conclusions about the efficacy could not be drawn. Few cases reports and clinical trials also advised use of antidepressants for the treatment of PPD with proved efficacy.

Breastfeeding and Anti-Depressants

Breastfeeding promotes health of infant. Breastfeeding is important in women affected with postpartum depression as she perceives it as a positive experience in her negative depressed state. Before administering antidepressants to breastfeeding woman with PPD, efficacy of antidepressant medications should be weighed against risks of exposing her infant to antidepressant medication and adverse effects of untreated postpartum depression on future child cognitive development.

To avoid possible adverse effects of antidepressants on breastfeeding infants, it is recommended to titrate the dose up slowly starting with low doses. Irritability, poor weight gain and sedation are few adverse effects noted with antidepressant in infants. Stowe et al in his study recommended avoidance of breastfeeding at time of peak drug concentration

in breast milk to reduce risks to infant. Fluoxetine, doxepin, citalopram, bupropion and nefazodone were shown to have adverse effects on breastfeeding infants. Systemic reviews of safety of selective serotonin reuptake inhibitors (SSRIs) and Tricyclic antidepressants (TCAs) have been conducted. SSRIs have been recommended as initial choice of treatment for postpartum depression

Other Treatments

Sleep deprivation, maternal & infant sleep intervention, Infant massage, exercise and electroconvulsive therapy have shown some benefit in literature. Estrogen supplements were proved to have benefit in women affected with postpartum depression, although progesterone found to have no role in postpartum depression.

MATERIALS AND METHODS

Present study was a cross-sectional study carried out over a period of one year & eight months from February 2020-October 2021 in a tertiary hospital.

Approval and Registration:

Prior to enrolment of patients, approval was obtained from Institutional Ethical Committee (IEC)

Inclusion Criteria:

1. Those who have given consent
2. Postpartum mothers of age group 20-40-yrs
3. All postnatal women delivered within 3-5 days and at 6 weeks after delivery.

Exclusion Criteria:

1. Those who have not given consent
2. Postpartum mothers with pre-existing medical conditions
3. Unable to comprehend the questions.

All eligible women were explained the purpose of study in the language they understood and enrolled after taking written informed consent. Subjects were recruited from women attending Govt RSRM Lying In Hospital, Stanley Medical College, Chennai. Sample size was calculated to be 330 using SPSS software.

Parameter	Values
Sample size	• FORMULA: n= Z×Z×p×q/d×d • Where n=sample size • Z =1.96 (statistical constant for 95% CI) • p=14.6% (prevalence of postnatal depression among postnatal mothers from previous study) • q=85.4% • d=4% absolute precision • Thus, by above formula 3.84×14.6×8.54/16 • n ~ 299 (minimum sample size) • Adding 10% nonresponse rate,n~328 • *FINAL SAMPLE SIZE, n~330*
Data collection	Preformatted pro-forma enclosed along with.
Statistical Analysis	Data obtained will be entered in MS Excel and analysed using SPSS Software. Descriptive Statistics such as Frequency will be calculated for Categorical Variables, Mean and Standard Deviation will be calculated for continuous variables. Measures of association such as Relative Risk and Inferential Statistics such as Chi Square Test and Student t test will be done.
Sponsorship	None.
Conflict of Interest	None

332 consecutive women who delivered at RSRM Lying-In hospital, Chennai and were willing to participate were recruited. The EPDS was used to identify the postnatal depression between

3-5 days after delivery. All these patients screened were again re-screened at 6 weeks postnatal. The study period was from February 2020 to October 2021.Written and informed consent was obtained, **Edinburgh Postnatal Depression Scale** (EPDS) study questionnaire was administered to participants in this study. Privacy was ensured. The questionnaire consisted of socio demographic details, obstetric history, presence of chronic disease, past medical and surgical history, previous history of psychiatric disorders, antenatal details, gender of the newborn and previous children, mode of delivery, social issues such as alcohol dependence in husband, marital problems and family pressure to have a male child. Socio economic status was determined using modified kuppusamy scale.

The EPDS is self-reporting questionnaire intended to measure depressive symptoms intensity experienced by participant within last seven days. Each statement is rated on a scale from 0-3, resulting in a total possible score ranging from 0-30. The outcome variable of the interest in this study is the occurrence of postpartum depression symptoms based on EPDS screening criteria. We used an EPDS score ≥12 as a cut-off point to classify depressive symptoms .The scale was translated and back-translated into the local language (Tamil) for our study.

EDINBURGH POSTNATAL DEPRESSION SCALE

Edinburgh Postpartum Depression Scale

Please **underline** the answer which comes closest to how you have felt in the **past 7 days**, not just how you feel today.

1. I have been able to laugh and see the funny side of things.
   - As much as I always could (0)
   - Not quite so much now (1)
   - Definitely not so much now (2)
   - Not at all (3)

2. I have looked forward with enjoyment to things.
   - As much as I ever did (0)
   - Rather less than I used to (1)
   - Definitely less than I used to (2)
   - Hardly at all (3)

3. I have blamed myself unnecessarily when things went wrong.
   - Yes, most of the time (3)
   - Yes, some of the time (2)
   - Not very often (1)
   - No, never (0)

4. I have been anxious or worried for no good reason.
   - No, not at all (0)
   - Hardly ever (1)
   - Yes, sometimes (2)
   - Yes, very often (3)

5. I have felt scared or panicky for not very good reason.
   - Yes, quite a lot (3)
   - Yes, sometimes (2)
   - No, not much (1)
   - No, not at all (0)

6. Things have been getting on top of me.
   - Yes, most of the time I haven't been able to cope at all (3)
   - Yes, sometimes I haven't been coping as well as usual (2)
   - No, most of the time I have coped quite well (1)
   - No, I have been coping as well as ever (0)

7. I have been so unhappy that I have had difficulty sleeping.
   - Yes, most of the time (3)
   - Yes, sometimes (2)
   - Not very often (1)
   - No, not at all (0)

8. I have felt sad or miserable.
   - Yes, most of the time (3)
   - Yes, quite often (2)
   - Not very often (1)
   - No, not at all (0)

9. I have been so unhappy that I have been crying.
   - Yes, most of the time (3)
   - Yes, quite often (2)
   - Only occasionally (1)
   - No, never (0)

10. The thought of harming myself has occurred to me.
    - Yes, quite often (3)
    - Sometimes (2)
    - Hardly ever (1)
    - Never (0)

- The score for each statement is listed in parentheses to the right of the response (i.e. "(3)" would be 3 points). The total score is calculated by adding together the points for each of the ten questions.
- A total score of 12 or higher indicates the likelihood of depression, but not its severity.
- If you scored 12 or higher, we strongly encourage you to contact your physician as soon as possible to manage this common, yet serious and treatable medical condition.

AIM

To determine the prevalence of postpartum depression among women delivering at our hospital and the risk factors associated with postpartum depression.

RESULTS AND OBSERVATION

The gathered data was analysed with the software IBM SPSS Statistics for Windows, Version 23.0. To describe the data descriptive statistical frequency analysis, percentage analysis were performed on categorical variables and the mean & S.D analysis was performed for continuous variables. To find the significant difference between the bivariate samples in independent groups the Unpaired sample t-test was used. To find the significance in categorical data Chi-Square test was used similarly if the expected cell frequency is less than 5 in 2×2 tables then the Fisher's Exact was used. In all the above statistical tools the probability value .05 is considered as significant level.

Table 1: Age distribution

Age distribution		
	Frequency	Percent
Up to 20 years	65	19.6
21 - 25 years	130	39.2
26 - 30 years	108	32.5
Above 30 years	29	8.7
Total	332	100.0
Mean ± SD = 25 ± 4 years		

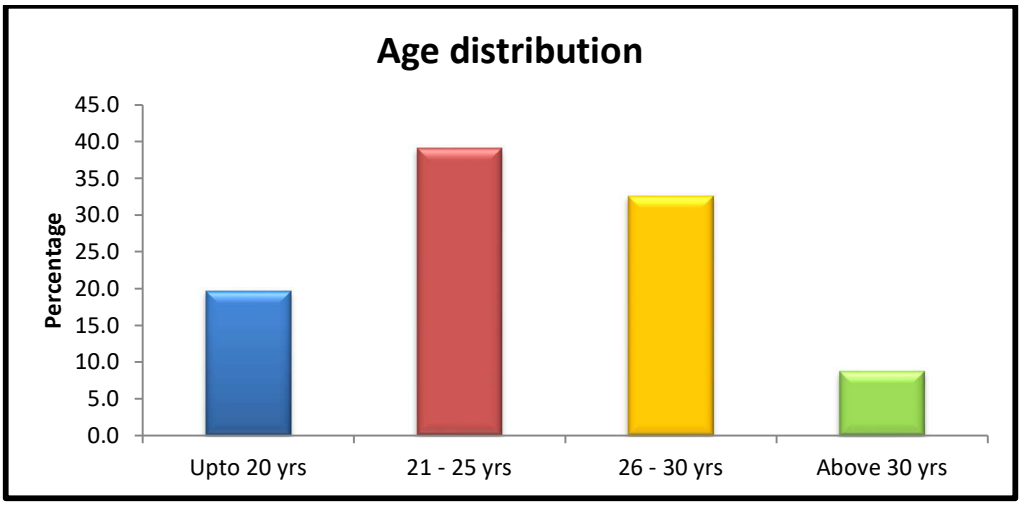

Figure 1

The above table shows Age distribution were <20 years is 19.6%, 21-25 years is 39.2%, 26-30 years is 32.5%, >30 years is 8.7%.

Table 2: Comparison of Age between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Age	Up to 20 years	Count	55	10	65	2.447	0.485 #
		%	18.6%	27.8%	19.6%		
	21 - 25 years	Count	117	13	130		
		%	39.5%	36.1%	39.2%		
	26 - 30 years	Count	99	9	108		
		%	33.4%	25.0%	32.5%		
	Above 30 years	Count	25	4	29		
		%	8.4%	11.1%	8.7%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

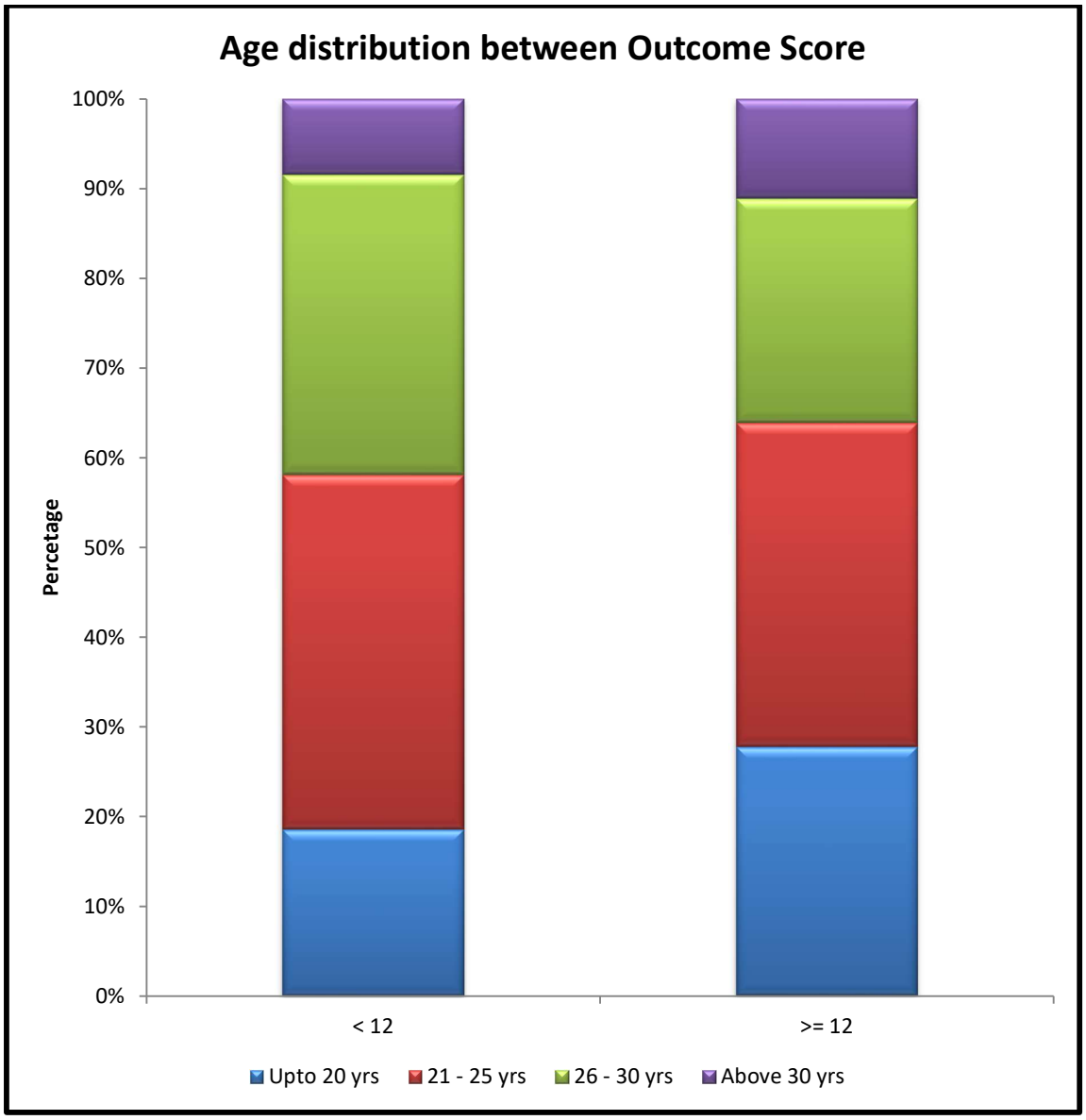

Figure 2

The above table shows comparison of Age between Outcome Score by Pearson's Chi-Square test were $\chi 2=2.447$, $p=0.485>0.05$ which shows no statistical significance between Age and Outcome Score.

