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Maternal depressiveness and infant growth outcomes: Findings from the MAASTHI cohort study in India

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ABSTRACT

Objective: The study aims to examine the association between depressiveness in mothers on infant obesity and stunting at one year of age.
Methods: We enrolled 4829 pregnant women, followed them up at public health facilities in Bengaluru for one year after birth. We collected information on women's sociodemographic characteristics, obstetric history, depressive symptoms during pregnancy and delivery within 48 h. We took infant anthropometric measurements at birth and one year. We used chi-square tests, and calculated an unadjusted odds ratio using univariate logistic regression. We used multivariate logistic regression to examine the association between maternal depressiveness, childhood adiposity, and stunting.
Results: We found that the prevalence of depressiveness was 31.8% in mothers who delivered in public health facilities in Bengaluru. Infants born to mothers with depressiveness at birth had 3.9 times higher odds of having larger waist circumference than infants born to mothers with no depressiveness (AOR: 3.96, 95% Confidence Interval: 1.24,12.58) and 1.9 times higher odds of having a larger sum of skinfold thickness (AOR: 1.99, 95% CI: 1.18,3.38). Additionally, we found that infants born to mothers with depressiveness at birth had 1.7 times higher odds of stunting than infants born to mothers with no depressiveness (AOR: 1.72; 95%CI: 1.22,2.43) after adjusting for confounders.
Conclusion: Our study highlights a high prevalence of depressiveness among mothers seeking antenatal care at a public hospital is associated with an increased risk of infant adiposity and stunting at one year. Further research is needed to understand the underlying mechanisms and identify effective interventions.

1. Introduction

Maternal mental health is central to the health of the mother and the baby. [1,2] Women suffer from various mental health problems, including depressiveness during pregnancy and immediately after birth, postpartum depression (PPD), and postpartum psychosis in extreme circumstances. Approximately 50% of women experience depressiveness after delivery, which lasts for short periods after birth. [3] Depressiveness is the most widely observed state of puerperium mood disturbance, with a prevalence range of 30–75% [4,5]. Symptoms are usually mild, including mood swings, irritability, tearfulness, anxiety, sleep disturbances, and appetite loss. [6] which usually peaks within five days after delivery and lasts for weeks. [7] The prevalence of depressiveness measured in pregnancy and after birth varies across countries. It is estimated to affect between 300 and 700 mothers per 1000 mothers globally. [8] In India, the prevalence of depressiveness ranges from 50 to 60%, [9,10] 31.3% in Nigeria [11], 50–80% in Iran [12], 70.3% in Korea [13], and 63.3% in Pakistan [14] have been reported, respectively.

Post-birth, several biochemical and hormonal changes cause depressiveness after delivery. [15] There is no uniformity in measuring mental health status among women who have just given birth. Though depressiveness in mothers measured after delivery is the least severe form of PPD, it is essential to consider the physiological changes after delivery. [16] PPD in mothers is associated with infant adiposity [17,18] and stunting. [19] Earlier and later stages of infant exposure to

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depressive symptoms are associated with child growth outcomes. [20] Depressiveness is misperceived to have fewer adverse sequelae and typically does not require treatment and resolves through reassurance. [21] Recent evidence shows that depressiveness during the puerperal period influences the growth of the child. [22] Possible reasons for this include the nature of marriage, the form of family support the new mother receives, the influence of socio-cultural factors in maternal mental health and infant nutrition, the gender of the child, low social status, and lower women empowerment. [23]

Mothers with depressiveness may also find it more challenging to provide the baby with appropriate nutrition. [24] Potential mechanisms of depressiveness affecting infant growth might include disruption of mother-child interaction, [25] early termination of breastfeeding, and the introduction of formula feeding or supplementary feeding. [26] Studies also suggest mothers with depressiveness might have less mother-child interaction [27]. This is because depressiveness can lead to difficulties in breastfeeding [28]. Early cessation of breastfeeding and initiation of early formula feeding impact the growth of the children [29] Therefore, the impact of depressiveness measured immediately after delivery on infant growth outcomes has yet to be fully understood, and this study seeks to address this knowledge gap.

