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Original Article

Clinical Profiling and Comparative Assessment of Selective Serotonin Reuptake Inhibitors and Tricyclic Antidepressants in the Management of Postpartum Depression

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ABSTRACT

Objectives: To compare and assess the effectiveness of SSRIs and TCAs and to interpret the patient clinical data on PPD and to state the relation of clinical data such as patient demographics, pregnancy complication, patient history, socio-economic status, history with PPD. **Materials and Methods:** An observational cohort study with 6-months duration was conducted among 30 women in the age group 18-45 years, in a tertiary care hospital at Perintalmanna, Malappuram, Kerala. **Results:** About 66.7% (*n*=20) of patients treated with SSRI and about 33.3% (*n*=10) with TCA. The statistical data shows that SSRI is efficient compared to TCA for the treatment of PPD with symptom reduction and improvement in functioning with a $p<0.001$. Paired *t*-test shows initial EPDS score have a mean of 18.8667±2.44573 and final EPDS score had a mean of 14.0667±2.247 and initial MADRS score had a mean of 39.433±4.67335 and final MADRS score had a mean of 27.1333 ±4.95311. **Conclusion:** The study clearly conveyed that the patients who had their age below 30 years and who had their 1st pregnancy below 20 years with low educational status and low socio-economic status had a greater chance of postpartum depression. The incidence of PPD was higher in upper middle socio-economic class. The patients who had education status of SSLC had higher incidence of PPD. The postpartum sleep disturbance was evident in all 30 patients studied for the duration of 6 months. Statistical comparison proved that SSRI is more efficient in the management of PPD compared to the TCAs.

Keywords: Clinical Profiling, PPD, SSRIs, TCAs.

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INTRODUCTION

Mental health is as likely as physical health were everyone needs to take good of it i.e., generally to think and react in same way you want in life. Psychiatric or psychological disorders involves disturbance in behavior thinking and emotion.[1] Postpartum Depression (PPD) is a major form of depression and includes all the symptom of depression but occurs only after child birth. PPD is a major form of depression and includes all symptoms of depression but occurs only after child birth. Women are commonly affected with this disorder. The Diagnostic and Statistical Manual of Mental Disorders, in May 2013, 4th Edition, includes the term "with postpartum onset". The onset must be within 4 weeks after birth or during pregnancy only condition to which DSM-5 criteria can be used.[2]

PPD include symptoms that last longer and are severe. The patient feelings include hopelessness, worthlessness, thoughts of hurting or harming and no interest for baby. They need to get treated right away, often in hospital. PPD can occur at any time in first year after child birth. Hormonal and physical changes after birth and stress of carrying for a new baby may play a role but otherwise, no actual role is known.[3]

The clinical profiling was conducted to find out relation of various factors such as Age, Number of children, Age of first pregnancy, Age of last child in weeks, History of abortion, Socio-economic status, Disorganized or anxious attachment, Maltreatment, Sexual abuse, Father's pre-natal depression, Obstetric factors and Miscellaneous risk factors.

In this study, MADRS and EPDS are used to assess and evaluate the severity of disease. Montgomery-Asberg Depression Rating Scale (MADRS)[4] developed in late 1979 by Swedish and British researchers in addition to Hamilton Rating Scale for Depression (HAMD) sensitive to the effects of antidepressant medications, mainly Tri-Cyclic Antidepressants (TCAs).[5] The Edinburgh Postnatal Depression Scale (EPDS)[6] developed in Britain a commonly and widely used screening instrument for

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the assessment of symptoms of Perinatal Common Mental Disorders (PCMDs) of anxiety and depression.[7] Kuppuswamy's socioeconomic scale (1976)[8] is a composite score of occupation of the head of the family with monthly income of the family and education, which gives scoring of 3-29, classifies the study participants into low, middle, and high SES.[8]

The ongoing drug and psychological treatments of depression must be considered along with childcare. Tri-Cyclic Antidepressants (TCAs) and Selective Serotonin Reuptake Inhibitors (SSRIs) are used to treat PPD.[9] SSRIs are the regularly prescribed type of antidepressant which help patient to overcome depression. Antidepressants on the whole are relatively safe with minimal side effects, treating depression by increasing levels of serotonin in brain.[10] SSRIs selectively act on serotonin alone not affecting other neurotransmitters.[11]