Table 3: Comparison of Socio-Economic Status between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total		
			< 12	>= 12			
	Lower Middle	Count	138	19	157	$\chi 2$ – value =1.149	p-value = 0.765
		%	46.6%	52.8%	47.4%		
	Upper Lower	Count	158	17	175		
		%	53.4%	47.2%	52.6%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

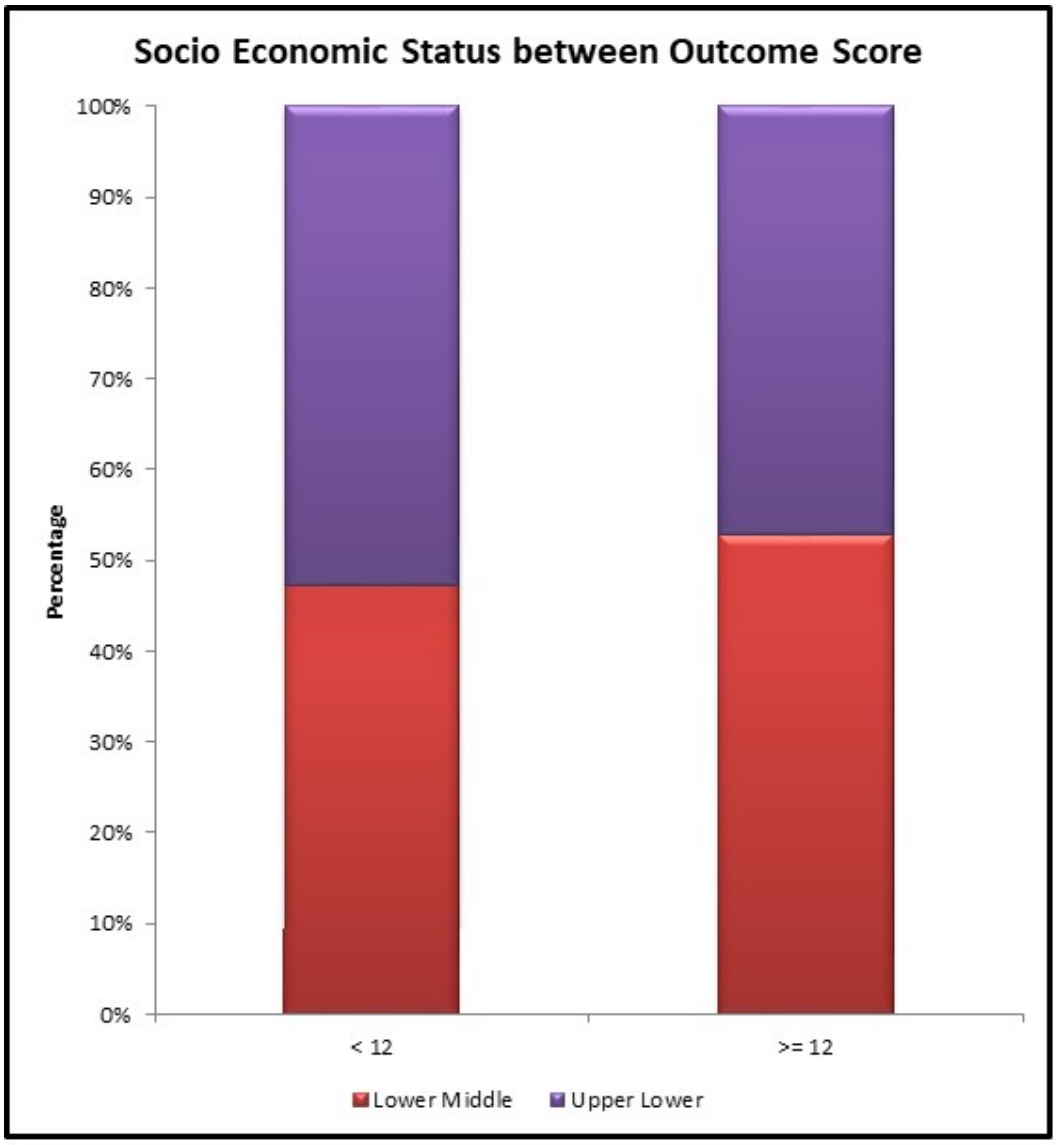

Figure 3

The above table shows comparison of Socio-Economic Status between Outcome Score by Pearson's Chi-Square test were $\chi 2=1.149$, $p=0.765>0.05$ which shows no statistical significance between Socio Economic Status and Outcome Score.

Table 4: Comparison of Baby gender coded between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Baby gender coded	Boy	Count	146	14	160	1.400	0.237 #
		%	49.3%	38.9%	48.2%		
	Girl	Count	150	22	172		
		%	50.7%	61.1%	51.8%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

No Statistical Significance at p > 0.05 level

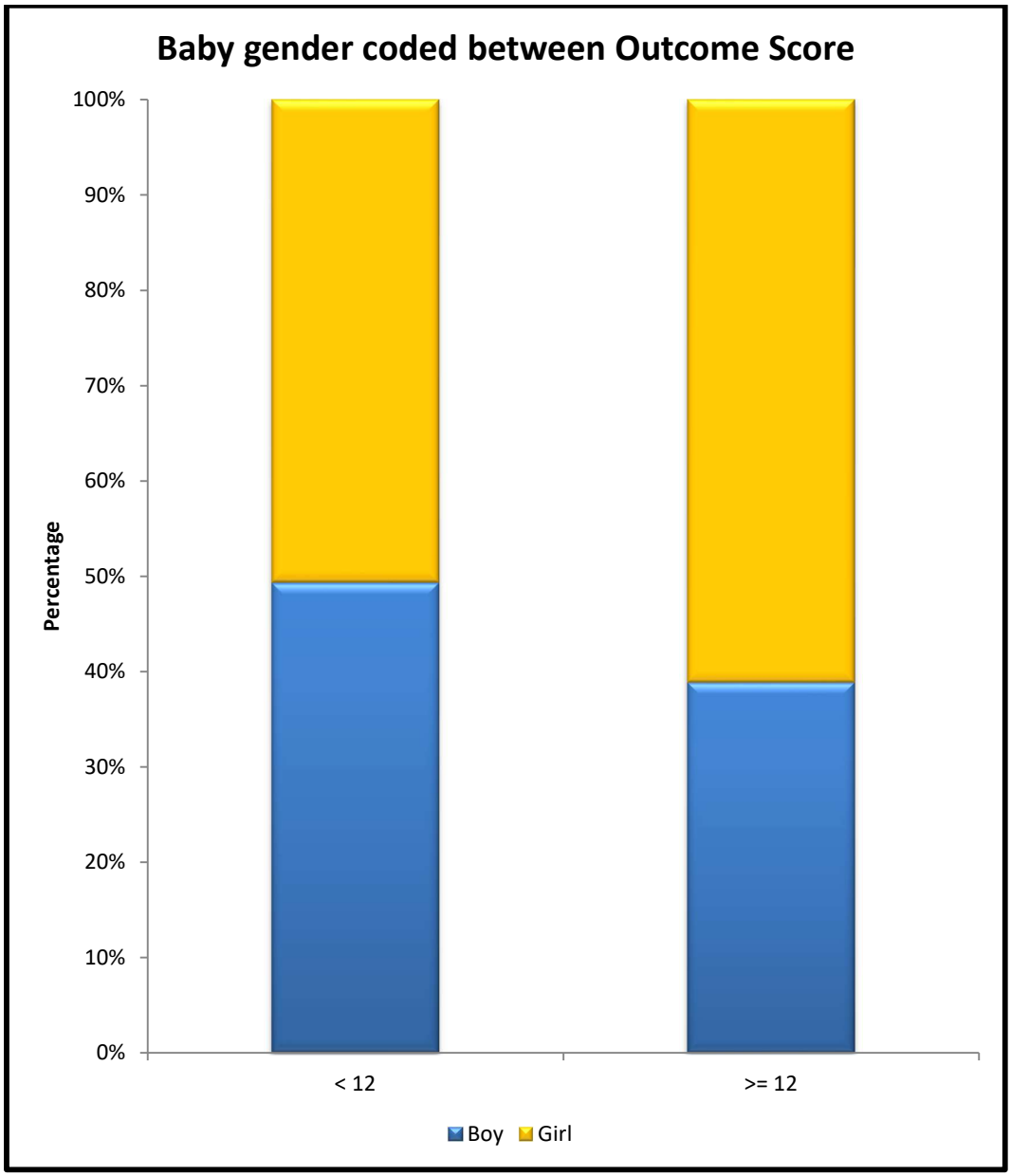

Figure 4

The above table shows comparison of Baby gender coded between Outcome Score by Pearson's Chi-Square test were $\chi 2=1.400$, $p=0.237>0.05$ which shows no statistical significance between Baby gender coded and Outcome Score.

Table 5: Comparison of Previous Pregnancy History between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	$\chi 2$ - value	p-value
			< 12	>= 12			
Previous Pregnancy History	Multi	Count	116	18	134	1.558	0.212 #
		%	39.2%	50.0%	40.4%		
	Primi	Count	180	18	198		
		%	60.8%	50.0%	59.6%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

No Statistical Significance at p > 0.05 level

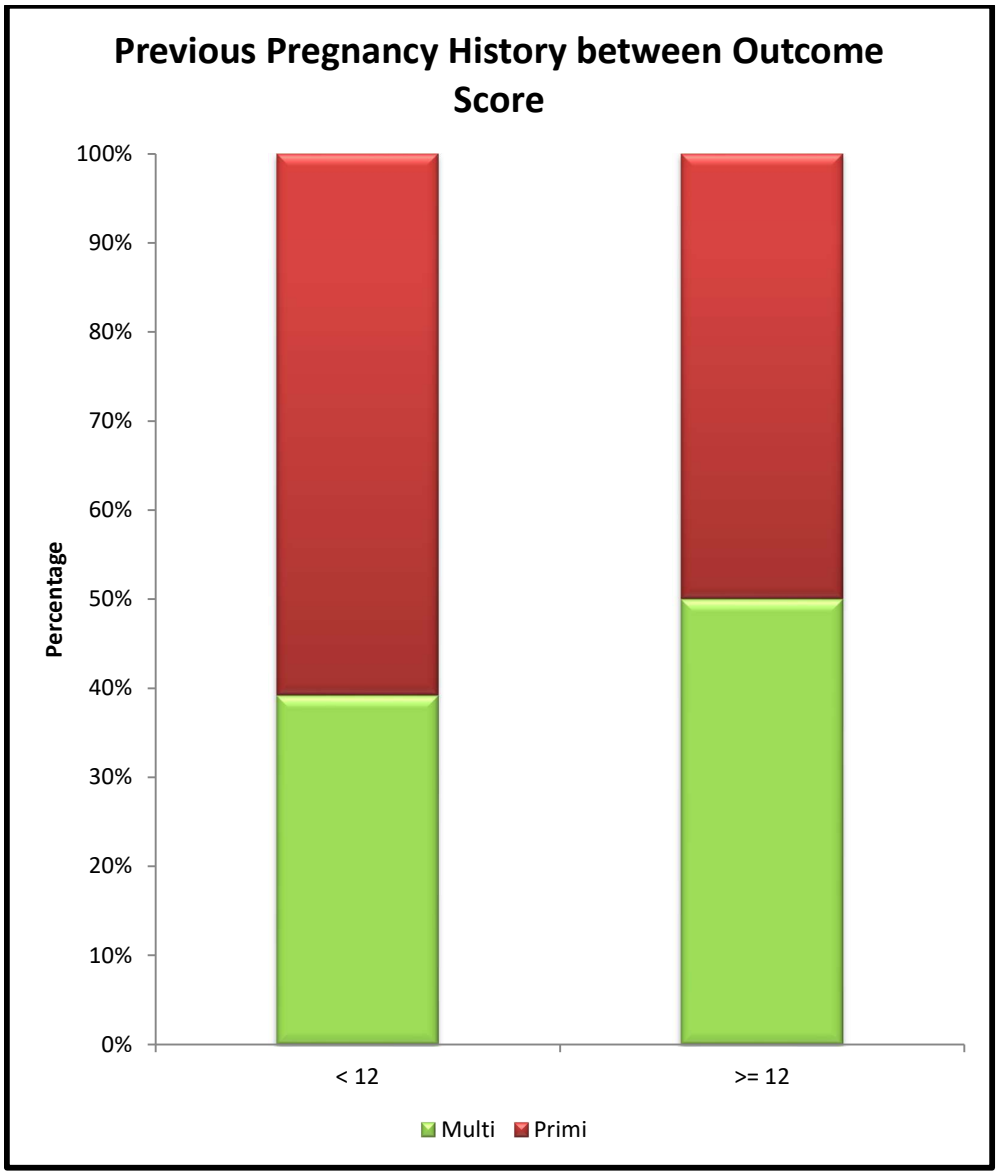

Figure 5

The above table shows comparison of Previous Pregnancy History between Outcome Score by Pearson's Chi-Square test were $\chi 2=1.558$, $p=0.212>0.05$ which shows no statistical significance between Previous Pregnancy History and Outcome Score.

Table 6: Comparison of Previous Abortion between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Previous Abortion	No	Count	256	30	286	0.267	0.605 #
		%	86.5%	83.3%	86.1%		
	Yes	Count	40	6	46		
		%	13.5%	16.7%	13.9%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

No Statistical Significance at p > 0.05 level

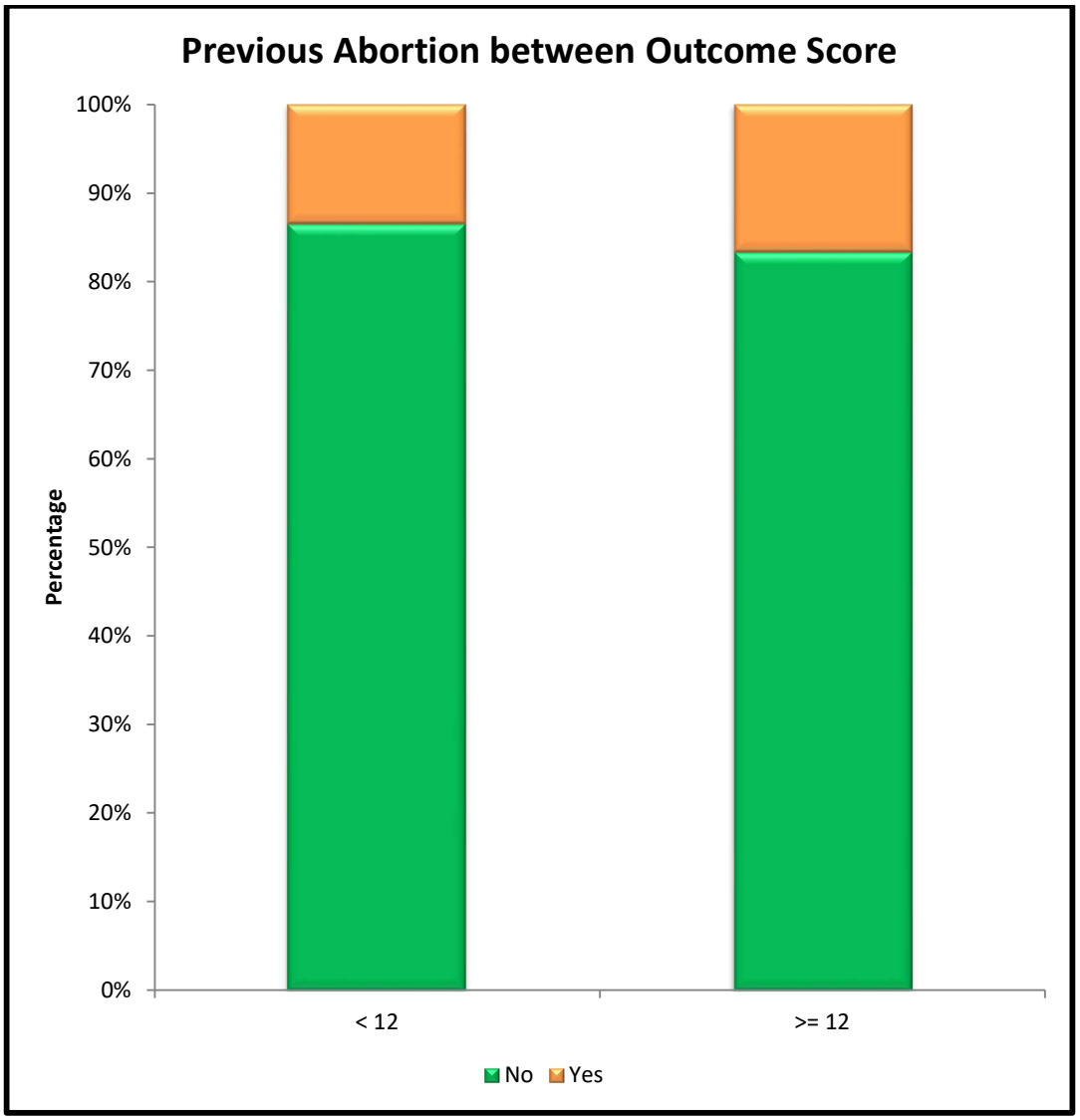

Figure 7

The above table shows comparison of Previous Abortion between Outcome Score by Pearson's Chi-Square test were $\chi 2=0.267$, $p=0.605>0.05$ which shows no statistical significance between Previous Abortion and Outcome Score.