This study aims to investigate the association between depressiveness in mothers and growth outcomes in children—particularly adiposity and stunting in the MAASTHI birth cohort study conducted in Karnataka, South India. We aimed to determine the prevalence of depressiveness in mothers after delivery and to examine the association of depressiveness on infant adiposity and stunting at one year, measured by several anthropometric markers. We hypothesized that depressiveness in mothers measured after delivery is a strong predictor of infant adiposity and stunting.

2. Materials and methods

2.1. Sample and data collection

MAASTHI is a birth cohort study in Bengaluru. One of the key objectives of MAASTHI was to prospectively identify the sequelae of psychosocial stress during the peripartum period in predicting the possible markers of future risk of chronic diseases. The detailed study protocol has been published elsewhere. [30] In summary, pregnant women aged between 14 and 32 weeks were enrolled in the study between April 2016 and December 2019. We collected information on socio-demographics, obstetric details, social support, depressive symptoms, smoking status, and alcohol consumption among participants and their spouses. Participants were followed at birth, 14 weeks after delivery, and a year later. The infants were assessed for morbidities, feeding practices, and child developmental milestones coupled with detailed anthropometric measurements. We recruited 4829 pregnant women and completed approximately 64% (2647) of at-birth follow-ups. We used data from 1135 infants and mothers who had completed their one-year assessments in the analysis.(See Fig. 1)

2.2. Measures

2.2.1. Assessment of depressiveness

The Edinburgh Postnatal Depression Scale (EPDS) was used to assess the depressive symptoms among delivered women within 48- hours of delivery. (9)The EPDS scale has been translated into different languages and validated in several countries, including India. [31] The EPDS has also been validated in South India, with a cut-off measure of ≥13. [32] As suggested in several studies, we used a cut-off measure of 13 and above to define women having depressiveness [33] to determine the threshold of depressive symptoms score and degree of impact on outcome variables.

2.2.2. Infant anthropometric measurements

Trained research staff measured anthropometrics at birth and at one year. In each visit, the child's weight was measured using SECA 354, and the height and the crown-rump length were measured using SECA 417 infantometer. Circumference measurements, such as waist and hip, are sensitive marker for abdominal adiposity. [34–36] Skinfold thickness is the most accurate measure of adiposity. [36,37] We used the sum of skinfold thickness (biceps + triceps + subscapular) to estimate overall adiposity. Chasmors body circumference tape measured chest, waist, hip, and mid-upper arm circumference(MUAC) circumferences.