TCAs are class of drugs primarily used as antidepressants had generally replaced with antidepressants causing lesser side effects. They act by affecting changes in brain chemistry and brain cell communication regulating mood and relieving depression.[12]

The current study was aimed at clinical profiling and comparative assessment of selective serotonin re-uptake inhibitors and tricyclic antidepressants in the management of postpartum depression in psychiatry department of a tertiary care super-speciality hospital. A study on comparative assessment of SSRIs and TCAs in the management of PPD can provide information about the most effective treatment option for patient with better and fast management of PPD. Clinical profiling can provide relation between patient's clinical data and identifiable cause of PPD. By collecting clinical profile information, the relation of clinical data such as patient demographics, pregnancy complication, patient history, socio- economic status, history with PPD can be clearly stated.

MATERIALS AND METHODS

A prospective observational cohort study was carried out for a period of 6 months in patients diagnosed with postpartum depression in a tertiary care referral hospital. The study was approved by the ethics committee of the hospital as per letter No. KAS/EC/2018-69 and an official consent was provided by the concerned authority for the purpose of conducting the study. The patients for the study were selected on the basis of following inclusion and exclusion criteria. The inclusion criteria for the study were women of age between 18 to 45 years diagnosed with postpartum depression and who are willing to give informed consent (If not; consent from first degree relatives), gave birth within last six months of assessment, history of at least two weeks with postpartum related mood or behavioral disturbances, patient fulfilling ICD-10 criteria for depressive disorder. The exclusion criteria are patients with past history of psychiatric disorder, patients with sub-normal intelligence, patients with co-morbid conditions, current alcohol or substance use or dependence of sufficient magnitude. A data collection form was designed to collect information necessary for the study. This data collection form provided clinical profiling of each patient studied. The nature, type or intention of the study was explained to the patients by direct patient interaction. Sources of data were patient's case record, direct interaction with physician, Edinburgh Postnatal Depression Scale (EPDS), Montgomery Asberg Depression Rating Scale (MADRS). Demographic data, details number of children, age of first pregnancy, age of last child, risk factors, mother childhood risk factors, obstetric factors, and miscellaneous risk factors were collected form patient's case record. The baseline characteristics were collected at the time of recruitment of patients in the study. The Scales used in data collection were Edinburgh postnatal depression scale and Montgomery Asberg depression rating scale.

The patients enrolled after getting informed consent and various clinical parameters and data were collected with the help of data collection form. Patient's depression score was calculated using MADRS and quantified the depression score using EPDS. Then, patients were grouped in to two; first group under SSRI and second under TCA treatment (SSRI treatment sample size was more than TCA sample size). The patients followed for duration of six months and the depression score was analyzed again using MADRS and quantified the current status of PPD by using EPDS. The collected data were analyzed, categorized and entered into MS Excel format. Statistical analysis of the collected details was done using SPSS version 20. The collected data for the study were compiled and analyzed for drawing interferences employing statistical techniques. The test used was "Paired *t*-Test" and "Levene's Test".

RESULTS

An aggregate of 30 females were enrolled for the study. The mean age was 26.13±5.5875 (Ranges from 18 to 38 years) and age category below 30 years was 63.34% (*n*=19), age category between 30-40 years was 36.66% (*n*=11). In this study, out of 30 patients, about 46.7% (*n*=14) patients were under upper lower class, about 16.7% (*n*=5) patients were under lower middle class, about 16.7% (*n*=5) were under upper middle class and about 20% (*n*=6) patients were under upper class [Figure 1]. It was found that, out of 30 patients, about 10% (*n*=3) patients had an education of below SSLC, about 36.7% (*n*=11) patients had an education of SSLC, 20% (*n*=8) patients had an education of plus two, about 26.7% (*n*=2) of patients were graduates, and about 6.7% patients were post graduates [Figure 2]. Rural/Urban wise distribution in patients with Postpartum depression illustrated that, out of 30 patients, about 73.3% (*n*=22) patients were rural and about 26.7% (*n*=8) patients were urban.