Table 7: Comparison of Mode of delivery between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	$\chi 2$ - value	p-value
			< 12	>= 12			
Mode of delivery	LN (Labour Natural)	Count	110	6	116	5.931	0.015 *
		%	37.2%	16.7%	34.9%		
	LSCS (Caesarean section)	Count	186	30	216		
		%	62.8%	83.3%	65.1%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

* Statistical Significance at $p < 0.05$ level

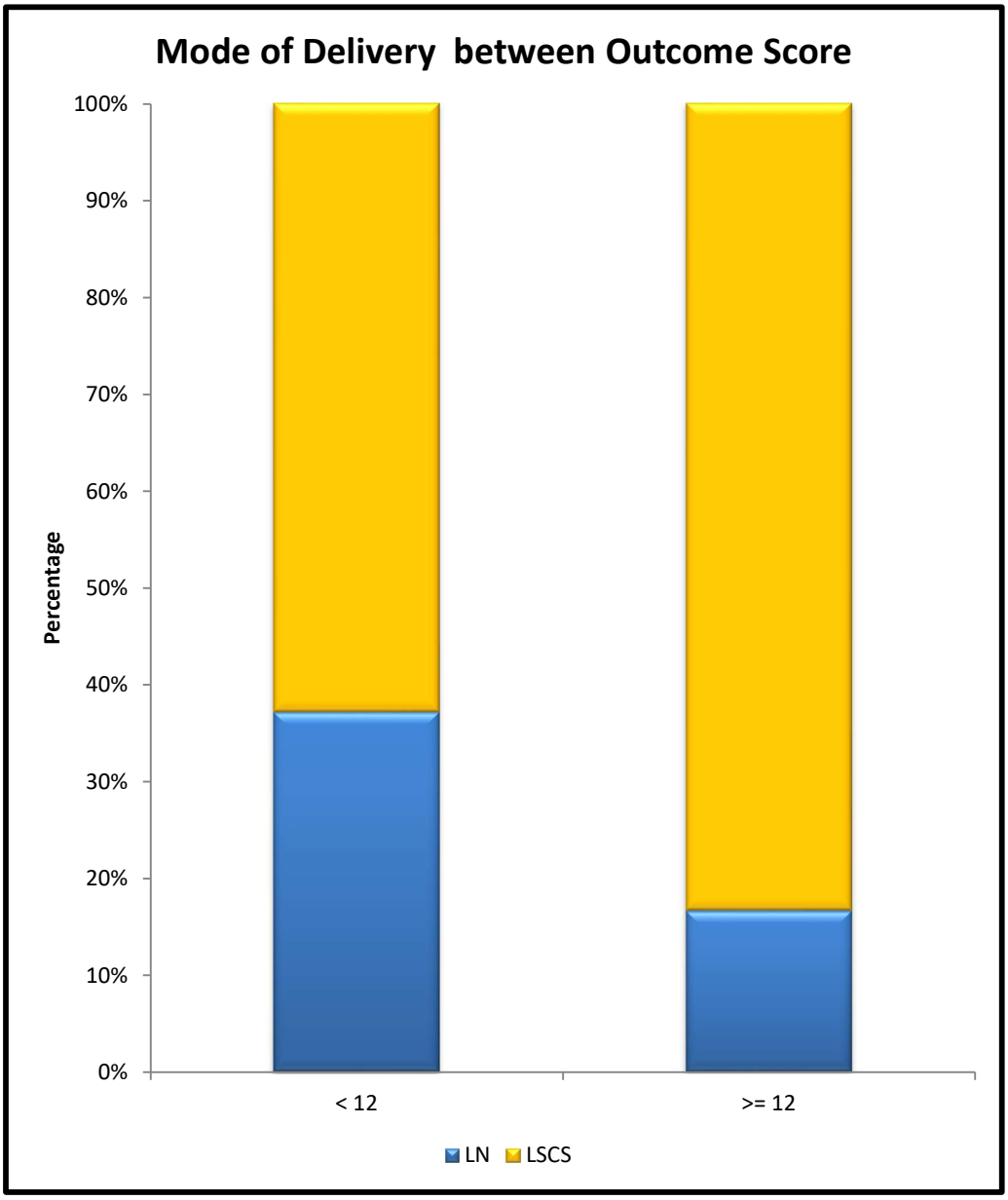

Figure 9

The above table shows comparison of Mode of delivery between Outcome Score by Pearson's Chi-Square test were $\chi 2=5.931$, $p=0.015<0.05$ which shows statistical significance between Mode of delivery and Outcome Score.

Table 8: Comparison of Baby details between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	$\chi 2$ - value	p-value
			< 12	>= 12			
Baby details	Pre-Term	Count	40	29	69	87.624	0.0005 **
		%	13.5%	80.6%	20.8%		
	Term	Count	256	7	263		
		%	86.5%	19.4%	79.2%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

** Highly Statistical Significance at p < 0.01 level

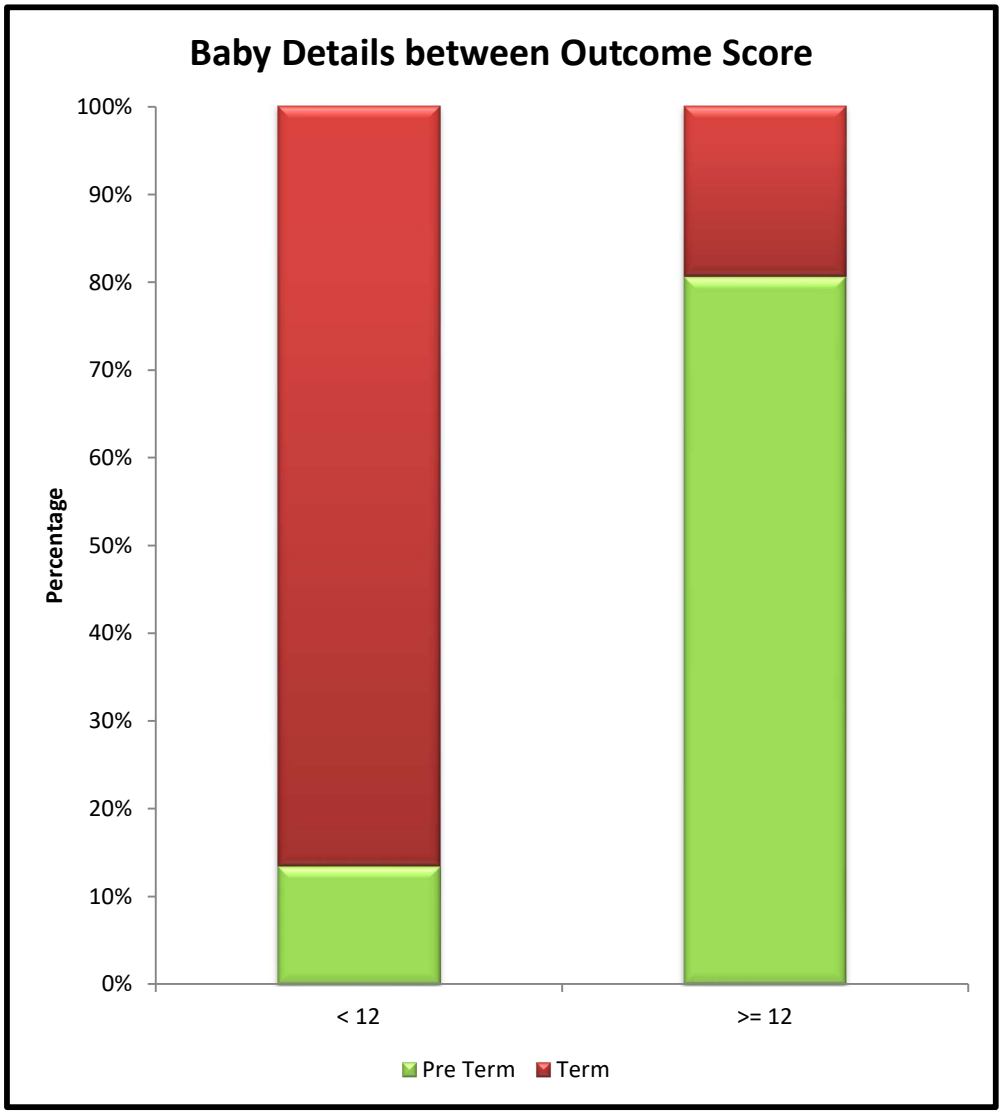

Figure 10

The above table shows comparison of Baby details between Outcome Score by Pearson's Chi-Square test were $\chi 2=87.624$, $p=0.0005<0.01$ which shows highly statistical significance between Baby details and Outcome Score.

Table 9: Comparison of NICU Admission between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	$\chi 2$ - value	p-value
			< 12	>= 12			
NICU Admission	No	Count	219	7	226	43.932	0.0005 **
		%	74.0%	19.4%	68.1%		
	Yes	Count	77	29	106		
		%	26.0%	80.6%	31.9%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		
** Highly Statistical Significance at p < 0.01 level							

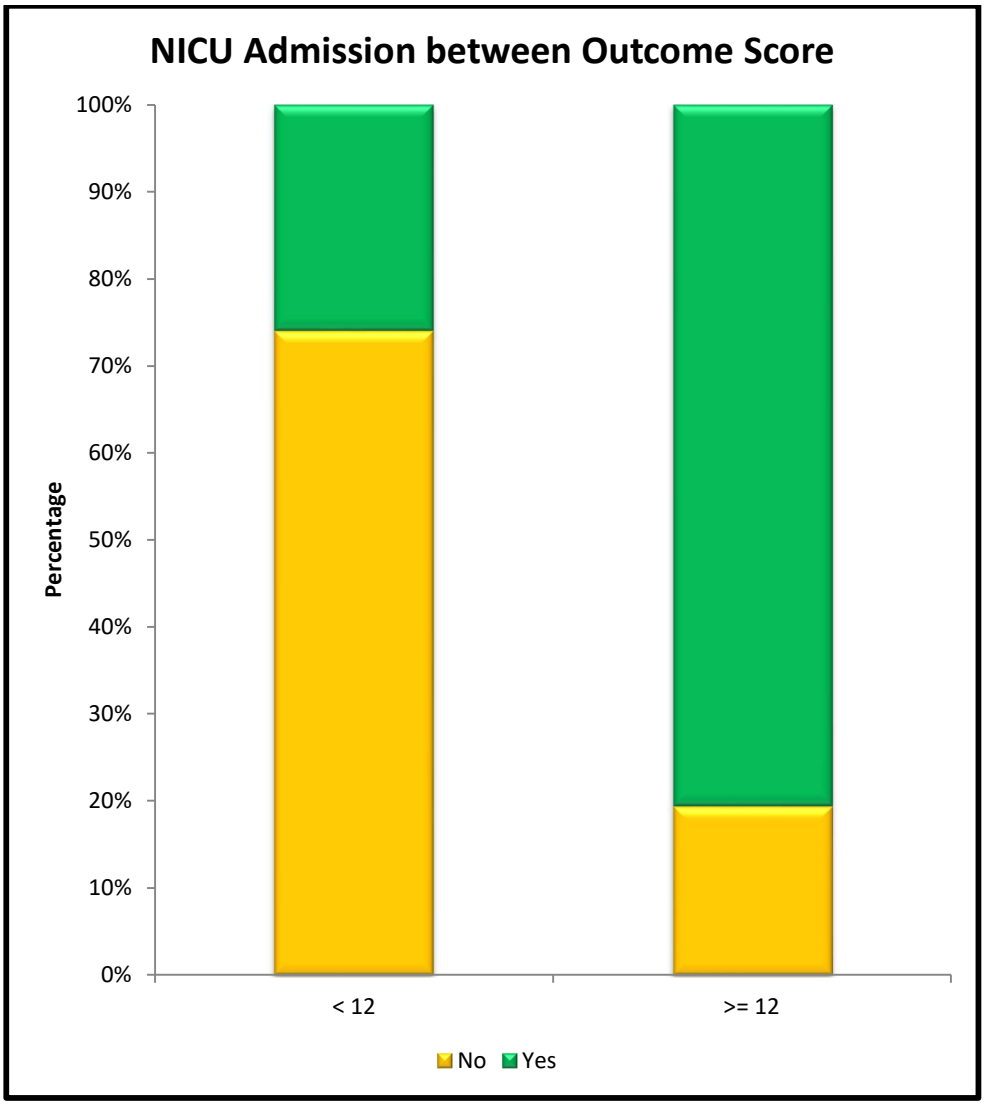

Figure 11

The above table shows comparison of NICU Admission between Outcome Score by Pearson's Chi-Square test were $\chi 2=49.932$, $p=0.0005<0.01$ which shows highly statistical significance between NICU Admission and Outcome Score.