In contrast, skinfold thickness (biceps, triceps, and subscapular) was

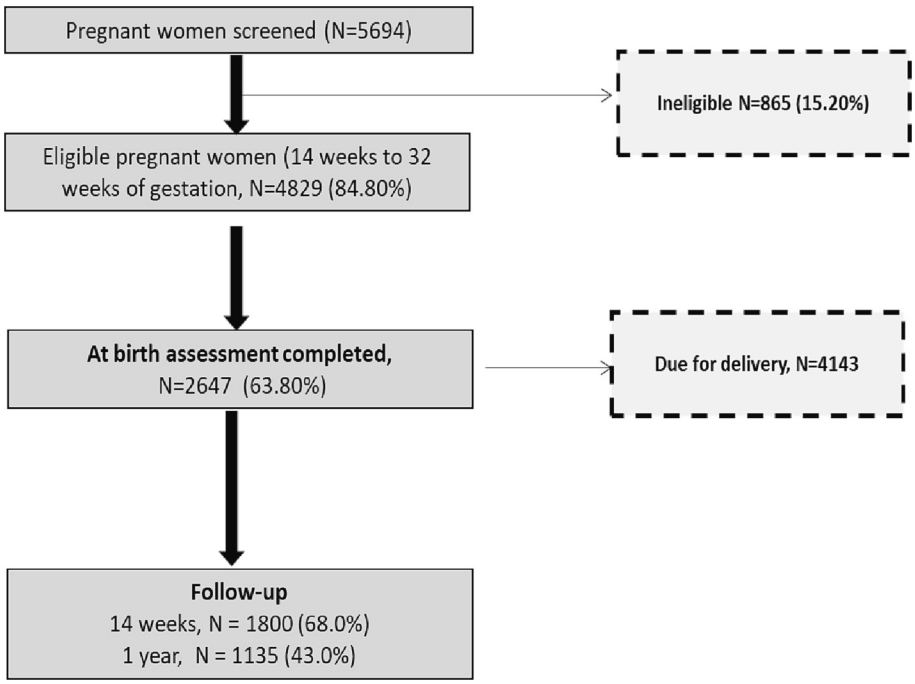

Fig. 1. Flow diagram showing the number of participants recruited and who completed follow-up assessments.

measured using Holtain Calliper (Holtain, UK). Weight was measured in kilograms, and the readings were measured to the nearest 0.5 grams. Height was measured in centimetres, circumferences in centimetres, and skinfold thickness in millimeters. Three readings were obtained for each measurement. The variables were subsequently classified based on the 90th percentile cut-off for anthropometric markers. [38–40] The research staff followed standard techniques for all the measurements and was periodically tested and certified for internal validity by St. John's Research Institute, Bengaluru.

2.3. Outcomes

2.3.1. Adiposity

We defined infants as obese when their anthropometric measurements were above the 90th percentile cut-off values(chest circumference, waist circumference, hip circumference, mid-upper arm circumference, and the sum of skinfold thickness)(Table A1:Appendix-I).

2.3.2. Stunting

We calculated the height for age Z-scores of the children and defined stunting as height for age z-score below -2SD per the World Health Organization (WHO) growth standards. [41]

2.3.3. Sociodemographic factors and confounders

We selected variables that have been previously linked to postpartum depression and infant growth outcomes. Information was collected on covariates such as maternal age, gestational age at delivery, socioeconomic status, education, parity, weight and height, the status of gestational diabetes during the current pregnancy, and the smoking status of both participant and their spouse. [23,42–46] Weight and height were measured, and the body mass index was calculated per the WHO cut-off values. [47] Social support was measured using a St. John's Research Institute questionnaire. [48] The EPDS scale measured depressive symptoms during pregnancy. Moreover, good social support was categorized as those who scored equal to or more than 24, and poor as those who scored below 24. Plasma glucose concentration and hemoglobin (Hb) status were measured in maternal blood samples collected during 24-36 weeks of pregnancy. The anemia was classified as normal (blood Hb >11gm/dl), mild (blood Hb = 10.0-10.9gm/dl), and moderate (blood Hb=7-9.9gm/dl). [49] Gestational age at delivery was computed from the last menstrual period and the date of delivery. The socioeconomic status of the participants was assessed using the Kuppuswamy scale. The total score ranges from 3-29, and it classifies families into three groups 3 to 10 as lower class, 11-25 as middle class, and above 25 classified as upper class. [50]

2.4. Statistical analysis

The data were checked for normality. The regression assumption was checked between anthropometric markers and depression scores of pregnant women. There was a linear association between adiposity markers and depressive symptom scores. We checked independent variables to rule out multicollinearity. We examined the association between depressiveness among delivered women and infant anthropometric markers at one year of age. The outcomes included circumferences of the chest, waist, hip, and mid-upper arm, skinfold thickness, biceps, triceps, and subscapular individually, and the sum of skinfold thickness above the 90th percentile. Frequency and percentages have been reported using cross-tabulations for all categorical variables. P-value <0.05 was considered statistically significant, and Fisher exact p-values have been reported wherever the cell count was less than five. The case summary of the anthropometric markers has been reported across the group of women with or without depressiveness. Univariate logistic regression was done to estimate the crude odds ratio, and multivariate logistic regression analysis was used to estimate the adjusted odds ratio between maternal depressiveness and infant adiposity and stunting. Based on a priori, we created models adjusted for gestational age at delivery [17,51], age of the mother, education, and socioeconomic status related to both maternal depression and child adiposity [17,52–55], height, weight, and smoking status of both participants and their spouse [18,58] and duration of breastfeeding. [20,52,56,57] Analysis was performed using IBM SPSS version 24.

