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Original Article

Association of Post-Partum Depression (PPD) with Mother`s Working Status – A Cross-Sectional Study

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ABSTRACT

Objective: To study the association of postpartum depression with mother`s working status in women presenting to tertiary care hospital

Study Design: Cross-sectional comparative study.

Place and Duration of Study: Department of Psychiatry, Armed Forces Institute of Mental Health, Rawalpindi Pakistan, from Sep 2024 to Feb 2025.

Methodology: Three hundred and twenty women during first 6 month of postpartum period were included. Two strata of working women and housewives were made using stratified random sampling. The Edinburgh Postnatal Depression Scale (EPDS) form filled by the participant during an interview by a doctor. Statistical significance checked using Chi square test and non-parametric tests. Cramer's V was used to check strength of association between mother's working status and EPDS score.

Results: Comparison of EPDS scores between the two groups revealed a significant difference with median [IQR] score of 9.00 [8.10] points and 8.00 [7.01] points in working and non-working women respectively (p=0.046). PPD diagnosed on EPDS score showed 40(25.0%) working women was suffering from depression as compared to 29(18.1%) non-working mothers. The risk of depression among the non-working was found to be less as compared to the working women (p=0.002, Cramer's V=0.225). Moreover, overall mothers from low socio-economic status found to be suffering from depression as compared to middle or upper socio-economic status mothers.

Conclusion: Females with employment status had slightly higher risk of suffering from symptomatic moderate-severe PPD when compared to non-working mothers.

Keywords: Baby Blues, Depression, Edinburgh Postnatal Depression Scale (EDPS), Postpartum Depression.

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INTRODUCTION

According to Diagnostic, and Statistical Manual of Mental Disorder (DSM-5), Post-partum depression (PPD) including perinatal and postpartum depression, occurs within 4-weeks up-to 1-year of delivery.[1] PPD affects 10-15% of postpartum mothers with overall prevalence reaching up-to 0.5-60.8%.[2] After delivery, 50-75% mothers experience baby blues, transient episode of depressive symptoms, self-limiting within weeks as compared to 15% mothers who develop PPD, lasting up-to months.[3] PPD remains undiagnosed in 50% cases due to patient`s reluctance of disclosing symptoms owing to stigma of mental illness, fear of abandonment and loss of family support.[4] Symptoms range from low mood and sleep disturbance, to severe symptoms like impaired concentration, low self-esteem, psychomotor disturbance and even suicidal thoughts. About 20% women have suicidal thoughts, self-worthlessness and intents of harming baby.[5] Patients have difficult bonding with baby, develop self-doubts and concerns regarding baby`s safety with hostile attitude towards baby.[6]

PPD leads to obsessional worries regarding job, hence, working females are more prone to develop PPD due to additional mental stress, job and salary concerns during postpartum leave.[7] PPD put unintentional and unwanted strain on family relations, sometimes leading to suicidal attempts.[8] If left untreated, PPD adversely interfere with mother`s ability to take care of herself and baby, causing long-term developmental, emotional and behavioral issues in child.[9] Edinburgh Postnatal Depression Scale (EDPS) is a one of the Psychiatric evaluation tools, to identify patients suffering from PPD or are at risk for early detection, prevention, and psychiatric assistance.[10]

Early recognizing and addressing PPD is pivotal for mother`s mental health and baby`s well-being. The

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rationale for conduction this study was to assess risk of PPD in association of mother`s working status along with confounding factors. This will help healthcare professionals to give awareness regarding PPD and motivate patients to seek psychiatric assistance to prevent harmful consequences on their mental health, baby`s well-being and family as well as professional life.

METHODOLOGY

It was a Cross-Sectional comparative Study, done in the Department of Psychiatry, Armed Forces Institute of Mental Health (AFIMH) Rawalpindi from Sept 2024 to Feb 2025 over period of 6 months following approval of the institutional ethical committee (IEC: 2401/dated: 23 Sept 24). The sample size 300 was calculated using the WHO sample size calculator taking a confidence interval of 95%, a margin of error of 5%, and a reported prevalence of postpartum depression of 28% in working women in Pakistan as per stated by Gulamani *et al*.[11]

Inclusion Criteria: Women of age group 20-45 years during first 6 month of postpartum period having symptoms of depressive illness presenting to Psychiatric OPD or admitted in gynecology section of psychiatric wards were included.

Exclusion Criteria: Women with thyroid or other endocrine disorders, previous psychiatric illness or on psychiatric medications, ages beyond the specified limits, history of drug or alcohol abuse were excluded.