Table 10: Comparison of Previous pregnancy history between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Previous pregnancy history	Multi	Count	128	25	153	8.868	0.0005 **
		%	43.2%	69.4%	46.1%		
	Primi	Count	168	11	179		
		%	56.8%	30.6%	53.9%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

** Highly Statistical Significance at $p < 0.01$ level

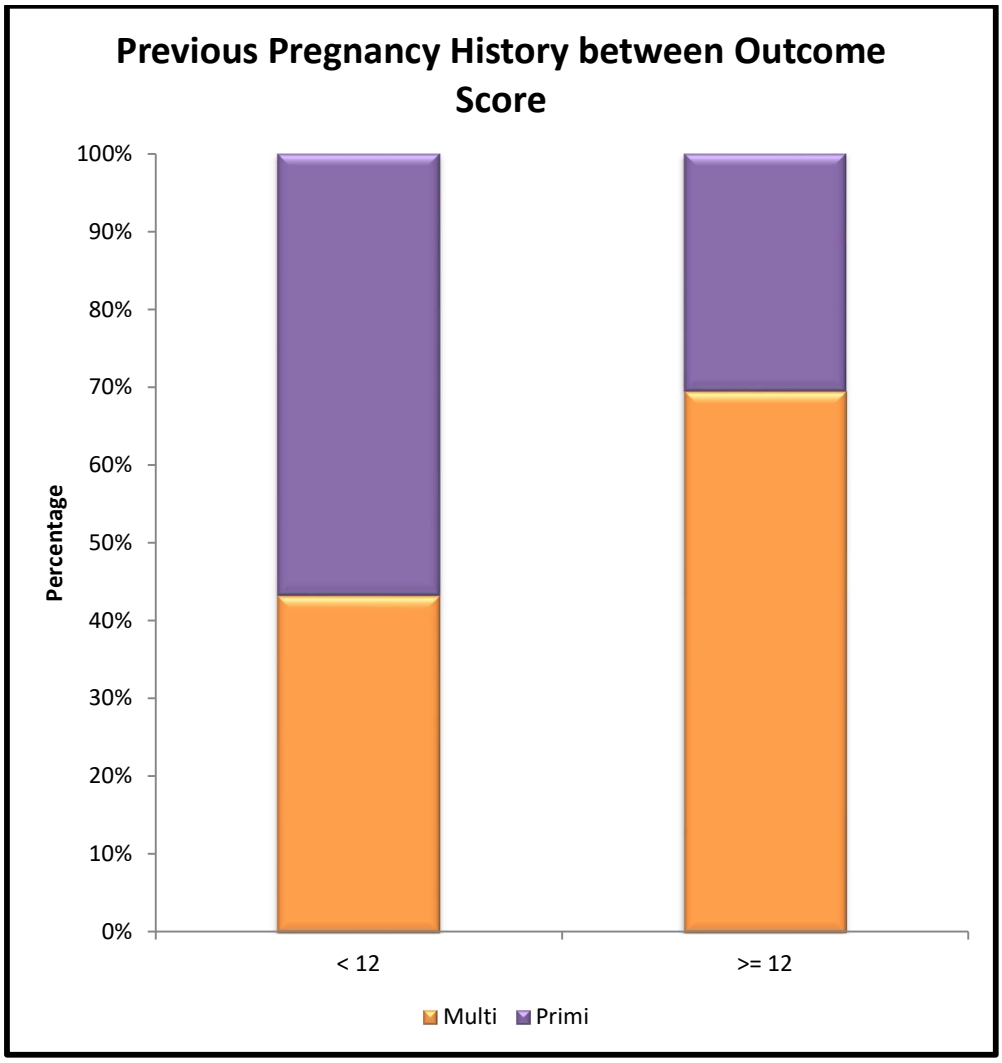

Figure 12

The above table shows comparison of Previous pregnancy history between Outcome Score by Pearson's Chi-Square test were $\chi 2=8.868$, $p=0.0005<0.01$ which shows highly statistical significance between Previous pregnancy history and Outcome Score.

Table 11: Comparison of Family relationship between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	$\chi 2$ - value	p-value
			< 12	>= 12			
Family relationship	A (Average)	Count	10	3	13	57.057	0.0005 **
		%	3.4%	8.3%	3.9%		
	B (Bad)	Count	10	13	23		
		%	3.4%	36.1%	6.9%		
	G (Good)	Count	236	16	252		
		%	79.7%	44.4%	75.9%		
	N (Neutral)	Count	40	4	44		
		%	13.5%	11.1%	13.3%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		
** Highly Statistical Significance at p < 0.01 level							

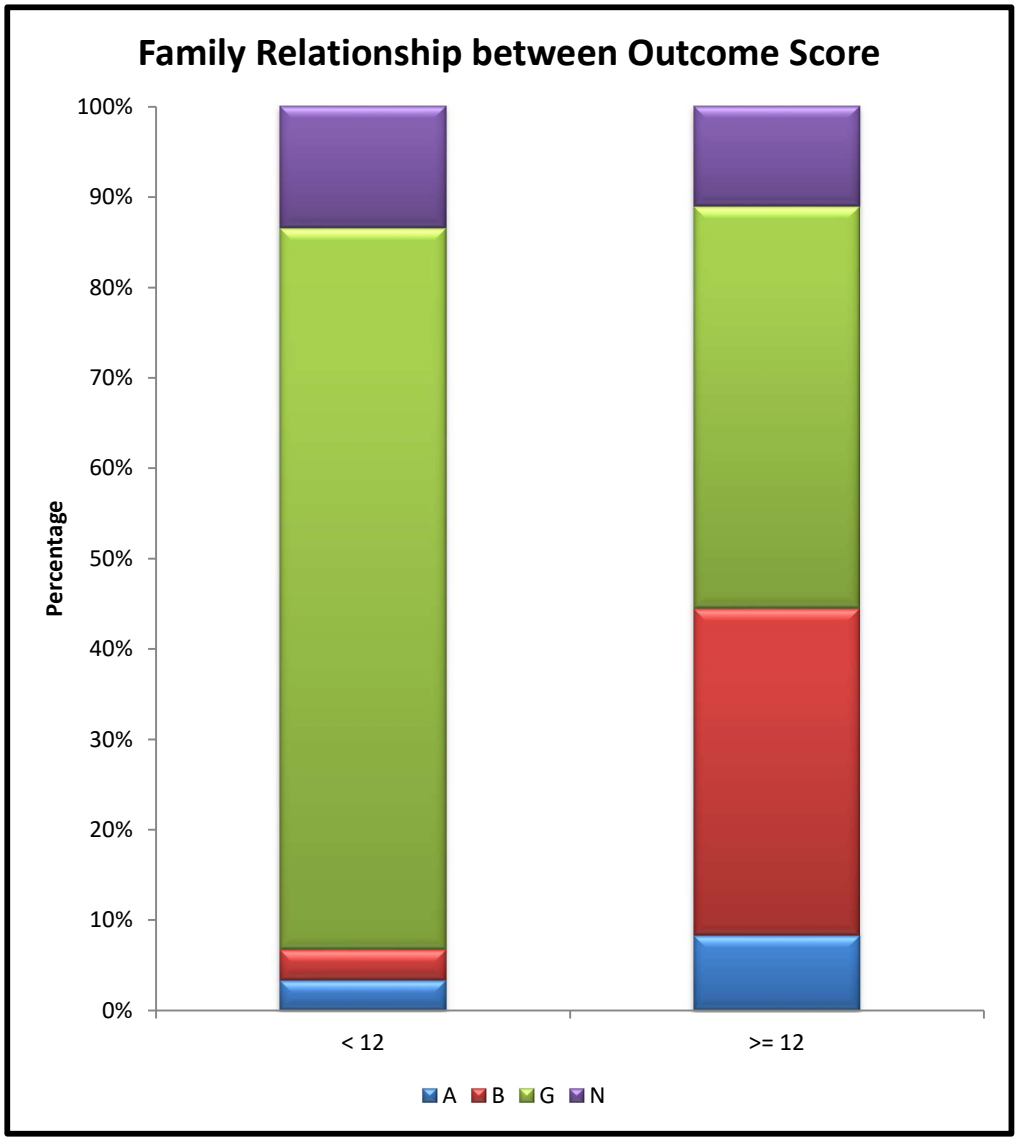

Figure 13

The above table shows comparison of Family relationship between Outcome Score by Pearson's Chi-Square test were $\chi 2=57.057$, $p=0.0005<0.01$ which shows highly statistical significance between Family relationship and Outcome Score.

Table 12: Comparison of Previous history of depression between the Outcome Score by Fisher's exact test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Previous history of depression	No	Count	292	30	322	25.771	0.0005 **
		%	98.6%	83.3%	97.0%		
	Yes	Count	4	6	10		
		%	1.4%	16.7%	3.0%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

** Highly Statistical Significance at $p < 0.01$ level

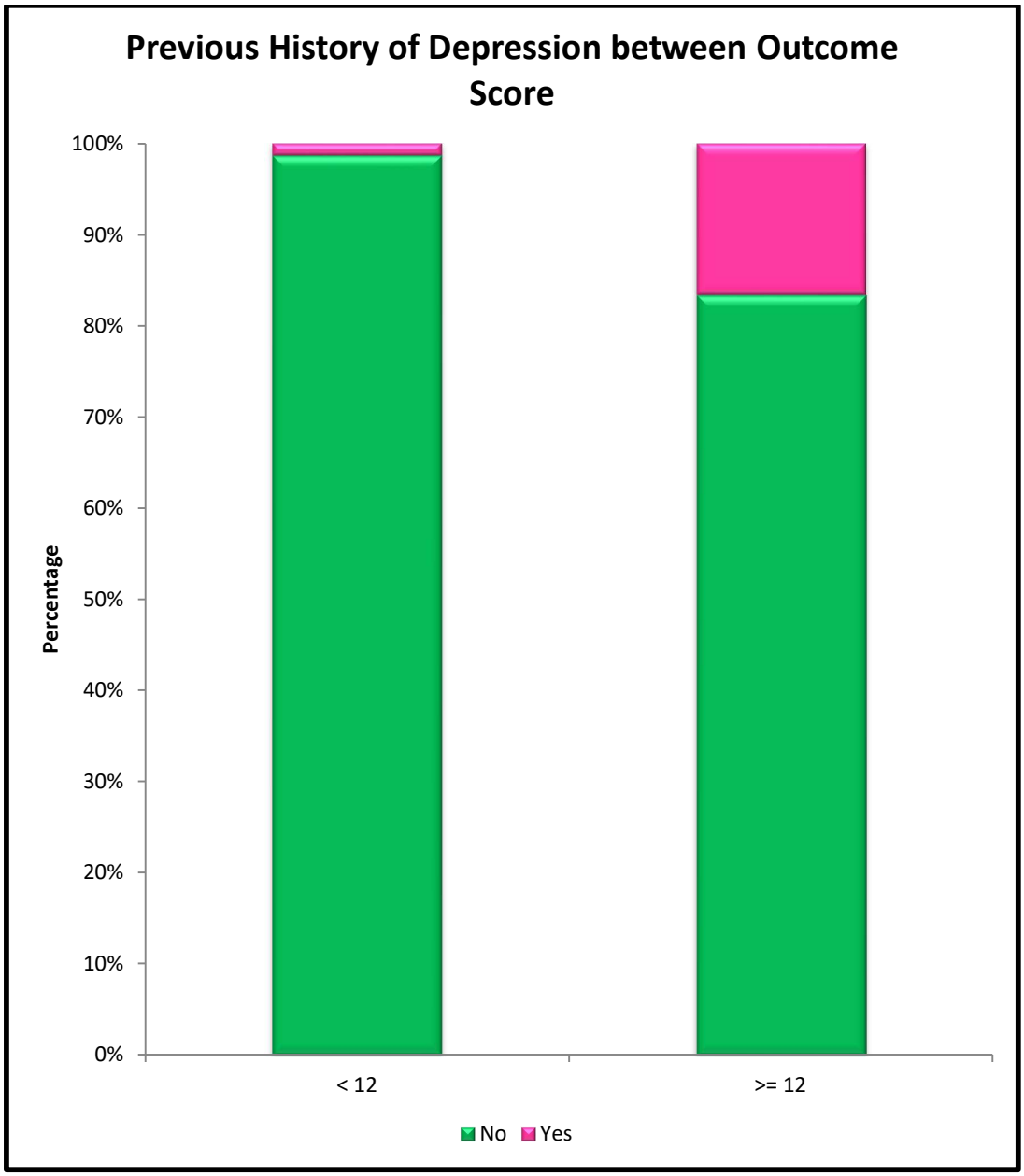

Figure 14

The above table shows comparison of Previous history of depression between Outcome Score by Fisher Exact test were $\chi 2=25.771$, $p=0.0005<0.01$ which shows highly statistical significance between Previous history of depression and Outcome Score.

Table 13: Comparison of Preference towards for male child between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Preference towards for male child	No	Count	230	11	241	35.858	0.0005 **
		%	77.7%	30.6%	72.6%		
	Yes	Count	66	25	91		
		%	22.3%	69.4%	27.4%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

** Highly Statistical Significance at p < 0.01 level

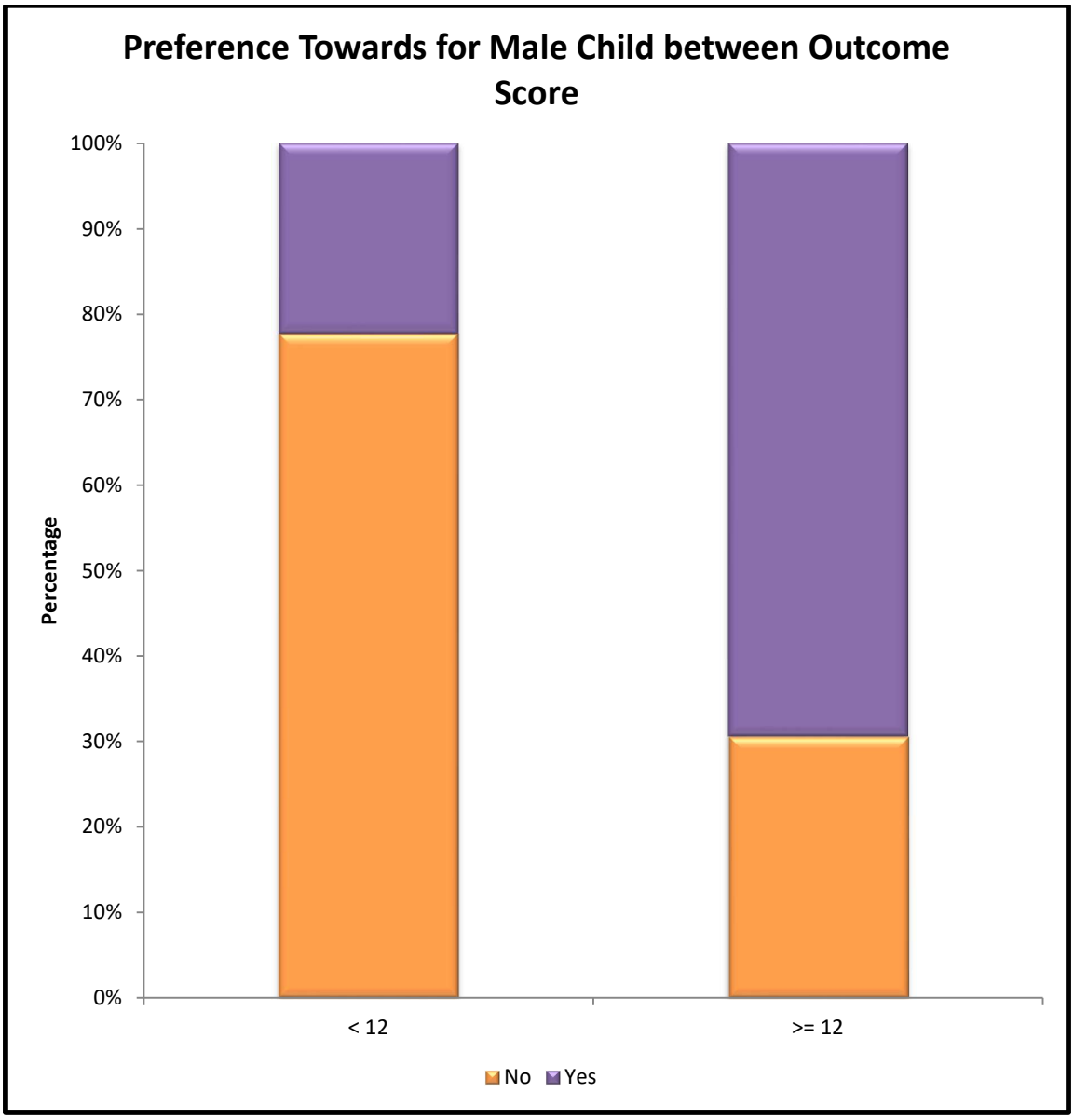

Figure 15

The above table shows comparison of Preference towards for male child between Outcome Score by Pearson's Chi-Square test were $\chi 2=35.858$, $p=0.0005<0.01$ which shows highly statistical significance between Preference towards for male child and Outcome Score.