3. Results

The study considered 1135 mother-child dyads who completed one-year follow-up out of 2647 due for one-year follow-up assessments. We found that 320 (31.8%) women had depressiveness assessed within 48 hours of the child's birth. The mean age of the mother was 24 years (±4.09years).

As seen in Table 1, we observed that religion and antenatal depressive symptoms were maternal factors associated with depressiveness among delivered women. Most were younger women (68.8% vs. 64.1%) who experienced depressiveness after delivery. Most women practiced Islam, followed by Hindus, and often belonged to lower socioeconomic strata. We found that more women with depressiveness after delivery were diagnosed with GDM (18.2% Vs. 17.1%) and anemia compared to women without depressiveness. History of abortions (24.1% Vs. 23.7%), poor social support (33.4% Vs. 28.4%), and antenatal depressive symptoms were higher (16.9% Vs. 8.4%) among women with depressiveness compared to women without depressiveness after delivery. Of

Table 1
Distribution of maternal characteristics with depressiveness (EPDS≥13) in MAASTHI cohort participants (2016–19) (n = 1135).

Maternal characteristics	Category	Normal(n = 705) 68.20%	Depressiveness (n = 320) 31.80%	p-value
Age(years)	18–25	454(66.1)	220(68.8)	0.37
	26–30	178(25.9)	82(25.6)	
	≥31	55(8.0)	18(5.6)	
Religion	Hindu	331(48.2)	129(40.3)	**0.04**
	Christian	22(3.2)	8(2.5)	
	Islam	334(48.6)	183(57.2)	
Education	Illiterate	19(2.8%)	10(3.1)	0.16
	Primary	36(5.2)	14(4.4)	
	Middle school	110(16.0)	53(16.6)	
	High school	320(46.6)	128(40.0)	
	PUC/diploma	139(20.2)	88(27.5)	
	Graduate and above	63(9.2)	27(8.4)	
Socioeconomic status	Lower class	431(62.7)	206(64.4)	0.77
	Middle class	196(28.5)	90(28.1)	
	Upper class	60(8.7)	24(7.5)	
GDM	No	563(82.9)	261(81.8)	0.36
	Yes	116(17.1)	58(18.2)	
Participants' sum of SST	>90th percentile	600(87.3)	287(89.7)	0.16
	≤90th percentile	87(12.7)	33(10.3)	
History of abortion	No	524(76.3)	243(75.9)	0.48
	Yes	163(23.7)	77(24.1)	
Social support	Good (≥24)	492(71.6)	213(66.6)	0.1
	Poor (<24)	195(28.4)	107(33.4)	
Anemia Status during Pregnancy	Normal (>11gmg/dl)	395(57.8)	172(54.4)	0.54
	Mild anemia (10–10.9 g/dl	173(25.4)	84(26.5)	
	Moderate anemia (7–9.9 g/dl)	114(16.7)	60(19.0)	
	Severe anemia (<7 g/dl)	1(0.1)	1(0.1)	
Antenatal depressive symptoms	No	629(91.6)	266(83.1)	0.000
	Yes	58(8.4)	54(16.9)	

PUC-pre university college, SES-socio economic status, GDM-gestational diabetes, SST-subscapular skinfold thickness

the total participants, we observed that only 0.2% of the study participants reported their smoking status (not included in the table).

The distribution of anthropometric characteristics of infants at one year is presented in Table 2. Mean, and standard deviations were reported for all anthropometric measurements. We observed higher mean values for most anthropometric markers in children born to mothers with depressiveness compared to mothers who did not have depressiveness. These included significant differences in chest circumference (47.48cm vs. 45.62cm), waist circumference (45.80cm vs. 44.24cm), hip circumference (46.28cm vs. 45.11cm), and the sum of skinfold thickness (23.77mm vs. 21.23mm) among mothers with depressiveness against those mothers who did not have depressiveness after delivery.

