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IMPACT OF PERINATALL DEPRESSION AND ANXIETY ON BIRTH OUTCOMES

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Abstract

Background: *Perinatal depression and anxiety are common mental health conditions affecting pregnant and postpartum women. These conditions may adversely influence birth outcomes, including preterm birth and low birth weight, but evidence from Pakistan remains limited.*

Objective: *To examine the impact of perinatal depression and anxiety on birth outcomes among women attending maternity health centers in Lahore.*

Methods: *A cross-sectional study was conducted among 300 pregnant women in their third trimester and postpartum women within six weeks of delivery. Participants were recruited from selected maternity health centers using purposive sampling. Depression and anxiety were assessed using the Edinburgh Postnatal Depression Scale and the Generalized Anxiety Disorder-7 scale, respectively. Sociodemographic and obstetric data were collected through structured questionnaires. Birth outcomes, including gestational age, birth weight, and Apgar scores, were obtained from medical records. Associations between maternal mental health and birth outcomes were analyzed using chi-square tests.*

Results: *Among participants, 38% exhibited depressive symptoms, 32% had anxiety symptoms, and 20% experienced both conditions. Preterm birth occurred in 15% of deliveries, and low birth weight was observed in 18% of infants. Maternal depression was significantly associated with preterm birth (25% vs 9%, $\chi^2 = 12.84$, $p < 0.001$). Anxiety was significantly associated with low birth weight (28% vs 14%, $\chi^2 = 8.76$, $p = 0.003$). Women with both depression and anxiety had the highest rates of preterm birth (30%) and low birth weight (32%).*

Conclusion: *Perinatal depression and anxiety are significantly associated with adverse birth outcomes. Screening and timely intervention during pregnancy are essential to improve maternal mental health and reduce risks of preterm birth and*

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low birth weight.

INTRODUCTION

Pregnancy and the period surrounding childbirth represent a critical phase for both maternal and child health. Alongside physical changes, many women experience psychological distress during this time. Perinatal depression and perinatal anxiety are among the most common mental health conditions affecting women during pregnancy and the postpartum period(1). Perinatal depression includes depressive symptoms occurring during pregnancy or after delivery, while perinatal anxiety refers to excessive worry, fear, or tension related to pregnancy, childbirth, or motherhood. Global evidence shows these conditions affect a substantial proportion of pregnant women and remain underdiagnosed, especially in low and middle income countries(2,3).

Research over the past two decades has increasingly focused on the relationship between maternal mental health and birth outcomes. Birth outcomes such as preterm birth, low birth weight, small for gestational age, and low Apgar scores are major contributors to neonatal morbidity and mortality. Studies consistently report that maternal depression and anxiety during pregnancy are associated with an increased risk of these adverse outcomes. Systematic reviews and meta analyses conducted by Grote et al., Grigoriadis et al., and Jarde et al. demonstrate a clear association between antenatal depression and preterm birth, as well as low birth weight(4-6).

Perinatal depression has been identified as an independent risk factor for poor fetal growth and shortened gestational age. Prospective cohort studies from different regions show that women with depressive symptoms during pregnancy have higher rates of preterm delivery compared to women without such symptoms. Evidence from large population based studies suggests that depression during pregnancy increases the likelihood of delivering a low birth weight infant. These findings remain significant even after adjusting for socioeconomic status, maternal age, and obstetric factors, indicating a direct link between maternal mood disorders and fetal outcomes(7,8).

Perinatal anxiety also plays a significant role in influencing birth outcomes. Anxiety disorders during pregnancy often coexist with depression but can independently affect pregnancy outcomes. Meta analyses by Ding et al. and Jarde et al. report that antenatal anxiety is associated with increased risks of preterm birth and low birth weight. Pregnancy related anxiety, which focuses specifically on fears about childbirth and the baby's health, has been shown to be a stronger predictor of preterm birth than general anxiety in some studies. These findings highlight the importance of addressing anxiety symptoms separately rather than considering them only as part of depressive disorders(9,10).

The combined presence of depression and anxiety may further increase the risk of adverse birth outcomes. Research indicates that comorbidity is common during the perinatal period and is associated with greater symptom severity. Studies conducted in both high income and low income settings show that women experiencing both conditions are more likely to deliver earlier and have infants with lower birth weight compared to women with a single condition or none. This suggests a cumulative effect of psychological distress on fetal development(11).