Considering the disorganized attachment in PPD, about 6.7% (*n*=2) patients did not have disorganized attachment and about 93.3% (*n*=28) patients had disorganized attachment and

considering the anxious attachment in patients with postpartum depression, out of 30 patients, about 20% (*n*=6) patients did not have anxious attachment and about 80% (*n*=24) patients had anxious attachment. In this study, out of 30 patients, about 76.7% (*n*=23) patients did not have prenatal sleep disturbances and about 23.3% (*n*=7) patients had prenatal sleep disturbances and100% (*n*=30) patients had postpartum sleep disturbances [Figure 3].

Drug wise distribution of patients in postpartum depression revealed that out of 30 patients, about 66.7% (*n*=20) patients received SSRIs and about 33.3% (*n*=10) patients received TCAs [Figure 4]. Initial EPDS represents the severity of symptoms in postpartum depression before the treatment and final EPDS score represents the symptoms severity after treatment. Here initial EPDS score had a mean of 18.8667± 2.44573 and final EPDS score had a mean of 14.0667± 2.2474, the study was significant with t=11.685 and *p* value<0.001 at 1% level of significance Table 1.

Initial MADRS score represents the severity of symptoms in postpartum depression before the treatment and final MADRS score represents the symptoms severity after treatment. Here initial MADRS score had a mean of 39.433±4.67335 and final MADRS score had a mean of 27.1333±4.95311, the study was significant with t=11.685 and *p* value<0.001 at 1% level of significance Table 2.

Comparison of SSRI versus TCA was made in differences in EPDS score in PPD patients. The SSRI had EPDS score with mean of 5.9500±1.76143 and TCA had EPDS score with mean of 2.5000±0.97183. The test used was paired t test. The study was significant with t =5.739 and *p* value <0.001 at 1% level of significance Table 3. Comparison of SSRI versus TCA was made in differences in MADRS score in PPD patients. The SSRI had MADRS score with mean of 15.3500±6.76115 and TCA had MADRS score with mean of 6.2000±2.04396. The test used was paired t test. The study was significant with t = 4.133 and *p* value <0.001 at 1% level of significance Table 4.

DISCUSSION

The educational status in postpartum depression was evaluated in the study. About 36% (*n*=11) had an education of 10th, about 20% (*n*=6) had an education of 12th, about 27% (*n*=8) were graduated, about 10% (*n*=3) had an education status of below 10th about 7% (*n*=2) were graduated. The patients with low education status have higher risk for PPD. Analyzing 30 patients for educational status for PPD there was higher incidence of educational status 10th or below. With the patients having educational status of graduation or post-graduation have lower incidence of PPD. A similar study was conducted by Buist A *et al.*[13] to assess the impact of the education participation in PPD. A sample size of 1309 women is used to assess objective of the study. The study concluded that the poor educational status has influenced the incidence of PPD.

The number of children in PPD patient was analyzed, about 43% (*n*=13) had 1 child, about 43% (*n*=12) had 2 children, about 17% (*n*=5) had 3 children. The data shows that 1st time pregnant patients had higher risk of PPD. Mother with higher number of children had comparatively low risk of PPD. Evaluation of postpartum depression and associated factors were done by Rev Saudi Publican in which 410 mothers were interviewed with questionnaires.

Socio economic status of PPD patients was assessed and out of patients, about 46% (*n*=14) belong to upper lower class, about

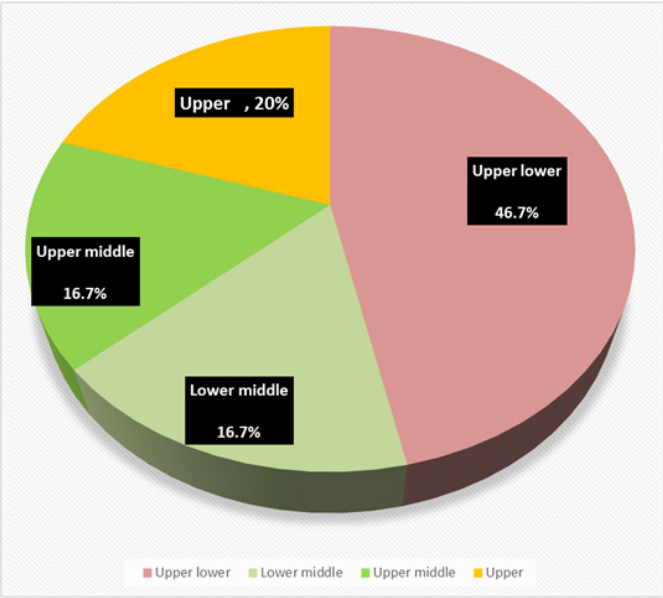

Figure 1: Socioeconomic status in patients with post partum depression.