A total 478 postpartum females were screened and 362 women during first 6 month of postpartum period fulfilling inclusion criteria were included in the study after scrutiny. Stratified random sampling technique was used. Two strata were made, i.e., working women and housewives and every 2nd woman meeting the inclusion criteria was included in the study from both strata (Figure-1).

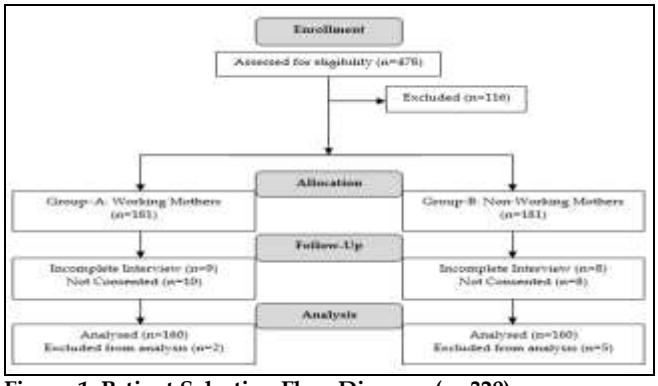

Figure-1: Patient Selection Flow Diagram (n=320)

Data were collected using a specially designed proforma for this study after informed consent and secrecy was ensured. Basic demographic data was inquired by the researcher and entered in the proforma including socioeconomic and basic obstetric history. Patients were interviewed by psychiatrist and confidentially was ensured. The Edinburgh Postnatal Depression Scale (EPDS) form was filled by the participant herself in the language she understood (Urdu / English) otherwise it was filled by the researcher and later on score was entered in the proforma.

Data entered and analyzed in to Statistical Package for Social Sciences Software (SPSS v25). Normality of data was checked using Kolmogorov-Smirnov test and found to have non-normal distribution. Qualitative data including live issue, profession, income, socio-economic status, maternity leave and post-partum month was expressed as frequencies and percentages while quantitative data such as age, married duration and EPDS score was presented as median and interquartile range (IQR). Statistical significance was checked using Chi square test and non-parametric tests (Mann Whitney U and Kruskal Wallis tests) and a p-value ≤0.05 was considered significant. Cramer's V was used to check strength of association between mothers's working status and EPDS score.

RESULTS

Final analysis of the study included 320 patients with 160 females in each group as working and non-working mothers with median age of 34.00 [11.00] and 34.08 [11.02] respectively (p=0.917). There was statistically insignificant difference was noted between duration of marriage (p=0.967), live issues (p=0.766), and education (p=0.832) between both groups. In working group, most of the females 78(48.8%) were given 02 months of maternity leave. There was also statistically insignificant difference between socio-economic status (p=0.544) and mode of delivery (p=0.264). The comparison of studied variables between both groups has been summarized in the Table-I.

Comparison of EPDS scores between the two groups revealed a significant difference with median [IQR] score of 9.00 [8.10] points and 8.00 [7.01] points in working and non-working women respectively (p=0.046). Similarly, while interpreting the score, the risk of developing depression and diagnosed depression among the housewives was found to be

less as compared to the working women and statistically significant (p=0.002, Cramer's V=0.225) (Table-II).

Table-I: Comparison of Characteristics across Working and Non-Working Mothers (n=320)

Variables		Working (n=160)	Non-working (n=160)	p-value
Age in years, median [IQR]		34.00 [11.00]	34.08 [11.02]	0.917
Married duration years median [IQR]		8.10 [8.00]	8.00 [7.04]	0.967
Live Issues	1	19(11.8%)	21(13.1%)	0.766
	2	46(28.8%)	45(28.1%)	
	3	44(27.5%)	40(25.0%)	
	4	32(20.0%)	28(17.5%)	
	5	13(8.1%)	20(12.5%)	
	6	6(3.8%)	6(3.8%)	
Education	Under-Matriculate	43(26.9%)	45(28.1%)	0.832
	Matriculate	66(41.3%)	65(40.6%)	
	Intermediate	20(12.5%)	20(12.5%)	
	Graduate	31(19.4%)	30(18.8%)	
Monthly Income (Rupees)	Nil / Housewife	0	160(100%)	-
	<30,000	25(15.6%)	0	
	<50,000	61(38.1%)	0	
	<80,000	38(23.8%)	0	
	<100,000	12(7.5%)	0	
	>100,000	24(15.0%)	0	
Profession	Housewife	0	160(100.0%)	-
	Health Professional	29(18.1%)	0	
	Teaching	42(26.3%)	0	
	Corporate	19(11.8%)	0	
	Administrative	29(18.1%)	0	
	Online Work	41(25.6%)	0	
Socioeconomic Status	Lower	66(41.3%)	72(45.0%)	0.544
	Middle	65(40.6%)	61(38.1%)	
	Upper	29(18.1%)	27(16.9%)	
Maternity Leave (months)	1	52(32.5%)	N/A	-
	2	78(48.8%)		
	3	16(10.0%)		
	4	10(6.25%)		
	5	4(2.5%)		
Current Delivery Mode	Vaginal	89(55.6%)	81(50.6%)	0.264
	Caesarian	71(44.4%)	79(49.4%)	
Current Postpartum month	1	14(8.8%)	6(3.8%)	0.058
	2	42(26.3%)	34(21.3%)	
	3	30(18.75%)	30(18.8%)	
	4	18(11.3%)	25(15.6%)	
	5	43(26.9%)	53(33.1%)	
	6	13(8.1%)	12(7.5%)	