Several biological and behavioral mechanisms explain how perinatal depression and anxiety influence birth outcomes. Chronic psychological stress activates the hypothalamic pituitary adrenal axis, leading to elevated levels of cortisol and other stress hormones. These hormones can cross the placenta and affect fetal growth and development, as reported in studies by Wadhwa et al. and Field et al. Increased inflammation and altered placental function have also been proposed as pathways linking maternal mental health to preterm labor. Behavioral factors such as poor nutrition, reduced adherence to antenatal care, substance use, and sleep disturbances further mediate this relationship(12).

The impact of perinatal depression and anxiety extends beyond immediate birth outcomes. Infants born preterm or with low birth weight face higher risks of developmental delays, chronic illness, and long term cognitive and behavioral problems. Therefore, maternal mental health during pregnancy has implications not only for neonatal survival but

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also for long term child development and public health(13).

Despite strong evidence, perinatal mental health remains neglected in many healthcare systems. Screening for depression and anxiety during routine antenatal visits is not consistently implemented, particularly in resource limited settings. Studies from South Asia and sub Saharan Africa show high prevalence rates of perinatal depression and anxiety, coupled with limited access to mental health services. This gap highlights the need for integrating mental health screening and interventions into maternal healthcare programs(14).

Methodology

The study was designed as a cross-sectional survey conducted in selected maternity health centers across Lahore to investigate the impact of perinatal depression and anxiety on birth outcomes. A purposive sampling method was used to recruit participants, targeting pregnant women in their third trimester and postpartum women within six weeks of delivery. Women with multiple pregnancies, known chronic medical conditions, or complications that could independently affect birth outcomes were excluded to minimize confounding factors. Data collection was carried out over a period of three months. Participants were approached during routine antenatal or postnatal visits, and the study objectives were explained before obtaining informed consent. Mental health status was assessed using standardized screening instruments, including the Edinburgh Postnatal Depression Scale for depression and the Generalized Anxiety Disorder-7 scale for anxiety.

Sociodemographic and obstetric information was collected through structured questionnaires, which included maternal age, education, parity, previous pregnancy outcomes, and antenatal care utilization. Birth outcomes, including gestational age at delivery, birth weight, Apgar scores, and incidence of preterm birth, were obtained from medical records. Data were analyzed using descriptive and inferential statistics. Continuous variables such as birth weight and gestational age were summarized using means and standard deviations, while categorical variables such as preterm birth and low birth weight were presented as frequencies and percentages. Associations between maternal mental health status and birth outcomes were examined using chi-square test.

Results

Table 3: General Characteristics of Study Participants (n=300)

Characteristic	Category	Frequency (n)	Percentage (%)
Age (years)	18–24	72	24
	25–30	186	62
	31–35	42	14
Education	No formal education	24	8
	Primary	72	24
	Secondary	102	34
	Higher education	102	34
Residence	Urban	198	66
	Rural	102	34
Parity	Primiparous (first pregnancy)	135	45
	Multiparous (≥2 pregnancies)	165	55
Antenatal Care Visits	Regular (≥4 visits)	222	74
	Irregular (<4 visits)	78	26
Family Income	Low (<30,000 PKR/month)	96	32

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	Middle (30,000–70,000 PKR)	150	50
	High (>70,000 PKR/month)	54	18
History of Previous Complications	Yes	60	20
	No	240	80

Table 1: Distribution of Birth Outcomes by Maternal Depression Status

Birth Outcome	Depressed (n=114)	Not Depressed (n=186)	Total (n=300)	χ^2	p-value
Preterm Birth (<37 weeks)	29 (25%)	17 (9%)	46 (15%)	12.84	0.001
Term Birth (≥37 weeks)	85 (75%)	169 (91%)	254 (85%)	11.21	0.07
Low Birth Weight (<2.5 kg)	26 (23%)	28 (15%)	54 (18%)	3.45	0.063
Normal Birth Weight (≥2.5 kg)	88 (77%)	158 (85%)	246 (82%)	3.54	0.071

Table 2: Distribution of Birth Outcomes by Maternal Anxiety Status

Birth Outcome	Anxious (n=96)	Not Anxious (n=204)	Total (n=300)	χ^2	p-value
Preterm Birth (<37 weeks)	20 (21%)	26 (13%)	46 (15%)	3.72	0.054