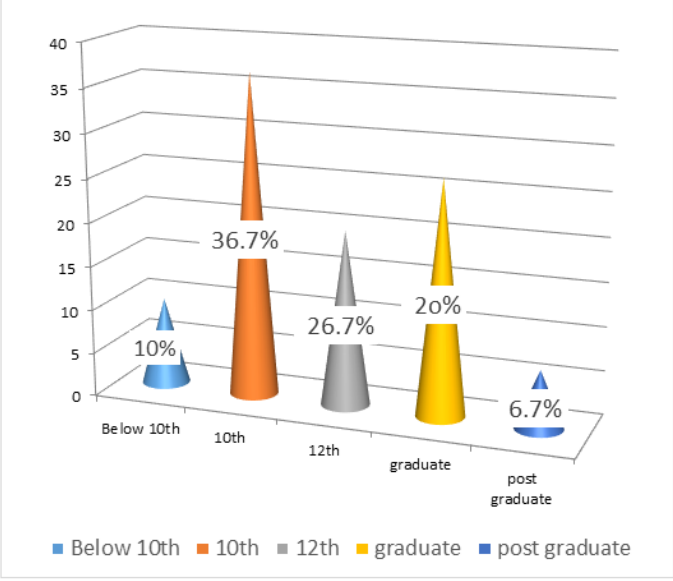

Figure 2: Educational qualification in patients with post partum depression.

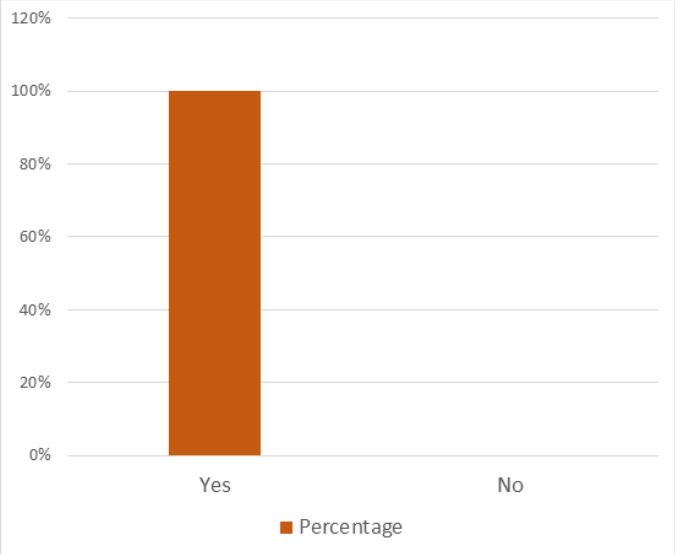

Figure 3: Postpartum sleep disturbances in patients with post partum depression.

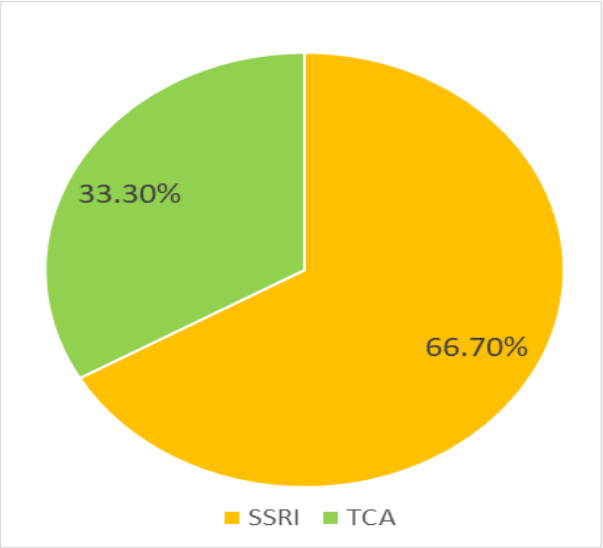

Figure 4: Drugwise ditribution of patients in post partum depression.