Table-II: Edinburgh Postnatal Depression Scale scores Comparison between the two Groups (n=320)

Variable	Working (n=160)	Non-Working (n=160)	p-value
Edinburgh Postnatal Depression Scale			0.046
Score, median [IQR]	9.00 [8.10]	8.00 [7.01]	
Interpretation			
Low Risk (≤8)	60(37.5%)	91(56.9%)	0.002
High Risk / Possible Depression (9-12)	33(20.6%)	28(17.5%)	
Mild Depression (13-14)	27(16.9%)	12(7.5%)	
Depression (>14)	40(25.0%)	29(18.1%)	

**EPDS: Edinburgh Postnatal Depression Scale*

Post-partum depression diagnosed on EPDS score showed 40(25.0%) working females were suffering from depression (Figure-2) as compared to 29(18.1%) non-working house-wives who were diagnosed with PPD with EPDS score of >14 points (Figure-3). Moreover, depression was cross analyzed with socioeconomic status and working status and overall mothers from low-SES found to be suffering from depression as compared to middle or upper SES mothers.

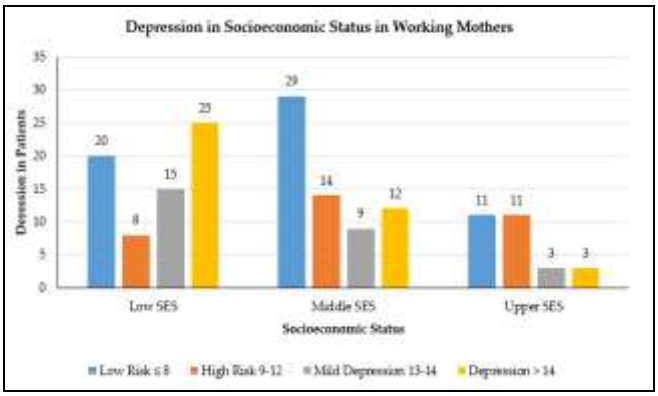

Figure-2: Comparison of Depression & Socioeconomic status in Working Mothers (n=160)

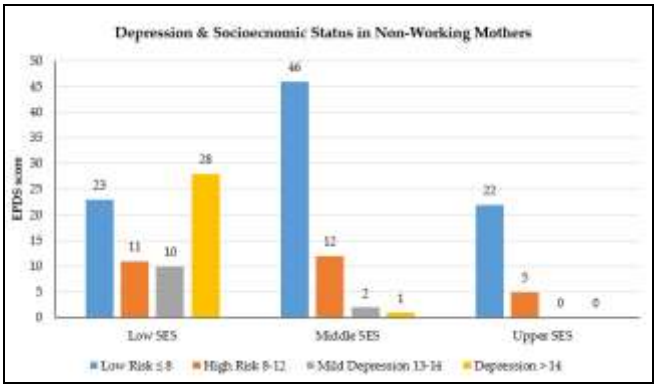

Figure-3: Comparison of Depression & Socioeconomic status in Non-Working Mothers (n=160)

However, there was no significant relationship found between postpartum depression and socioeconomic status (p=0.566) or number of children (>3 versus >4) a lady was raising at present (p=0.582 and 0.658). The same trend withstood for the mode of delivery (p=0.575) and the ongoing postpartum month (p=0.559) as well. In addition, no significant association was found between postpartum depression and the duration of maternity leave (p=0.213) or the fact whether it was paid or not (p=0.475).