The results of the logistic regression analysis are presented in Table 3. Though the analysis was run for all anthropometric measurements, only those with significant results have been reported (results for mid-upper arm circumference above 90th percentile and biceps and triceps above 90th percentile are not shown). We observed statistically significant results for chest, waist, and hip circumferences and the sum of skinfold thicknesses. The results demonstrated that children born to women with depressiveness have 3.9-time higher odds (3.96, 95% CI 1.24–12.58) of having adiposity when measured using waist circumference at one year of age and 3 times higher odds (3.04, 95% CI 1.03,8.92) of having adiposity when measured using skinfold thickness at one year of age. The significant association persisted for waist circumference and sum of skinfold thickness even after controlling for relevant confounders.

Table 4 shows adjusted and unadjusted odds ratios to demonstrate the association between women with depressiveness and the infants' height. After controlling for identified possible confounders, we found that children born to women with depressiveness have 1.7 times higher odds of stunting (height for age Z score below -2SD) when compared to women with no depressiveness.

4. Discussion

We found prevalence of depressiveness of 31.8% among women who delivered at public health facilities in Bengaluru. We found that infants born to mothers with depressiveness had a higher risk of both adiposity and stunting at one year of age.

Depressiveness and its impact on infant growth have not been adequately studied in LMIC settings. Our findings contribute to this evidence to understand the adverse effects of women with depressiveness on infants' health. However, the exact relationship between depressiveness and infant adiposity must be further studied.

Several other studies have documented higher depressiveness among delivered women than our findings, with prevalence ranging from 50% to 60% in India. [9,10]) The reported evidence for depressiveness came from an Indian study conducted in referral hospitals, indicating that complicated cases were more likely referred to the referral hospital. Hence, pregnant women have had higher depressive symptoms than those in primary care hospitals/ maternity homes. Another possibility is that the higher prevalence was due to sampling methods, which included a purposive sample technique that might have contributed to the higher prevalence. A systematic review b reported an overall prevalence of depressiveness after delivery of 39% and observed a higher rate of depressiveness in LMICs compared to high-income countries. Based on the income status of the countries, the pooled prevalence was 76%, 40.8%, and 38.4% in low, middle and high-income countries, respectively. [58]

Existing studies examined the association between depressiveness measured after delivery and infant adiposity. Previous studies have assessed postpartum depression (PPD) at one month, two months, and six months of delivery are important to determine the association of PPD with infant adiposity. [1,59–65] Some studies suggest that PPD might cause only transitional adiposity, usually seen at four months of life but disappearing by one year of life. [66] All these studies reported some effects of PPD on child anthropometry. Our study indicates that depressiveness in mothers has a potentially long-lasting effect on a fetal growth trajectory. Further studies are required to investigate the possible mechanisms and to evaluate the reasons underlying the effect of depressiveness on infant outcomes. Several studies have suggested that maternal depressiveness, despite being transient, can negatively impact the mother-infant bonding process [67], disrupt caregiving practices [68], and alter the quality of the home environment [69]. Moreover, maternal mental health issues can increase the risk of suboptimal infant feeding practices [70], which may contribute to poor growth and development. Furthermore, biological mechanisms, such as alterations in the maternal hypothalamic-pituitary-adrenal (HPA) axis and increased levels of stress hormones, have been proposed to affect fetal and infant development [71]. Although depressiveness can be short-lived, the lasting impact on the child's growth trajectory and developmental outcomes underscores the importance of early identification and intervention in addressing maternal mental health issues [72].