Table 14: Comparison of Occupation between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	$\chi 2$ - value	p-value
			< 12	>= 12			
Occupation	Unemployed	Count	248	14	262	38.880	0.0005 **
		%	83.8%	38.9%	78.9%		
	Employed	Count	48	22	70		
		%	16.2%	61.1%	21.1%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

** Highly Statistical Significance at $p < 0.01$ level

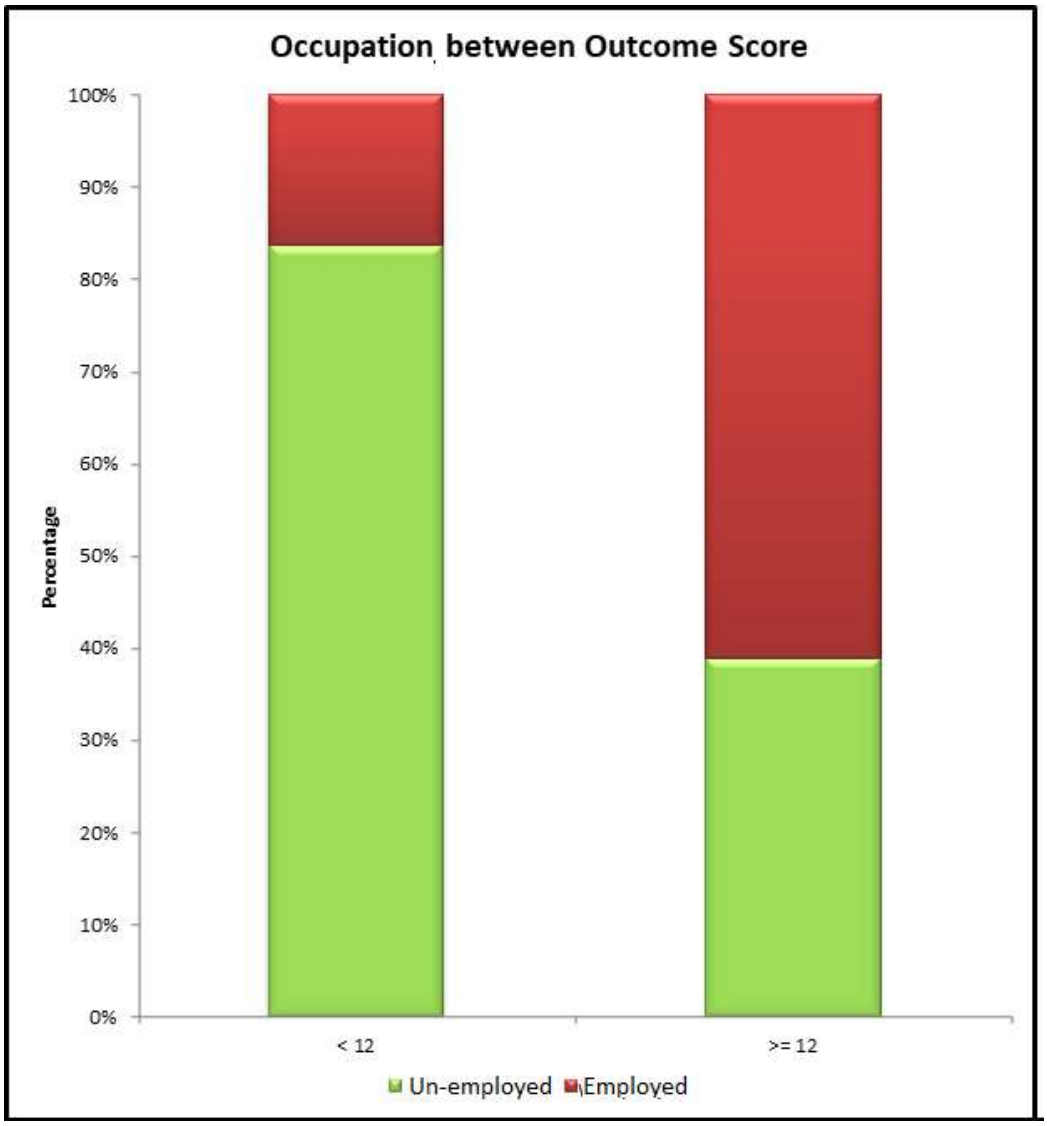

Figure 16

The above table shows comparison of Occupation between Outcome Score by Pearson's Chi-Square test were $\chi 2=38.880$, $p=0.0005<0.01$ which shows highly statistical significance between Occupation and Outcome Score.

Table 15: Comparison of Type of family between the Outcome Score by Pearson's Chi-Square test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Type of family	Joint family	Count	191	29	220	3.689	0.055 #
		%	64.5%	80.6%	66.3%		
	Nuclear	Count	105	7	112		
		%	35.5%	19.4%	33.7%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

No Statistical Significance at p > 0.05 level

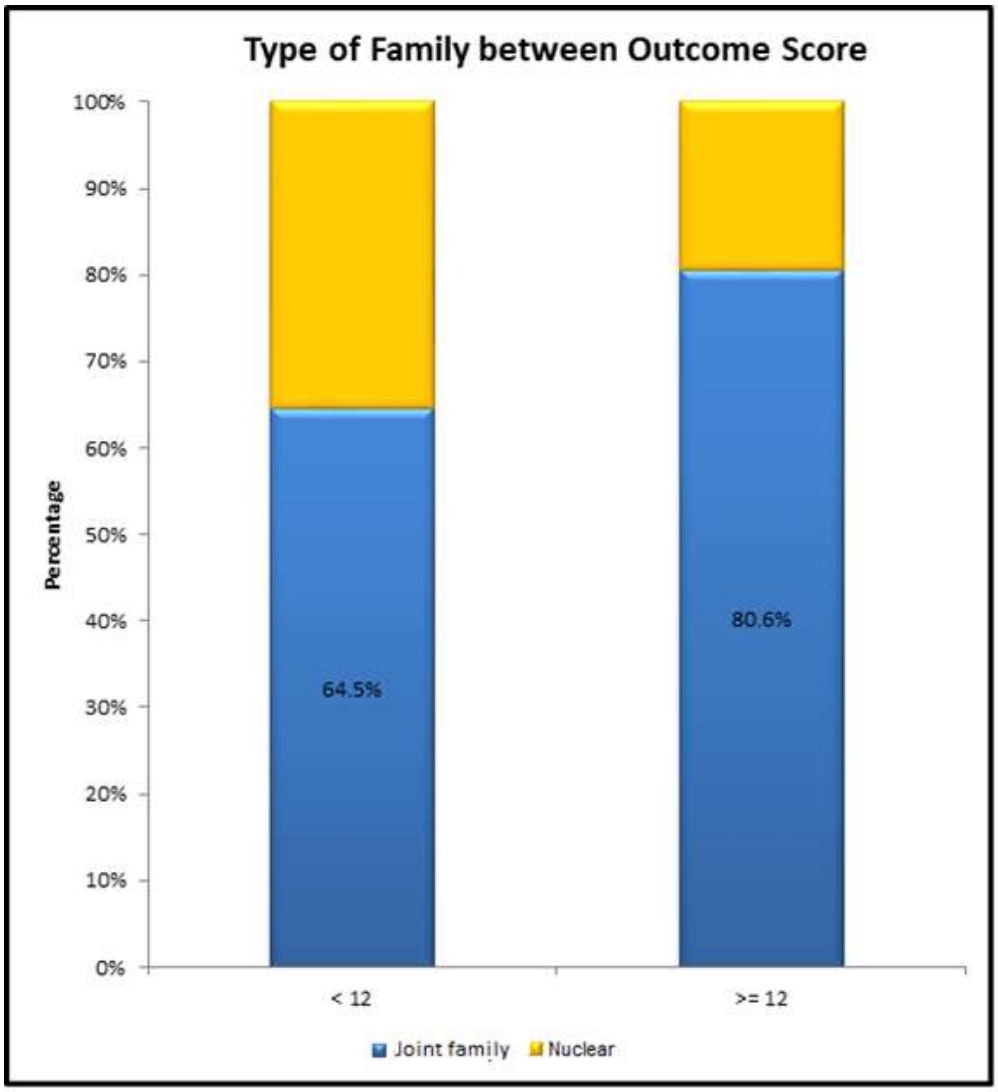

Figure 17

The above table shows comparison of Type of family between Outcome Score by Pearson's Chi-Square test were $\chi 2=3.689$, $p=0.055>0.05$ which shows no statistical significance between Type of family and Outcome Score.

Table 16: Comparison of Days from admission to delivery between the Outcome Score by Unpaired sample t-test

Outcome Score		N	Mean	SD	t-value	p-value
Days from admission to delivery	< 12	296	1.2	1.9	1.023	0.307 #
	>= 12	36	1.6	2.0		
# No Statistical Significance at p > 0.05 level						

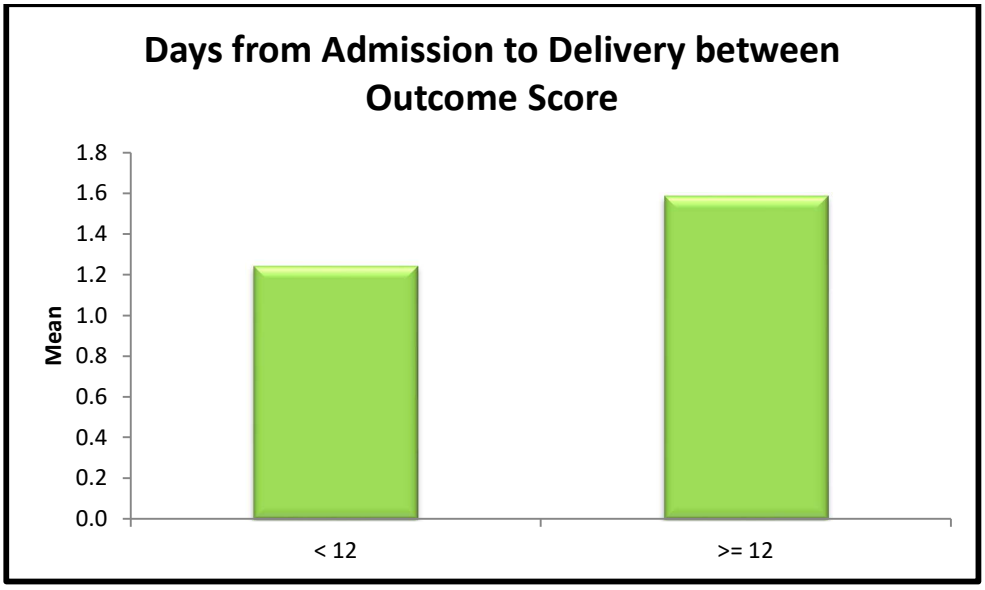

Figure 18

The above table shows comparison of Days from admission to delivery between Outcome Score by Unpaired t-test were t-value=1.023, p-value=0.307>0.05 which shows no statistical significance difference at p > 0.05 level.

Table 17: Comparison of Days from delivery to discharge between the Outcome Score by Unpaired sample t-test

Outcome Score		N	Mean	SD	t-value	p-value
Days from delivery to discharge	< 12	296	6.6	3.0	4.790	0.0005 **
	>= 12	36	9.2	3.3		
** Highly Statistical Significance at p < 0.01 level						

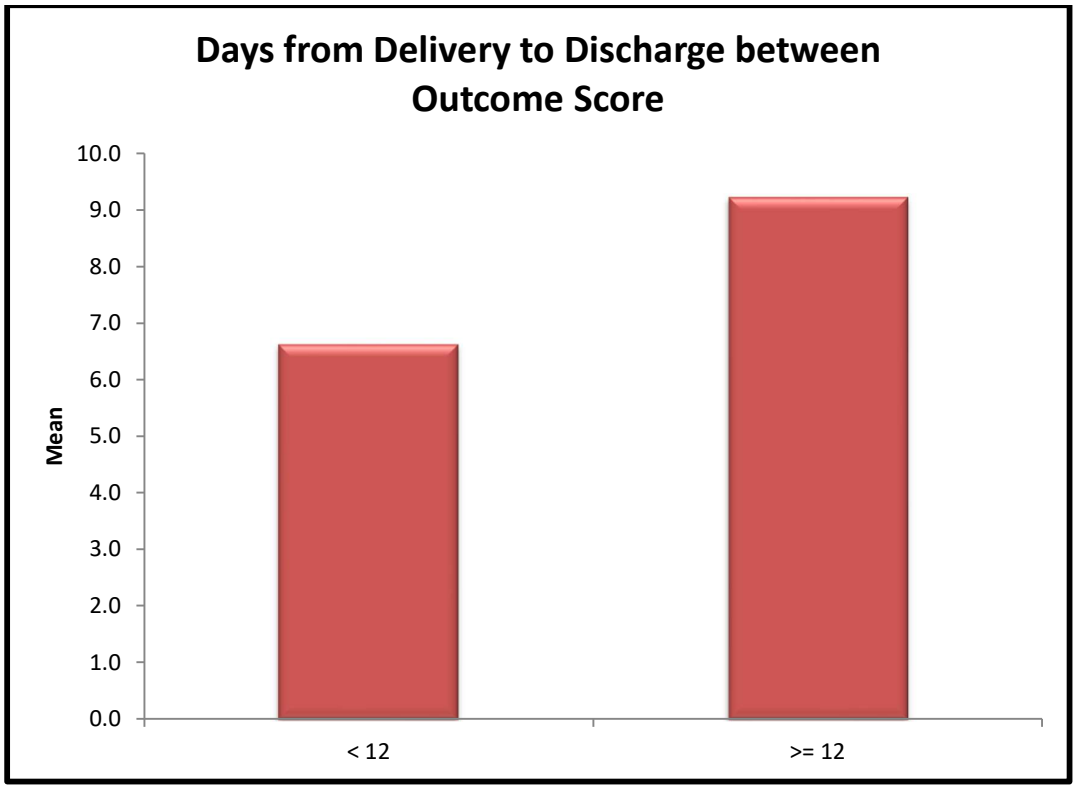

Figure 19

The above table shows comparison of Days from admission to delivery between Outcome Score by Unpaired t-test were t-value=4.790, p-value=0.0005<0.01 which shows highly statistical significance difference at p < 0.01 level.