DISCUSSION

This study highlighted a significant association between working status and postpartum depression, with working mothers demonstrating higher EPDS

scores and an increased risk of postpartum depression compared to non-working mothers (p=0.011). It was observed that mild depressive symptoms were faced by 16.9% working women and 7.5% non-working women whereas depression was diagnosed in 25.0% working women as compared to 18.1% non-working women. Bhatti *et al.,* conducted a study at HIT hospital Taxila and found that 41.27% women developed postpartum depression mainly from urban background having lack of social support.[12] This finding aligns with previous literature suggesting that work-related stress, challenges in balancing professional and maternal responsibilities may contribute to postpartum emotional distress. Lewis *et al.,* observed postpartum depression by EPDS scale and logistic analysis showed that 20% of working females had EPDS score of 10 or more suggesting high risk/probable depression. He also concluded that employment status was associated with developing depressive symptoms in postpartum period and increased risk of depression on EPDS.[13] Similarly Dash *et al.,* also concluded that the risk of having symptomatic PPD was noted to be significantly higher in women with employment status as compared to non-working women (p<0.001).[14]

The significantly higher proportion of working women experiencing mild-to-severe depression underscores the need for workplace interventions, such as extended maternity leave, flexible work schedules, and mental health support, to mitigate the psychological burden associated with returning to work postpartum. Karl *et al.,* explained that postpartum depression assessed on The Employment Precariousness Scale (EPRES) score showed mean score of 1.02±0.46 were significantly associated with PPD (r(528)=0.290, p<0.001) in working women. He also observed that in working women the ERI (Effort-Reward Imbalance) ratio mean 1.09±0.37 was associated with higher EPDS score (β =0.112; p<0.05).[15]

Working status emerged as a significant determinant, whereas variables such as socioeconomic status, number of children, mode of delivery, postpartum month, and maternity leave conditions did not show significant associations with postpartum depression. However, in a study by Xiao *et al.,* it was explained that new mothers, females from low-SES and working women with low income tend to have higher odds of suffering from PPD. Lack of family support were also noted to be a significant risk factor in developing symptomatic depressive illness.[16] Similar findings were also observed by O`Hara *et al.,* that social-economic status and family support directly affects development of PPD.[17]

In a PRISMA study by Szurek *et al.,* it was observed that working status, low income and low socioeconomic status (SES) mothers were at high risk of developing PPD as compared to housewives and women from high-SES warranting programs for psychological support and programs for low-SES and working mothers during postpartum period.18 Females with low family and social support during postpartum period were noted to have higher chances of having PPD (OR=2.76, 95% CI: 1.56–4.89) versus female with good or moderate family support (OR=1.78, 95% CI: 1.26-2.53).[19]

In this study, it was also observed that monthly income did not had significantly significant effect on development of depression among both groups, however, intragroup analysis in working women group showed that women with <50,000 per month 86(53.5%) women were either high risk for depression or had mild-mod symptomatic depression. Similar findings were observed in a study by Masih *et al.,* that low monthly income were associated with higher incidence of developing postpartum depression in working women.[20] Mother`s having high family and social support and working women with adequate paid maternity leave had significantly lower odds of having PPD (aOR=0.35, p<0.011) as concluded by Gjerdingen *et al*.[21]

One of the inferences that can be drawn from it would be that factors beyond leave policies seem to play a more crucial role in postpartum mental health. Depression in the postpartum period may be more influenced by work-related stress and maternal role transition rather than financial or household factors. This also raises questions about the quality of postnatal support systems, indicating that simply providing leave may not be sufficient if mothers do not receive adequate psychosocial support or workplace reintegration assistance.

Moreover, the lack of association with socioeconomic status challenged the assumption that financial stability alone serves as a protective factor against postpartum depression, highlighting the multifaceted nature of postpartum mental health.

LIMITATIONS OF STUDY

Authors are well aware of limitations of this study foremost being the single center study with limited sample size. Women previously on psychiatric medicines were

excluded and relation of known depressive illness with PPD was not studied. In addition, effect of job nature, working hours and working environment as well as demographic background like rural or urban were not studied as a confounding factors or risk factor of developing depressive illness. Further research is needed to explore work-life balance, social support systems, and psychological resilience as potential mediators in postpartum depression among working women.

CONCLUSION

Females from working class had slightly higher risk of suffering from symptomatic moderate, severe PPD when compared to non-working mothers. In addition, lack of social support and low income in working women also had positive effect in development of depressive illness during postpartum period. PPD always have bi-directional effect on mother and baby physical and psychological health as well. Therefore, mothers working non-working both needed emotional and psychological support during pregnancy as well as postpartum period.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

IFM & AST: Data acquisition, data analysis, critical review, approval of the final version to be published.

BA & HI: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

DAZ & MZ: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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