We additionally found that depressiveness in mothers is associated with stunting. Evidence suggests that PPD assessed after six weeks of birth is associated with stunting. A similar finding was obtained from rural India, where PPD was associated with a 2.9-fold higher risk of stunting. [73] A meta-analysis of data from 11 countries showed that children of mothers with depression or depressive symptoms have a 1.4-fold higher risk of stunting. [74] A cross-sectional study in Ghana reported that maternal depression was associated with a 2.4-fold higher risk of child stunting. [75] A prospective cohort study in Pakistan found that PPD was a significant risk factor with a 2.5-fold higher risk of stunting. [76] Another cross-sectional study in Pakistan reported that mothers with depressive symptoms had a three times higher risk of having stunted children. [77] The study from Bangladesh additionally reported that infants born to mothers with depressive symptoms have a 2.7-fold higher risk of stunting at 12 months of age. [78] Our findings differ from those of a longitudinal study in Nigeria, where the length-for-age (stunting) of infants born to mothers with postpartum depression after delivery did not differ from that of healthy mothers. [60] An Ethiopian study did not find an association between maternal depression and stunting at 12 months [79] Findings from a study done in South Africa did not show an association between maternal postpartum depressive symptoms and stunting. [80]

Childhood adiposity no longer afflicts the affluent alone but is observed in high proportions among society's poorer strata. The Comprehensive National Nutrition Survey of India found that 9% of children aged 5 to 9 were obese or overweight. [81] Depressiveness in women interferes with the mother-child interaction, which in turn interferes with a responsive feeding style. [82,83] Responsive feeding style refers to a mother-to-baby relationship in which the mother knows the child's hunger signals and reacts age-appropriate and receptively.

Table 2
Distribution of anthropometric characteristics of infants at one year of age (n=1135).

Child Anthropometric characteristics	Normal **(EPDS < 13)** (mean, ±SD)	Depressiveness **EPDS ≥ 13)** (mean, ±SD)
Weight (kg)	8.75(1.24)	8.78(1.20)
Crown-rump length(cm)	45.06(4.58)	45.73(3.79)
Height(cm)	73.48(4.27)	74.75(4.87)
Head circumference(cm)	44.99(1.93)	45.50(1.31)
Chest circumference(cm)	45.62(2.29)	47.48(2.11)
Waist circumference(cm)	44.24(3.20)	45.80(2.97)
Hip circumference(cm)	45.11(3.55)	46.28(4.32)
Mid-upper arm circumference (cm)	14.32(2.18)	14.76(1.23)
Biceps skinfold (mm)	5.45(1.20)	5.94(1.48)
Triceps skinfold (mm)	8.21(1.88)	9.48(1.81)
Subscapular skinfold(mm)	7.58(1.51)	8.45(2.14)
Sum of skinfold (mm)	21.23(3.85)	23.77(4.53)

Table 3
Regression analysis showing the association between maternal depressiveness and anthropometric markers of adiposity among infants at one year of age (n=1135).

	Chest circumference#	Waist Circumference#	Hip circumference#	Sum of skinfold thickness#
Depressiveness (≥13)	Odds ratio, 95% confidence interval	Odds ratio, 95% confidence interval	Odds ratio, 95% confidence interval	Odds ratio, 95% confidence interval
Unadjusted	1.729*	1.723*	2.466*	1.996*
	(1.02,2.92)	(1.05,2.822)	(1.43,4.23)	(1.18,3.36)
Adjusted	2.846	3.963*	2.242	3.045*
	(0.87,9.28)	(1.24,12.58)	(0.73,6.82)	(1.03,8.92)

#>90th percentile Adjusted factors are: gestational age at delivery, age of the respondent, Education and socioeconomic status, -parity, weight, height, gestational diabetes, birth weight and smoking status of participants' husband, and duration of breastfeeding

Table 4
Logistic regression analysis showing the association between maternal depressiveness and stunting in infants at one year of age. (N=1135).