Table 18: Comparison of Birth weight between the Outcome Score by Unpaired sample t-test

Outcome Score		N	Mean	SD	t-value	p-value
Birth weight	< 12	296	2.8	0.4	2.251	0.025 *
	>= 12	36	2.6	0.5		
* Statistical Significance at p < 0.05 level						

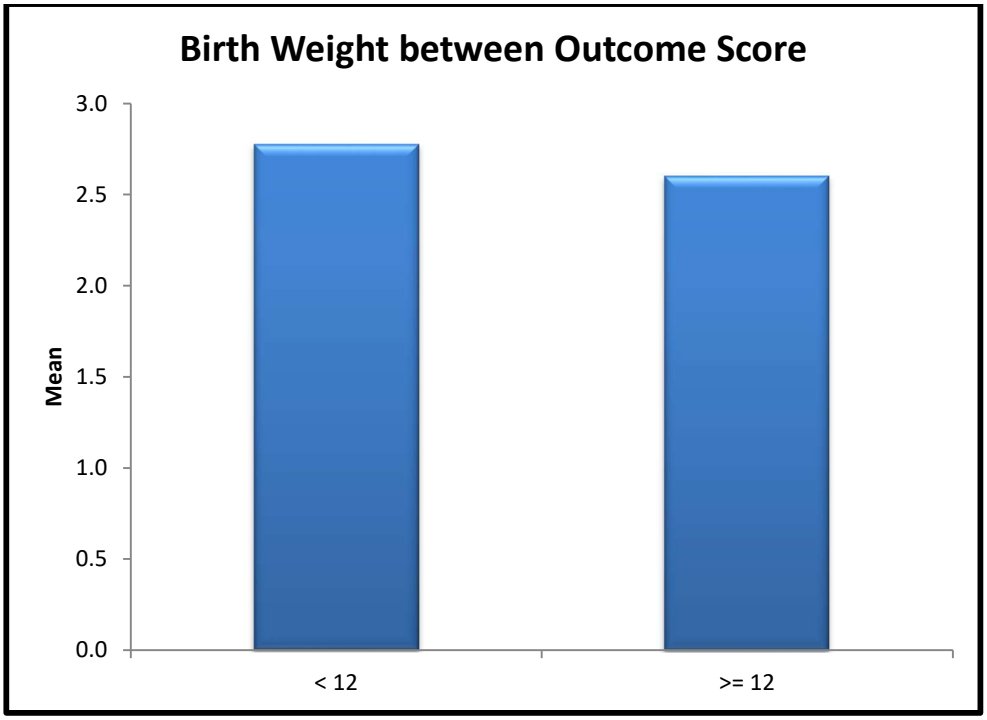

Figure 20

The above table shows comparison of Birth weight between Outcome Score by Unpaired t-test were t-value=2.251, p-value=0.025<0.05 which shows statistical significance difference at p < 0.05 level.

Table 19: Comparison of Hb between the Outcome Score by Unpaired sample t-test

Outcome Score		N	Mean	SD	t-value	p-value
Hb	< 12	296	10.6	1.6	10.210	0.0005 **
	>= 12	36	7.7	1.4		

** Highly Statistical Significance at p < 0.01 level

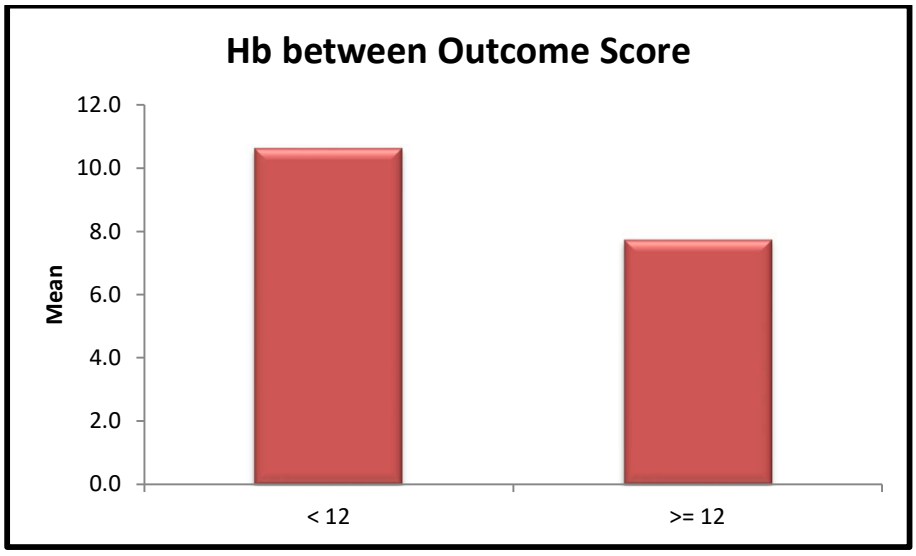

Figure 21

The above table shows comparison of Hb between Outcome Score by Unpaired t-test were t-value=10.210, p-value=0.0005<0.01 which shows highly statistical significance difference at p < 0.01 level.

Table 20: Comparison of Counselling given between the Outcome Score by Fisher's exact test

			Outcome Score		Total	χ 2 - value	p-value
			< 12	>= 12			
Counselling given	No	Count	232	1	233	87.658	0.0005 **
		%	78.4%	2.8%	70.2%		
	Yes	Count	64	35	99		
		%	21.6%	97.2%	29.8%		
Total		Count	296	36	332		
		%	100.0%	100.0%	100.0%		

** Highly Statistical Significance at p < 0.01 level

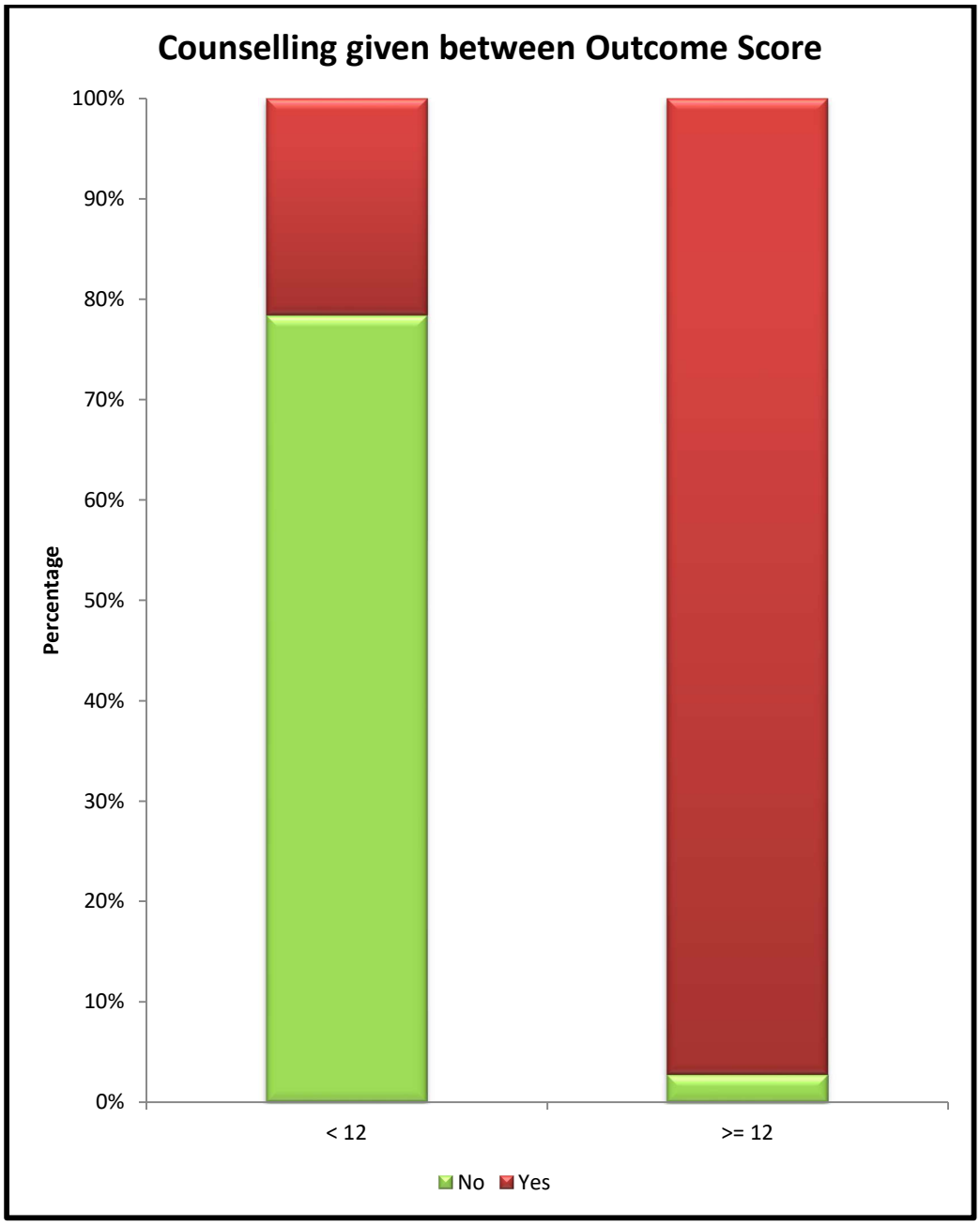

Figure 8

The above table shows comparison of Counselling given between Outcome Score by Fisher's exact test were $\chi 2=87.658$, $p=0.0005<0.01$ which shows highly statistical significance between Counselling given and Outcome Score.

Table 21: Comparison of Follow up score between the Outcome Score by Unpaired sample t-test

Outcome Score		N	Mean	SD	t-value	p-value
Follow up score	< 12	296	5.7	1.8	17.068	0.0005 **
	>= 12	36	9.1	1.0		
** Highly Statistical Significance at p < 0.01 level						

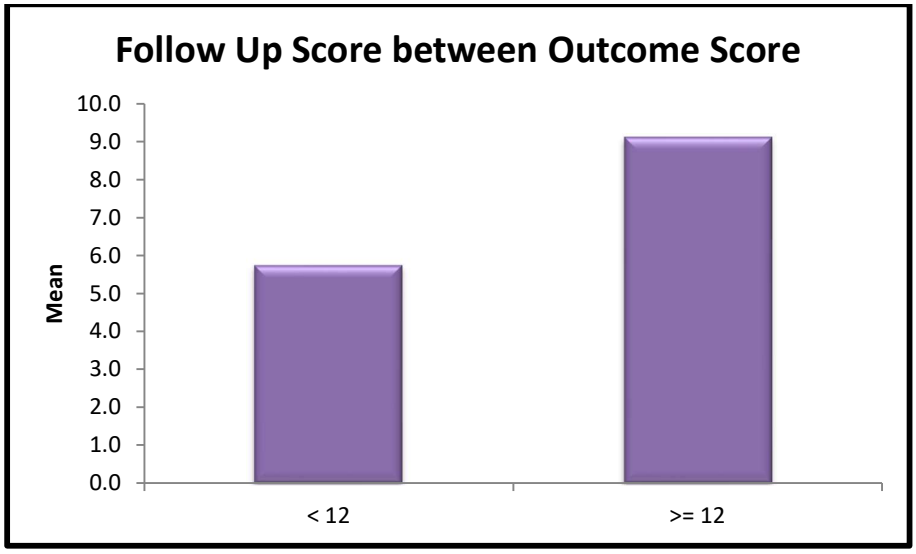

Figure 22

The above table shows comparison of Follow up score between Outcome Score by Unpaired t-test were t-value=17.068, p-value=0.0005<0.01 which shows highly statistical significance difference at p < 0.01 level.

Summary

- The Age distribution were <20 years is 19.6%, 21-25 years is 39.2%, 26-30 years is 32.5%, >30 years is 8.7%.
- The Age between Outcome Score by Pearson's Chi-Square test were $\chi 2=2.447$, $p=0.485>0.05$ which shows no statistical significance between Age and Outcome Score.
- The Socio-Economic Status between Outcome Score by Pearson's Chi-Square test were $\chi 2=1.149$, $p=0.765>0.05$ which shows no statistical significance between Socio Economic Status and Outcome Score.
- The Baby gender coded between Outcome Score by Pearson's Chi-Square test were $\chi 2=1.400$, $p=0.237>0.05$ which shows no statistical significance between Baby gender coded and Outcome Score.
- The Previous Abortion between Outcome Score by Pearson's Chi-Square test were $\chi 2=0.267$, $p=0.605>0.05$ which shows no statistical significance between Previous Abortion and Outcome Score.
- The Counselling given between Outcome Score by Fisher's exact test were $\chi 2=87.658$, $p=0.0005<0.01$ which shows highly statistical significance between Counselling given and Outcome Score.
- The Mode of delivery between Outcome Score by Pearson's Chi-Square test were $\chi 2=5.931$, $p=0.015<0.05$ which shows statistical significance between Mode of delivery and Outcome Score.
- The Baby details between Outcome Score by Pearson's Chi-Square test were $\chi 2=87.624$, $p=0.0005<0.01$ which shows highly statistical significance between Baby details and Outcome Score.