Table 1: Edinburg postnatal depression scale scoring in patients with post partum depression.

EPDS	Mean	SD	Mean Difference	Paired test	
				t	*P* value
Initial	18.8667	2.44573	4.80000	4.80000	0.000
Final	14.0667	2.24274			

Table 2: Montgomery asberg depression rating scale scoring in patients with postpartum depression.

MADRS	Mean	SD	Mean Difference	Paired test	
				t	*P* value
INITIAL	39.4333	4.67335	12.30000	9.481	0.000*
FINAL	27.1333	4.95311			

Table 3: Comparison of SSRIS V/S tcas in differences in EPDS scoring in patients with postpartum depression.

SSRI/ TCA	Mean	SD	Mean Difference	Paired *t*-test	
				t	*P* value
SSRI	5.95000	1.76143	3.45	5.739	0.000*
TCA	2.5000	0.97183			

Table 4: Comparison of SSRIS V/S TCAS in differences in madrs scoring in patients with postpartum depression.

SSRI/ TCA	Mean	SD	Mean Difference	Paired *t*-test	
				t	*P* value
SSRI	15.3500	6.76115	9.15	4.153	0.000*
TCA	6.2000	2.04396			

20% (*n*=6) belong to upper class, about 17% (*n*=5) belong to upper middle class, about 17% (*n*=5) belong to lower middle. From this statistical data we can conclude that low socio-economic status had a major influence with risk of PPD. The patients with low socio economic status had a higher incidence of PPD compared to patients with high socio economic status because of high cost, long waits for treatment, lack of insurance and problem with transportation. A similar study was conducted by Ronda C Boyd *et al.* The study included a community consist of 16 female workers participated in 3 focus groups.[14] The estimation of PPD in rural versus urban population was assessed, about 73% (*n*=22) lived rural settings, about 27% (*n*=8) lived in urban settings. From the above statistical data, it is clear that there is greater incidence of PPD in rural settings compared to urban settings. A similar study was conducted by Maria Ahmed *et al.*,[15] on prevalence of PPD in urban setting. Study conducted for 4 months in 88 women. This study depicts that urban settings have prevalence of PPD with low educational and socioeconomic status.

The evaluation of disorganized attachment in PPD patients was made in the study. About 93% (*n*=28) had disorganized attachment and about 7% (*n*=2) did not show disorganized attachment. Among 30 patient 28 show a high degree of disorganized attachment with their infants. A similar study was conducted by Catherine A McMahon *et al.*[16] on maternal state of mind that correlates with impact of depression after birth on infant attachment. In this study, 111 middle class women were recruited for the study and the study concluded with a positive association between depression of mother and inhibited child mother attachment. The assessment of anxious attachment in PPD was made in the study. About 80% (*n*=24) had anxious attachment and about 20% (*n*=6) did not show anxious attachment with their infants. Among 30 patients 24 show

anxious attachment in patients with postpartum depression. The reason for the anxious and disorganized attachment may be when the patient has recurrence of prior depressive episodes.

Incidence of PPD after caesarian section versus normal delivery was analyzed. About 23% (*n*=7) had caesarian and about 77% (*n*=23) had normal delivery. In this study we compared the association of normal and caesarian with the incidence of PPD and showed a higher risk with normal delivery. About 7% (*n*=23) had no pre-natal sleep disturbance an about 23% (*n*=23) had pre-natal sleep disturbance among total of 30 PPD patients. A longitudinal population-based study was conducted among perinatal women by Signe K. Dorheim *et al.*, regarding sleep disturbances a predicting factor for postpartum depression. Study concluded with there is no significant relation between pre-natal sleep disturbances with postpartum depression.[17]

The incidence of postpartum sleep disturbance was analyzed in the study. About 100% (*n*=30) showed postpartum depression. Total of 30 patients were analyzed and showed postpartum sleep disturbance. The statistical data showed that there is high incidence of postpartum sleep disturbance among PPD patients was observed due to chronic stress, anxiety and severe mood change.