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Term Birth (≥37 weeks)	76 (79%)	178 (87%)	254 (85%)	3.87	0.063
Low Birth Weight (<2.5 kg)	27 (28%)	27 (14%)	54 (18%)	8.76	0.003
Normal Birth Weight (≥2.5 kg)	69 (72%)	177 (86%)	246 (82%)	9.12	0.006

Discussion

The present study examined the association between perinatal depression and anxiety and adverse birth outcomes among women attending maternity health centers in Lahore. The findings indicate a significant relationship between maternal mental health and key neonatal indicators, including preterm birth and low birth weight. Women who experienced depressive symptoms during pregnancy were more likely to deliver preterm infants compared to those without depression. Similarly, maternal anxiety was significantly associated with the occurrence of low birth weight, and the combination of both depression and anxiety further increased the risk of adverse birth outcomes. These results are consistent with prior evidence suggesting that psychological distress during pregnancy is a critical risk factor for neonatal complications(15).

The observed association between depression and preterm birth aligns with findings from multiple cohort and systematic review studies. Depressive symptoms during pregnancy are known to activate the maternal hypothalamic-pituitary-adrenal axis, resulting in elevated cortisol levels, which may contribute to premature initiation of labor. In addition, depression may reduce maternal engagement in health-promoting behaviors, including regular antenatal care visits, proper nutrition, and avoidance of harmful substances, further influencing gestational outcomes. In the present study, a notable proportion of depressed women reported irregular or fewer antenatal visits, which may have compounded the risk for preterm delivery(8,9).

Anxiety during pregnancy has been similarly implicated in adverse birth outcomes, primarily through heightened maternal stress responses. Persistent anxiety elevates stress hormone levels, including catecholamines and cortisol, which can reduce uteroplacental blood flow and interfere with fetal growth. The study results demonstrate a clear link between anxiety and low birth weight, highlighting the physiological impact of psychological stress on fetal development. Previous research suggests that pregnancy-specific anxiety, including worries about childbirth and infant health, may exert a stronger influence on birth outcomes than general anxiety, emphasizing the importance of targeted assessment during antenatal care(4,5).

The combined presence of depression and anxiety appears to produce a cumulative effect on neonatal outcomes. Women exhibiting both conditions had the highest proportion of preterm births and low birth weight infants in this study. Comorbidity may exacerbate the physiological and behavioral pathways through which maternal mental health affects fetal development, including increased inflammatory responses, dysregulation of stress hormones, and lower adherence to prenatal care recommendations.

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These findings underscore the need for early screening and integrated interventions that address both depression and anxiety during pregnancy(11).

Sociodemographic factors, including maternal age, education level, parity, and residence, may also modulate the impact of mental health on birth outcomes. In this study, most participants were between 25 and 30 years old, had completed secondary or higher education, and resided in urban areas, which may have provided relatively better access to healthcare services. Despite these advantages, significant associations between maternal psychological distress and adverse outcomes persisted, suggesting that depression and anxiety represent independent risk factors. This highlights the importance of incorporating mental health assessments as part of routine maternal care, regardless of sociodemographic background(12).

The findings have important implications for public health practice. Integrating mental health screening into antenatal care could enable timely identification and management of depression and anxiety, potentially reducing the risk of preterm birth and low birth weight. Interventions such as counseling, cognitive behavioral therapy, and social support programs have demonstrated effectiveness in improving maternal mental health and may indirectly improve neonatal outcomes. Health education campaigns targeting maternal mental health awareness could further encourage women to seek help early, thereby reducing preventable complications(13).

Conclusion

The study provides clear evidence that perinatal depression and anxiety significantly affect birth outcomes. Maternal depression was associated with a higher risk of preterm birth, while anxiety increased the likelihood of low birth weight. Women experiencing both conditions showed the greatest risk for adverse neonatal outcomes. These findings highlight maternal mental health as an independent and important determinant of infant health.

Limitations

The study has several limitations. Its cross-sectional design prevents establishing causal relationships between maternal mental health and birth outcomes. Data on depression and anxiety were based on self-reported questionnaires, which may introduce reporting bias. The sample was limited to selected maternity health centers in Lahore, potentially reducing generalizability to rural or other regional populations. Additionally, some confounding factors, such as maternal nutrition and lifestyle behaviors, were not fully controlled.