- The NICU Admission between Outcome Score by Pearson's Chi-Square test were $\chi 2=49.932$, $p=0.0005<0.01$ which shows highly statistical significance between NICU Coded and Outcome Score.
- The Previous pregnancy history between Outcome Score by Pearson's Chi-Square test were $\chi 2=8.868$, $p=0.0005<0.01$ which shows highly statistical significance between Previous pregnancy history and Outcome Score.
- The Family relationship between Outcome Score by Pearson's Chi-Square test were $\chi 2=57.057$, $p=0.0005<0.01$ which shows highly statistical significance between Family relationship and Outcome Score.
- The Previous history of depression between Outcome Score by Fisher Exact test were $\chi 2=25.771$, $p=0.0005<0.01$ which shows highly statistical significance between Previous history of depression and Outcome Score.
- The Preference towards male child between Outcome Score by Pearson's Chi-Square test were $\chi 2=35.858$, $p=0.0005<0.01$ which shows highly statistical significance between Preference towards for male child and Outcome Score.
- The Occupation between Outcome Score by Pearson's Chi-Square test were $\chi 2=38.880$, $p=0.0005<0.01$ which shows highly statistical significance between Occupation and Outcome Score.
- The Type of family between Outcome Score by Pearson's Chi-Square test were $\chi 2=3.689$, $p=0.055>0.05$ which shows no statistical significance between Type of family and Outcome Score.
- The Days from admission to delivery between Outcome Score by Unpaired t-test were t-value=1.023, p-value=0.307>0.05 which shows no statistical significance difference at $p > 0.05$ level.

- The Days from admission to delivery between Outcome Score by Unpaired t-test were t-value=4.790, p-value=0.0005<0.01 which shows highly statistical significance difference at $p < 0.01$ level.
- The Birth weight between Outcome Score by Unpaired t-test were t-value=2.251, p-value=0.025<0.05 which shows statistical significance difference at $p < 0.05$ level.
- The Haemoglobin status of the mother between Outcome Score by Unpaired t-test were t-value=10.210, p-value=0.0005<0.01 which shows highly statistical significance difference at $p < 0.01$ level.
- The Follow up score between Outcome Score by Unpaired t-test were t-value=17.068, p-value=0.0005<0.01 which shows highly statistical significance difference at $p < 0.01$ level.

DISCUSSION

The telltale sign of postpartum depression can be described by one of the patients who reported to clinic and said "I was transformed from a competent lawyer into new mother-crippled with doubt, confusion and unshakeable sadness. Too terrified to hold my baby, I cried even more than she did". My postpartum depression lasted for months. Psychiatric illness following child birth has been an area of concern to medical profession for a long time. Postpartum psychiatric disorders are popularly classified into three major clinical categories: Postpartum blues, Postpartum depression, and Postpartum psychosis. Research thesis focused on postnatal depression. The effects of postnatal depression on the mother-infant relationship, child neurocognitive development and her marital relationship are detrimental, hence it is important to prevent, diagnose and treat. Various screening instruments have been validated to detect postpartum depression. The Edinburgh Postnatal Depression Scale is a self-reported 10-item questionnaire which is widely used and validated screening tool of postpartum depression. This cross-sectional study was conducted to determine the prevalence of postnatal depression among women delivering at our hospital and factors associated with it. In our study out of 332 subjects 36 were screened positive for postnatal depression by employing EPDS questionnaire in immediate postnatal period. Several factors related to screen positivity have been studied and screen positive women were subjected to psychiatric evaluation.

Studies report prevalence rates among women from 5% to 25%, but methodological differences among the studies make the actual prevalence rate unclear. In this study we found that the prevalence rate of depression was 10% using Edinburgh Postnatal depression scale in immediate postnatal period, though none were confirmed to have depression using structured clinical interview which included DSM-V diagnostic criteria by psychiatrist. Though screening test has poor sensitivity to pick up postnatal depression it helps in identifying

adjustments disorder and counselled and at 6 weeks all 36 women were screened negative with EPDS questionnaire.

Ina S. Santos has done study on 378 mothers from Brazil to evaluate sensitivity and specificity of Edinburgh Postnatal Depression Scale (EPDS) in screening for postnatal depression, three months after delivery. The sensitivity and specificity for different cutoff scores noted. The study found ≥10 as best cut of score with 82.6% sensitivity and 65.4% specificity. For moderate and severe case, ≥11, with 83.8% sensitivity and 74.7% specificity was reported to be the best cut-off score. They also found EPDS tool was valid only if prevalence rates ranged between 20-25%. In this study population that too in Indian scenario prevalence rates would have been low due to emotional support from family and none had marital adjustments problems. O'Hara and Swain (1996) did meta-analysis of 59 studies and estimated that the average prevalence rate of postnatal depression was 13%. Out of the 336 study participants 10% (36) women were screened positive in immediate postnatal period who were later subjected to psychiatric evaluation. All 36 were screened negative at 6 weeks of postpartum.

AGE

It was observed from this study that majority of study population belong to <20 years is 19.6%, 21-25 years is 39.2%, 26-30 years is 32.5%, >30 years is 8.7%.Among the study population test positivity was maximum among women aged 21-25 years (36.1%) followed by less than or equal to 20 years of age (27.8%) , 26-30 years of age (25%) and more than 30 years of age (11.1%).Though not statistically significant, majority of population under study were found in 21-25 years, might have contributed to high test positivity in 21-25 years of age group.

Janet w et al studied postpartum depression in 1278 women and found young age to be associated with more risk of postpartum depression. This findings were similar to present study.

In the study conducted by Desai Nimisha et al it was observed that,48% of postpartum depressed mothers belong to 20-24 years followed by 25-29 years (40%), 30-34years (8%).and less than 20 years (4%). These were closely similar to present study were younger age group of mothers were affected more compared to older age group.

Kathryn A Houston et al among 160 participants one third of study participants found to be in depression (37.5%) were ≥ 35 years of age group .This finding was contradicting present study findings.

In the study conducted Dr.Ashish V Gokhale and Dr.Amit vaja it was observed that among mothers with postpartum depression 50% belong to 20-25 years of age and 50% belong to 25-29 years of age .These differences were not statistically significant .These finding were similar to present study findings.

In the study conducted by Siddharudha Shivalli and Nandhihal Guruajit was observed that 36.1% of mothers with postpartum depression belong to less than 21 years of age and 28.8% belong to more than 21 years of age gropu . This difference was not statistically significant which were similar to present study.

In the study conducted by Christine E Parsons et al it was observed that no statistically significant association was found between age and postpartum depression .These findings were similar to present study

SOCIOECONOMIC STATUS

It was observed from the current study that, majority of study population belong to upper lower class (52.6%) followed by lower middle class (47.4%).

Among the study population with test positivity, majority belong to lower middle class (52.8%) followed by upper lower class (47.2%). None of the postnatal mothers were belong to lower

class and lower upper class. These differences were not statistically significant with outcome score.

In the study conducted by Siddharudha Shivalli and Nandihal Guruajit was observed that 39.2% mothers with postpartum depression belong below poverty line and only 4.3% mothers belong to above poverty line. This difference was statistically significant. However, these findings were contradicting to present study. It probably may be due to different scales employed in stratifying socio-economic status.

In the study conducted by Rajendra Kumar Giri et al it was observed that 41.7% of mothers with postpartum depression symptoms belong to lower class followed by 28.4% belong to middle class and 26.6% belong to upper class. These differences were statistically significant. These findings were similar to present study.

GENDER OF THE NEWBORN

More than half of the participants 172 (51.8%) gave birth to female babies and 160 (48.2%) women gave birth to male babies.

Among the postnatal mothers with test positivity, 61.1%(22) delivered female babies compared to 38.9%(14) mothers who delivered male babies . In present study there was no statistically significant association between postnatal depression and female sex of new born.

In male dominated society like India giving birth to male child brings happiness to the family. Due to bad social cultural practices like dowry, female child is considered as a financial burden to the family. Pressure from family and society to have a male child acts a stressor for development of postnatal depression in mothers.

In the study conducted by Desai Nimisha et al it was observed that, among the mothers with postpartum depression 8/25 gave birth to male child compared to 17/25 mothers gave birth to female child . This difference was statistically significant . These findings were contradictory to present study.

In the study conducted Dr. Ashish V Gokhale and Dr. Amit Vajait was observed that among mothers with postpartum depression 72.7% gave birth to female child and 27.3% gave birth to male child. This difference was statistically significant . These finding was contradictory to present study.

In the study conducted by Siddharudha Shivalli and Nandihal Gururaj it was observed that 46.3% of mothers with postpartum depression gave birth to female child and 21.3% mothers gave birth to male child . This difference was statistically significant. These findings were contradictory to present study.

PARITY

It was observed from the current study that,153 study participants were multipara and 179 women were primigravida.

Among the postnatal mothers with test positivity, majority were multipara (69.4%) compared to primigravida (30.6%).This difference was statistically significant.

In the study conducted by Desai Nimisha et al it was observed that, among mothers with postpartum depression were multipara (20/25) and (5/25) women were primigravida. This difference statistically significant. This finding is similar to present study.

In the study conducted by Ashish V Gokhale and Amit Vaja it was observed that among mothers with postpartum depression majority were primigravida(63.6%) and 36.4% were

multipara. This difference was statistically significant. This finding was contradicting the present study.

PREVIOUS HISTORY OF ABORTION

Of all postnatal mothers 86.1% (286) had no previous history of abortions and 13.9% (46) had previous history of abortions

Among the postnatal mothers with test positivity 16.7% (6) had previous history of postnatal depression and 83.3% (30) had no such previous history of abortions. The difference was statistically significant.

In the study conducted Dr. Ashish V Gokhale and Dr. Amit Vaja it was observed that among mothers with postpartum depression 45.6% had history of miscarriage. This difference was statistically significant. This finding was contradicting present study.

MODE OF DELIVERY

From the current study it was observed that majority of postnatal mothers had undergone LSCS 65.1%(216) followed by mothers who had undergone normal vaginal delivery 34.9%(116).

Among the mothers with test positivity , majority had undergone LSCS 83.3%(30) followed by mothers had undergone normal vaginal delivery 16.7%(6) .There was a strong association between LSCS and normal vaginal delivery.

In Indian scenario caesarean for women is perceived as stressful situation and also usually done for either obstetrical or maternal or fetal indication, all of these are potential risk factors for depression. Patient's antepartum delivery preferences may play a role in predicting postpartum depression.

Kathryn .A et al conducted a study on 160 women and concluded that women wishing to deliver vaginally antepartum and delivered by caesarean later were found to be at increased risk of depression in the early postpartum period. These findings were similar to present study.

In the study conducted Dr .Ashish V Gokahale and Dr. Amit Vaja it was observed that among the mothers with postpartum depression 90.9% had undergone vaginal delivery and 9.1% mothers had undergone LSCS. This difference was not statistically significant . These findings were contradicting to present study.

In the study conducted Siddharudha Shivalli and Nandihal Gururaj it was observed that 33.3% had undergone LSCS and 31.% mothers had undergone vaginal delivery. This difference was not statistically significant. These findings were contradicting to present study.

GESTATIONAL AGE AT DELIVERY

It was observed from this study that, majority of postnatal mothers were delivered at term 79.2% (263) and 20.8%(69).Among the postnatal mothers with test positivity, majority were preterm delivery 80.6% (29) compared to mothers with term gestation 19.4%(7). This difference was statistically significant.

In the study conducted Siddharudha Shivalli and Nandihal Gururajit was obssrved that 66.7% of mothers with postpartum depression had preterm delivery and 25.5% had full term pregnancy. This difference was statistically significant . These findings were similar to present study.

NICU ADMISSION

From the present study it was observed that around 31.9% (106) newborns were admitted in NICU and around 68.1% (226) did not had admission in NICU.

Among the postnatal mothers, test positivity was more among the mothers whose newborn had NICU admission 80.6% (29) compared to mothers whose newborns did not had admission in NICU 19.4% (7).This was statistically significant strong association between postnatal depression and the newborn baby's NICU admission.

Throughout pregnancy women will dream of having a healthy baby. Separation of baby from mother in immediate postnatal period is quite distressing for mother and significant risk factor for development of depression.

FAMILY RELATIONSHIP

Among the postnatal mothers, majority had good family relationship 75.9% (252) ,13.3% (44) had neutral relationship ,6.9% (23) had bad family relationship and 8.3% (3) had average family relationship.

Of the mothers test positivity 44.4%(16) had good family relationship ,36.1% (13) had bad relationship, 11.1%(4) had neutral family relationship and 8.3%(3) had average family relationship .

Though it is statistically significant ,postnatal mothers had inhibition of revealing their family relationship which is an important risk factor for postpartum depression. Hence this factor significance is inconclusive.

PREVIOUS HISTORY OF DEPRESSION

From the current study it was observed that majority had no previous history of depression 97% (322) and only 3% (10) had previous history of depression .

Among the postnatal mothers with test positivity,83.3% (30) had no previous history of depression and 16.7% (6) had previous history of depression.

O'Hara and Swain's meta analyses included 14 studies of approximately 3000 subjects which examined the mother's previous psychiatric history and postpartum depression. Beck's meta analyses included 11 studies which examined approximately 1000 subjects .The results of both analyses found that a previous history of depression was a moderate to strong predictor of subsequent postpartum depression.

However in present study, the overall postnatal mothers with positive history of depression was only 3%(out of 332) .Although previous history of depression is an important factor for postpartum depression, the sample size is not much sufficient enough to conclude the significance of this factor in current study.

PREFERENCE TOWARDS MALE CHILD

From the present study it was observed that, more than three fourths of study population 72.6% (241) had no preference to have a male child and 27.4%(91) had preference to have male child.

Among the mothers with positive screening for postnatal depression, 69.4% (25) had preferences towards male child and 30.6%(11) had no preferences towards male child.This difference was statistically significant. India is male dominated society, delivery of male child is a welcomed event. When mother delivers a female child she may have to face criticism, antipathy and at times rejection from her husband and his family, finally playing a major role for development of depression.

OCCUPATION

Among 332 study participants ,78.9% (262) were unemployed followed by 21.1% (70) who were employed.

Among the postnatal mothers test was positive among 61.1% (22) were employed compared to 38.9% (14) among women who were unemployed. These differences were statistically significant.

In the study conducted by Desai Nimisha et al it was observed that, among mothers with postpartum depression 88% were unemployed and 22% were employed. These differences was statistically significant. These findings were contradicting to present study which could be because of the fact that the employment of the participants is mostly blue collar which is more laborious and tiring. With this we can conclude with the given demographics participants who are employed are more depressed than the participants who are un-employed.

In the study conducted by Christine E Parsons et al it was observed that no statistically significant association was found between occupation and postpartum depression. These findings were similar to present study.

TYPE OF FAMILY

Current study shows that majority of study population belong to joint family 220(66.3%) and 112(33.7%) women had nuclear family.