The evaluation of intimate partner violence among postpartum depression was assessed in the study. About 90% (*n*=3) had no intimate partner violence and about 10% (*n*=3) had intimate partner violence. Total of 30 patients were analyzed and only 10% showed intimate partner violence compared to other 90%. A similar study was conducted by Shalla Misri *et al.*[18] Where patients with PPD (*n*=29) were divided in to groups of patients alone and other with partners. Study concluded that partner support has effect on women having PPD.

A comparative study of use of SSRI and TCA in PPD was assessed. About 66.7% (*n*=20) with SSRI and about 33.3% (*n*=10) with TCA. The statistical data shows that SSRI is efficient compared to TCA for treatment of PPD. The study by Wisner *et al.*, a study on the reduction of symptoms and functional improvement with PPD treated with a TCA and SSRI were compared. Subjects were randomized to TCA and SSRI of 420 women, 10 women received indication, 95 provide follow up.[18] The study concluded that SSRI is more efficient for treating PPD.[11] Initial EPDS score represents the severity of symptoms in treatment of post-partum depression before the treatment and final EPDS score represents the symptoms severity after treatment. Here initial EPDS score have a mean of 18.8667±2.44573 and final EPDS score had a mean of 14.0667±2.247. The mean difference was 4.800 and the study was significance with *p*=0.000 at 1% level of significance. Initial MADRS score represents the severity of symptoms in treatment of post-partum depression before the treatment and final MADRS score represents the symptoms severity after treatment. Here initial MADRS score had a mean of 39.433±4.67335 and final MADRS score had a mean of 27.1333±4.95311. The mean difference was 12.300 and the study was significant with *p*=0.000 at 1% level of significance.

CONCLUSION

PPD, being the most common complication of childbirth, impairs functioning of the mother, effecting her relationship on primarily, the care for baby. If left untreated, women with PPD are at high risk for future depression episodes both puerperal and in general. While PPD prevalence being higher, it exerts a negative impact upon mother and offspring. Various placebo-controlled studies of antidepressant treatments, like Selective Serotonin Reuptake Inhibitors (SSRIs), And Tri-Cyclic Antidepressants (TCAs) were done.

The main target of the study is to compare and assess the effectiveness of TCAs and SSRIs in the treatment of PostPartum Depression (PPD) and to analyze the patient clinical data on PPD. Out of 30 patients enrolled in the study, majority of the patients with postpartum depression were below 30 years of age and under upper lower-class family. Only 26% of patients with PPD has degree as the educational qualification and most of the patients are having low educational status. Most of the patients living in rural area reported with PPD. Disorganized attachment and anxious attachment was higher in these study population. Most of the patients with postpartum depression were found to have both prenatal sleep disturbances and post-partum sleep disturbances aggravating the condition of PPD.

Intimate partner violence was not a contributing factor for PPD in this study. Majority of the patients received SSRI to treat PPD compared to TCA. Edinburg post-natal depression scale and Montgomery Asberg depression scale showed significant results. Comparison of SSRIs v/s TCAs in differences in MADRS scoring and EPD scoring in patients with postpartum depression also revealed significant results.

During the study, many challenges and limitation were faced due to its complexity in its nature. Lack of incidence, fluctuation of illness, non- adherence to treatment and not appearing on OPD regularly for follow up. In summary, the patients who had their age below 30 and who had their 1st pregnancy below 20 with low educational status and low socio-economic status had a greater chance of postpartum depression. The incidence of PPD was higher in upper middle socio-economic class. The patients who had education status of SSLC had higher incidence of PPD. The postpartum sleep disturbance was evident in all 30 patients studied for the duration of 6 months. Statistical comparison proved that SSRI is more efficient in the management of PPD compared to the TCAs.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

PPD: Post partum deression; **TCA:** Tricyclic Antidepressant; **SSRI:** Selective serotonin reuptake inhibitors.

SUMMARY

The patients with age less than 30 years and the first pregnancy below 20 years with low educational and socio-economic status were found to have high incidence of PPD. The study also proved that SSRI as more efficient treatment for PPD than TCAs.

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