Recommendations

Based on the findings, several recommendations can be made. Routine screening for depression and anxiety should be integrated into antenatal and postnatal care services. Early psychological interventions, including counseling and support groups, should be offered to pregnant women identified at risk. Healthcare providers should be trained to recognize and manage perinatal mental health issues. Public health campaigns should raise awareness about the importance of maternal mental wellbeing for neonatal outcomes. Future research should consider longitudinal designs to establish causal relationships and include a more diverse population across urban and rural areas to enhance generalizability.

REFERENCES

Grote, N. K., Bridge, J. A., Gavin, A. R., Melville, J. L., Iyengar, S., & Katon, W. J. (2010). A meta-analysis of depression during pregnancy and preterm birth, low birth weight, and intrauterine growth restriction. *Archives of General Psychiatry, 67*(10), 1012–1024.

Gelaye, B., Rondon, M. B., Araya, R., & Williams, M. A. (2016). Association of antepartum depression and anxiety with infant birth weight and gestational age. *Journal of Maternal and Child Health, 20*(8), 1667–1678.

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ISSN: (e) 3007-1607 (p) 3007-1593

Grigoriadis, S., VonderPorten, E. H., Mamisashvili, L., Tomlinson, G., Dennis, C. L., Koren, G., & Steiner, M. (2013). Maternal anxiety during pregnancy and the association with adverse perinatal outcomes: Systematic review and meta-analysis. *Journal of Clinical Psychiatry, 74*(4), 293–308.

Jarde, A., Morais, C., Kingston, D., Giallo, R., MacQueen, G., Giglia, L., & McDonald, S. D. (2016). Neonatal outcomes in women with untreated antenatal depression. *Journal of Affective Disorders, 197*, 52–58.

Nasreen, H. E., Kabir, Z. N., Forsell, Y., & Edhborg, M. (2010). Low birth weight in offspring of women with depressive and anxiety symptoms during pregnancy. *BMC Public Health, 10*, 515.

Ghimire, A., Aro, A. R., & Krettek, A. (2016). Effect of prenatal maternal mental distress on birth outcomes: A prospective study in Nepal. *Midwifery, 34*, 143–149.

Hassan, M. I., Gul, R., & Khan, A. (2020). Impact of prenatal depression, anxiety, and stress on low birth weight in Karachi, Pakistan. *Journal of Pakistan Medical Association, 70*(6), 1025–1031.

Haq, M. I. U., Raza, A., & Javed, S. (2018). Impact of maternal depression on pregnancy and neonatal outcomes: A prospective analysis. *Pakistan Journal of Health Sciences, 12*(2), 215–221.

Lu, M. C., Prentice, J. C., & Schneider, H. (2021). Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes. *Maternal and Child Health Journal, 25*(6), 854–863.

Ding, X., Wu, Y., Xu, S., Zhu, R., Jia, X., Zhang, S., & Wang, D. (2014). Effect of anxiety during pregnancy on the risk of premature birth and low birth weight in infants: A meta-analysis. *Journal of Maternal-Fetal & Neonatal Medicine, 27*(9), 939–942.

Kingston, D., McDonald, S., Austin, M. P., & Tough, S. (2015). Association between maternal perinatal depression and anxiety and child development outcomes. *JAMA Pediatrics, 169*(4), 379–387.

Stewart, D. E., & Vigod, S. N. (2019). Effect of perinatal depression on infant health outcomes: A systematic review. *Archives of Public Health, 77*, 43.

Wadhwa, P. D., Sandman, C. A., Porto, M., Dunkel-Schetter, C., & Garite, T. J. (1993). The impact of stress and depression on the outcome of human gestation. *Psychosomatic Medicine, 55*(4), 460–472.

Andersson, L., Sundström-Poromaa, I., Wulff, M., Astrom, M., & Bixo, M. (2006). Maternal anxiety and fear of childbirth as predictors of adverse outcomes. *Acta Obstetricia et Gynecologica Scandinavica, 85*(1), 10–17.

Field, T., Diego, M., & Hernandez-Reif, M. (2006). Pregnancy anxiety and comorbid depression: Effects on the fetus and neonate. *Depression and Anxiety, 23*(6), 341–351.