Among the study population with test positivity mothers belong to join family followed by nuclear family which was 80.6% (29) and 19.4%(7) respectively. There is no statistical significance but even in the over all population we can see that 64.5%(191) are from joint family and 35.5% (105) are from nuclear family. With this base value we can conclude that participants from joint family are more prone to depression than the participants who are from nuclear family.

This could be because that in current society many couples prefer nuclear family over joint families and staying together with a huge family though gives a great emotional support, personal choices matter and difficulty in maintaining relationship with the in-laws and increased workload associated with huge families could have contributed to current findings in our study.

ADMISSION TO DELIVERY INTERVAL:

From the study we can conclude that there is no statistical significance by the impact of the interval from admission to delivery. The reason for including this as a input parameter is that because we wanted to consider the stress the mother would feel on waiting in the hospital before the delivery.

Unfortunately, there are not many cases that gets into this scenario, we are not able to statistically arrive at a conclusion. Hence for the scope of this sample size we consider this parameter in-significant.

DELIVERY TO DISCHRAGE INYERVAL:

From the study, increase in delivery to discharge to interval is seen in majority of the postnatal mothers with test positive. This difference is statistically significant in present study.

This indicates that long stay in hospital greatly affects the mental health of the postnatal mothers

BIRTH WEIGHT OF THE BABY

It was observed from the current study, most of the babies were more than 2.5 kg (296) and 36 babies were low birth weight .

Of postnatal mothers with test positivity, majority of the babies were low birth weight. This factor had been statistically significant for current study. The condition of the babby significantly affects the mother which could be due to NICU admission of the babies, prolonged stay in the hospital for the sake of baby, financial difficulties and the bond between the mother and the baby is not much established.

HAEMOGLOBIN STATUS OF THE MOTHER:

From the present study it was observed that, 296 mothers had mean haemoglobin value of 10.6 and 36 mothers tested positive had mean haemoglobin value of 7.7g/dl. This difference is highly statistically significant for the current study.

Haemoglobin value reflects the nutritional status of the mother and also their socioeconomic status. With low haemoglobin, there results many complications in both antepartum and postpartum like Intrauterine growth restrictions, Gestational hypertension, Postpartum haemorrhage. Such complications may affects the mental status of the mother and also the general condition of the baby. Hence the haemoglobin status affects the outcome score of the postnatal mothers.

COUNSELLING GIVEN:

It was observed from this study that, counselling were given to 29.8%(99) and for 70.2%(233) counselling were not given. This factor improves the outcome score of the mothers. Hence it is statistically significant for the current study.

Counselling aids as an important tool to improve the mental health of the mother who had been affected.

FOLLOWUP SCORE:

From the current study, on comparison with outcome score (taken within 3-5 days of delivery) and follow-up score (after 6 weeks of delivery) , there is great improvement in follow-up score of all the postnatal mothers with test positivity.

This signifies that the mental status of the mother improves by time which could be due to strong bond established in mean time with the baby, mental support by her family, and gradual improvement in the general condition of the mother.

SUMMARY

1) This cross-sectional study was carried out over a period of one year and eight months from February 2020-October 2021 in the Department of Obstetrics and Gynaecology, at a tertiary hospital after approval from Institutional Ethical Committee (IEC-444/2015).

2) 332 consecutive women delivering at Govt. RSRM Lying-In Hospital, Chennai, and willing to participate in the study were considered for the study. The EDINBURGH POSTNATAL DEPRESSION SCALE was used to screen for postnatal depression between 3-5 days after delivery. Those found positive were referred to psychiatrist for further evaluation. All patients screened at 3-5 days after delivery, were re-screened at 6 weeks postnatally.

3) The outcome variable of interest in this study was the occurrence of postpartum depression symptoms based on EPDS screening criteria. The scale was translated into the local language (Tamil) for the study. EPDS score ≥12 was used as a cut-off point to classify the depressive symptoms. This was based on the interview with participants and similar studies done in other geographical areas.

4) Out of 332 participants 36 women tested positive for postnatal depression in the immediate postnatal period. The prevalence of postnatal depression in the immediate postnatal period was thus 10.8%.

5) For the given sample size, there was no statistical significant association between postpartum depression and age group, socioeconomic status, gender of the baby, previous history of abortions, type of family and admission to delivery interval.

6)For the given sample size, there was statistical significant association between postpartum depression and factors such as parity, mode of delivery, gestational age, NICU admission,

family relationship, previous history of depression, preference towards male child, occupation, birth weight, delivery to discharge interval, nutritional status of the mother.

LIMITATIONS

1)EPDS is a screening tool for postnatal depression and not confirmatory.

2)We did not consider other factors such as quality of social support, domestic violence, women empowerment etc.,

3)This study is hospital based not population based.

4) Relatively a small sample was studied in our study. Therefore, results would apply to women attending hospitals and clinics and cannot comment on those who do not receive postnatal care

CONCLUSION

Postnatal depression is a key concept for mother-infant mental health of Evidence of its impact on mother-infant relationship has been increasingly demonstrated in recent years. Therefore, optimal intervention is important for women and their babies' mental health. High rates of depression associated with childbirth have been reported in many parts of the developing world. However, the prevalence and associations of antenatal and postnatal depression in the rural population remain unknown. Research is needed to evaluate the efficacy of prevention and treatment for postpartum depression Postpartum depression may lead mothers to be inconsistent with childcare. Women diagnosed with postpartum depression often focus more on the negative events of childcare, resulting in poor coping strategies.

Early identification and intervention of PPD improve long term prognosis for most mothers. Some success with presumptive treatments has been identified as well. A major part of prevention is being knowledgeable about the risk factors, and the medical community can play an important role in identifying and treating PPD. Women should be screened to identify the risk for acquiring PPD by their physician.

From the results of the study, we can suggest the physicians to consider the statistically significant risk factors as a criterion in the course of pregnancy. During the antenatal period, the significant risk factors like parity, family relationship, previous history of depression, preferences towards male child, occupation, nutritional status of the mother.

During intrapartum period, the significant risk factors like gestational age, mode of delivery, birth weight of the baby and the risk factors that have been identified during antenatal period. If the risk factors of the antenatal and intrapartum are significant, such mothers are high risk for postpartum depression and utmost care has to be taken to make sure that these mothers were not affected

Postnatal risk factors like NICU admission of the baby, delivery to discharge interval should be monitored and if found significant for risk of postpartum depression proper counseling and medication if needed has to be given before discharge of these postnatal mothers and proper follow-up of these affected mothers are more significant.

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95. Prevalence and risk factors of postpartum depression within one year after birth in urban slums of Dhaka, Bangladesh [May 2019]

96. Demographic, psychosocial and clinical factors associated with postpartum depression in Kenyan women [2018]

97. Postpartum depression: literature review of risk factors and interventions [Oct 2003]

98. Fear of childbirth predicts postpartum depression: a population-based analysis of 511 422 singleton births in Finland [Nov 2013]

ABBREVIATIONS

Term	Abbreviations
PPD	Postpartum depression
PND	Postnatal depression
EPDS	Edinburg postnatal depression scale
SES	Socioeconomic status
NICU	Neonatal intensive care unit
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICD	International Statistical Classification of Diseases
WHO	World Health Organization
MDD	Major depressive disorder
BDI	Becks depression inventory
GHQ	General Health Questionnaire
SSRIs	Selective serotonin reuptake inhibitors
TCAs	Tricyclic antidepressants
IPT	Interpersonal psychotherapy
GBD	Global burden of disease
NVD	Normal vaginal delivery
d.f	Degree of freedom

PROFORMA

"A STUDY OF PREVALENCE AND RISK FACTORS ASSOCIATED WITH POST PARTUM DEPRSSEION"

S.No	Particulars	Value
1	Name:	
2	Age:	
3	IP No:	
4	Ward No	
5	Address No:	
6	Date of Admission	
7	Date of Delivery	
8	Date of Discharge	
9	Education	
10	Occupation	
11	Education of Husband	
12	Profession of Husband	
13	Annual Income	
14	Type of family	1) Joint 2) Nuclear
15	Previous Pregnancy History	

16	Mode of Delivery	1) LSCS 2) NVD Remarks:
17	Gestational Age	
18	NICU	
19	Sex of Baby	Male Female
20	Preference towards male child	Yes No
21	Residency during Pregnancy	Parent's Place In Law's Place
22	Family Relationship	1) Best 2) Good 3) Neutral 4) Bad
23	Length of stay in hospital during pregnancy	
24	Mental State during pregnancy	1) Best 2) Good 3) Neutral 4) Bad
25	Previous history of depression	
26	Haemoglobin status of the mother	

Informed Consent form

Title of the study: "A STUDY OF PREVALENCE AND RISK FACTORS ASSOCIATED WITH POSTPARTUM DEPRESSION"

I agree to participate in the study entitled and have been informed about the details of the study in my own language.

I have completely understood the details of the study.

I am aware of the possible risks and benefits, while taking part in the study.

I understand that I can withdraw from the study at any point of time and even then, I can receive the medical treatment as usual.

I understand that I will not get any money for taking part in the study.

I will not object if the results of this study are getting published in any medical journal, provided my personal identity is not revealed.

I know what I am supposed to do by taking part in this study and I assure that I would extend my full cooperation for this study

Name of the participant:

Signature / Left thumb print:

Date:

Name of the investigator: Dr K Moneekha Priyadarshini

Signature of investigator:

Date:

ஒப்புதல்படிவம்

நான் இந்த ஆராய்ச்சியின் முழுவிவரம் பற்றி அறிந்து கொண்டேன். இந்த ஆராய்ச்சியில் எந்த பின்விளைவும் இல்லை என்பதை புரிந்து கொண்டேன்.

இந்த ஆராய்ச்சிக்கு எந்த பணமோ பொருளோ கிடைக்காது என்பதையும் அறிந்து கொண்டேன்.

இந்த ஆராய்ச்சியில் கேட்கப்படும் கேள்விகளுக்கு என்னால் முயன்றவரை உண்மை விவரம் அளிப்பேன் என்பதை உறுதியளிக்கிறேன்.

என்முழுமனதுடன் இந்த ஆராய்ச்சிக்கு ஒத்துழைப்பை அளிக்கிறேன்.

தகவல்நகல்

இந்த ஆராய்ச்சியில் உங்களிடம் கேட்கப்படும் கேள்விகளுக்கு உங்கள் முழுமனதுடன் பதிலளிக்க வேண்டும்.

இந்த ஆராய்ச்சியில் உங்களுக்கு எந்தபின் விளைவும் ஏற்படாது என்பதை நான் உறுதியளிக்கிறேன்.

உங்களுக்கு பணம் எதுவும் அளிக்கப்படாது என்பதை இதன்மூலம் தெரிவிக்கிறேன்.

இந்த ஆய்வில் உங்களுக்கு எந்த நேரடி பயன் எதுவும் இல்லை. நீங்கள் அளிக்கும் தகவல் மூலம் புதுயுக்திகள் வகுக்கப்படலாம்.

அதன் மூலம் வருங்காலத்தில் உங்களுக்கோ அல்லது உங்களை போன்ற மக்களுக்கு பயன்படலாம்.

நீங்கள் எப்போது வேண்டுமானாலும் இந்த ஆய்விலிருந்து விலகிக் கொள்ளலாம் .அதனால் உங்களின் விபரங்கள் எதுவும் தெரிவிக்கப்படாது என்பதை உறுதியளிக்கிறேன்.

இந்த ஆராய்ச்சியின் முடிவுகள் பத்திரிக்கைகளில் பிரசுரிக்கப்படலாம். ஆனால் உங்களின் அடையாளம் எதுவும் தெரிவிக்கப்படாது.

EDINBURGH POSTNATAL DEPRESSION SCALE (TAMIL)

EDINBURGH POSTNATAL DEPRESSION SCALE

TAMIL VERSION

1. வேடிக்கையான நிகழ்ச்சிகளை பாத்து சிரிக்க முடியும்
   அ. எப்பொழுதும் என்னால் முடிந்த அளவு
   ஆ. எப்பொழுதாவது
   இ. கண்டிப்பாக எப்பொழுதாவது
   ஈ. முடியவே முடியாது

2. மகிழ்ச்சியான நிகழ்ச்சிகளுக்காக எதிர்நோக்கி கொண்டிருக்கிறேன்.
   அ. முடிந்த அளவு செய்திருக்கிறேன்
   ஆ. முன்பைவிட சிறிது குறைந்துள்ளேன்
   இ. கண்டிப்பாக முன்பைவிட குறைந்துள்ளேன்
   ஈ. இல்லை

3. தவறான காரியங்கள் நிகழ்ந்த போது நான் என்னையே குறை கூறி உள்ளேன்.
   அ. ஆம், எல்லா நேரத்திலும்
   ஆ. ஆம் சில நேரங்களில்
   இ. எப்பொழுதாவது
   ஈ. ஒருபோதும் இல்லை

4. தேவையற்ற காரணத்திற்காக நான் கவலைப்பட்டும், பயந்தும் உள்ளேன்.
   அ. இல்லவே இல்லை
   ஆ.எப்பொழுதாவது
   இ. ஆம் சில நேரங்களில்
   ஈ. ஆம், அடிக்கடி

5. ஒன்றுமில்லாத காரணத்திற்காக பயந்து உணர்வும் மற்றும் பதட்ட உணர்வும் அடைந்துள்ளேன்.
   அ. ஆம், நிறைய நேரம்
   ஆ. ஆம் சில நேரம்
   இ. இல்லை எப்பொழுதாவது
   ஈ. இல்லவே இல்லை

6. என் மீது சுமை ஃபாரம் அதிகரித்து உள்ளது.
அ. ஆம் நிறைய நேரங்களில் என்னால் எதிர்த்து சமாளிக்க முடிவதில்லை
ஆ. ஆம் சில நேரங்களில் என்னால் முன்பு மாதிரி சமாளிக்க முடிவதில்லை
இ. இல்லை நிறைய நேரங்களில் நன்றாக சமாளித்து உள்ளேன்
ஈ. இல்லவே எப்பொழுதும் சமாளித்து உள்ளேன்

7. தூக்கமின்மையால் நான் மகிழ்ச்சியாக இல்லை
அ. ஆம், எல்லா நேரமும்
ஆ. ஆம் அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

8. துக்கமான மற்றும் மகிழ்ச்சியற்ற நிலையை உணர்ந்துள்ளேன்.
அ. ஆம், எல்லா நேரமும்
ஆ. ஆம் அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

9. நான் அழுகையினால் சந்தோஷமின்றி இருக்கிறேன்
அ. ஆம், எல்லா நேரமும்
ஆ. ஆம் அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை

10.நான் என்னையே கொள்ளும் மனநிலையை அடைந்துள்ளேன்
அ. ஆம், எல்லா நேரமும்
ஆ. ஆம் அடிக்கடி
இ. எப்பொழுதாவது
ஈ. இல்லவே இல்லை