Depressiveness (≥13)	HAZ# OR, *p*-value	95% Confidence interval
Unadjusted	1.232	(0.92,1.63)
Adjusted @	1.724*	(1.22,2.43)

#: height for age Z-score < -2SD, OR-odds ratio, @ -*Factors adjusted:- gestational age at delivery, age of the respondent, Education, socioeconomic status, -parity, weight, height, gestational diabetes, birth weight, and smoking status of participants' husband.*

[84] Mothers with PPD are more likely to stop breastfeeding [85,86] in the first few months after delivery. Family members may start pressuring the baby to eat more food, with fewer vegetables and fruits and high fat and sugar, by restricting the recommended type of food. [87,88] Parenting, including a nonresponsive feeding style, is associated with a higher risk of stunting [61] and adiposity. [88] Hence, screening for depressiveness in women at the earliest after delivery using the existing opportunity is crucial, as it is one of the most important precursors for childhood adiposity. Our findings need to be further validated, including delineating the mediating role of PPD in this association.

In our study, the assessment of adiposity was done at one year of age, unlike in most studies that assessed adiposity at six weeks, two, and six months of age. Anthropometric measurements assessment at one year is a reliable marker of the adiposity trajectory for the rest of the life course. [89] Second, adiposity could be explained by the recent nutrition transition, sedentary lifestyle, and easy access to calorie-dense food in much of the urban population in India.

Our study has several strengths. This is the first prospective examination of a large sample of women and children at Bengaluru's public hospitals. We used validated scales of measurement for screening depressive symptoms and utilized calibrated equipment for anthropometry assessments. All our research staff has been trained and certified in anthropometry assessment with regular certification. The study has some limitations. First, we assessed depressiveness within 48 hours after delivery, which is known to have limited health effects. Second, the EPDS tool, an excellent instrument for routine screening, does not diagnose depression. We acquired only 43% of the one-year follow-up data due to the participants' relocation of residence and needing help to contact the participants. One potential limitation of our study is the possibility of response bias. While efforts were made to follow up with all participants, only a subset of the initial cohort completed the one-year follow-up assessment at the time of this study. Also, this study was conducted in government health facilities primarily serving society's middle to lower socioeconomic status. Therefore caution should be exercised when generalizing the findings to other populations. Further research in diverse settings is needed to confirm our results and to explore the possible role of social support and other contextual factors in the association between maternal depressiveness and adverse infant outcomes.

The current findings of the study showing a significant association between depressiveness and infant adiposity need further assessment. First, it indicates that when depressiveness early after delivery is severe, it elevates mothers' anxiety and contributes to weak maternal attachment. Compared to mothers without depressiveness, mothers with depressiveness are depressed, less active, have tense expressions, and show an improper response to the child, which, in turn, affects the mother-child interaction and impacts child growth and development. [15] Second, women's poor mental health status might interfere with the overall care and importance given to children's nutritional demands of the infants. The feeding pattern, supplementary foods, and other nutritional factors might play a greater role in developing adiposity at one year of age.

Our study emphasizes addressing maternal mental health to prevent childhood obesity and stunting. Our study shows that depressiveness after delivery may pose a risk for infant adiposity and stunting at one year of age. Our findings underline the need for mental health screening programs for women during pregnancy and postpartum in government hospitals. This would help identify women at risk for depressiveness and provide appropriate counseling and support. We also suggest that screening for incident obesity during child immunization visits could be tapped to identify children at risk for NCD and counsel them on healthy lifestyle behaviours. Future research should focus on developing early screening and prevention interventions for maternal depressiveness and childhood obesity.

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Ethical standards

The institutional ethical review board (IEC) reviewed and approved the study at the Bangalore campus of IIPH, PHFI. Only participants willing to participate voluntarily and those who have provided written informed consent are enrolled.

Declaration of Competing Interest

The authors declare that they have no competing interests.

Data availability

The data set used in the current study is available from the corresponding author upon request.

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Appendix A. Appendix

Table A1. List of anthropometric parameters with 90th percentile cut-off levels.

Sl. No	Parameters	90% percentile cut-off
1	Chest circumference	47.5 cm
2	Waist circumference	47.1 cm
3	Hip Circumference	47.9 cm
4	MUAC	15.3 cm
5	Sum of skinfold thickness	25.4 mm

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychores.2023.111378.

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