

Maternal Mental Status and Pregnancy - Importance of the Missing Peace

Natalia Schlabritz-Loutsevitch^{1*} and Shailesh Bobby Jain^{2*}

¹Department of Obstetrics and Gynecology, Texas Tech University Health Sciences Center, USA

²Department of Psychiatry, Texas Tech University Health Sciences Center, USA

*Corresponding authors: Natalia Schlabritz-Loutsevitch, Department of Obstetrics and Gynecology, Texas Tech University HSC School of Medicine at the Permian Basin, USA, Tel: 432-703-5169; E-mail: Natalia.schlabritz-lutsevich@ttuhsc.edu

Shailesh Bobby Jain, Texas Tech University Health Science Center, 701 W, 5th St. Suite # 2207, Odessa, Texas 79763, USA, Tel: 432-703-5367; Fax: 432-335-1788; E-mail: bobby.jain@ttuhsc.edu

Rec Date: March 30, 2015; Acc Date: March 31, 2015; Pub Date: April 2, 2015

Copyright: © 2015 Schlabritz-Loutsevitch N, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Editorial

The Institute of Medicine (IOM) emphasizes that the future research should recognize priority reproductive health problems identify effective interventions to address these problems, implement the interventions [1]. Pregnancy is the unique, relatively short reproductive event with the far reaching consequences for the society. The central temporal organ of pregnancy - placenta represents the intermediate “brain” during development [2], performing functions of synthesis of neurotransmitters, which could not be produced by under-developed fetal brain machinery [3] and are required for maternal brain protection [4]. The striking example of such function is the production of serotonin by placenta: fetal brain is not capable to synthesize this molecule and therefore relies on placental sources for function [3]. Placenta responds to maternal conditions, e.g. stress, undernutrition, obesity, alcohol consumption though the mechanism of secretion of neuro-endocrine factors [5,6]. From the other hand reproductive hormones, such as progesterone derivative-allopregnanolone, play an important in maternal cerebral neuro-endocrine adaptation to pregnancy, especially in decreasing stress responses during the second half of gestation [4]. Such central mechanisms of maternal cerebral plasticity are critical for the pregnancy success. The strong association between maternal mental status and pregnancy outcome is well documented [7]. Maternal mental status might play more important role in pregnancy outcome compared to environmental conditions e.g. tobacco smoke and social factors [8,9]. The term “behavioral perinatology”, which has been coined decade ago [10], mirrors the importance of maternal mental status for the long-term neurocognitive development of the offspring and neurogenerative disorders in adults. However, the definition of the happy healthy pregnancy is vague and the interventions to improve positive pregnancy experience are limited. In this editorial we will discuss some aspects of the healthy happy pregnancy and describe the novel concept of paternal mental health.

Does the Prenatal Information is a Burden to a Happy Pregnancy?

The changes in the prenatal care and information available to the expectant mothers through the health care provides, media, availability of home-based fetal heart rate monitoring, 3D and 4D ultrasound images has brought up the question: Is the prenatal diagnosis of fetal status the friend of foe of the happy pregnancy? The answer might depend on maternal perception and the fetal status. The knowledge of the pre-natal diagnosis of the fetal anomaly might be viewed as a “theft the pleasures and joy of pregnancy” [11]. Especially in cases of the

lethal anomalies, the couples are facing the choice of termination after diagnosis or palliative care for a lethal anomaly [12]. The information about families who continue a pregnancy after receiving a prenatal diagnosis of congenital anomaly is lacking. The maternal grief, associated with the prenatal diagnosis of the lethal anomaly is described as a loss of healthy pregnancy, loss of perfect or ideal child, loss of sense of normalcy and loss of planned birth experience [13]. Less is known about the mental status of the women in pregnancies, associated with the diagnosis of a non-lethal anomaly [14], the expectant mothers are experiencing different emotional themes: “time is good, but it is also the enemy; you grieve, but you do not grieve; my baby’s not perfect, but (s) he’s still mine” [14], accompanied by the grief of “multiple losses, arrested parenting, my baby is a person, fragmented health care, disconnected family and friends, and utterly alone” [15].

The Happy Pregnancy and Offspring Health

There are evidence from animal experiments, that an increase in nurturing maternal behaviors (licking and grooming) following pup exposure to repeated neonatal pain appeared to prevent later elevation in Hypothalamo-Pituitary-Adrenal (HPA) activity [16]. The nurturing maternal behavior depends on maternal-infant bonding and is critical for the offspring survival. In the study, undertaken by Weijerman et al. the importance of maternal-infant bonding is underlined by the fact, that only 48% of the children with Down syndrome (DS) for example were breast-fed from birth, compared with 78% in the reference population [17]. Breast-feeding has specific advantages in children with DS in terms of stimulating the development of the oral motor system, authors suggested that the mothers of such children should be encouraged to breast-feed them. The critical role of materno-fetal and materno-infant attachments has been recently discussed in several publications [18-20]. There is evidence that during early childhood, exposure to maternal distress concurrently or during infancy, or to stress-related situations such as low socioeconomic status is related to elevated cortisol levels in children born full-term [21]. The high cortisol levels might associate with later externalizing and internalizing behavior problems [22] and poorer cognitive performance [23]. In preterm infants exposed to high concurrent maternal stress and overwhelming interactive maternal behaviors, higher basal cortisol levels were associated with poor focused attention [24]. Moreover, preterm delivery was associated with the weaker materno-fetal bonding [19,25]. In another study, the significant effect of maternal attitudes toward infant-rearing on the child behavior has been reported during first year of life, while the effect of the prenatal history (such as maternal emotional well-being) decreases during the first half

year of infancy [26]. In general the data regarding the perinatal attachment is sparse and the field is wide open for the research, only one publication underlies importance of prenatal care to the subsequent development of materno-fetal attachment [27]. Recent publications showed, that despite the adequate quality of postnatal care, the prenatal diagnosis of anomalies does make difference in subsequent offspring outcome. For example, in the study of Calderon et al. [28] The measured outcome – neurocognitive development of children with d-transposition of the great arteries (TGA) after surgical-correction showed that children diagnosed prenatally had better neurocognitive performance at age 4-6 years. Other studies found similar effects of prenatal diagnosis on improvement of the preoperative condition of neonates with TGA [29], decreased neonatal morbidity in terms of decreased use of preoperative ventilator, administration of antibiotics, cardiac catheterization, and emergency surgery [30].

How to Measure the Maternal Happiness in Pregnancy?

Several scores have been published to validate maternal mental status during pregnancy: The Hospital Anxiety and Depression rating scale (HAD-S, [31]), the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q, [32]) and the Post-partum Bonding Questionnaire (PBQ; Brockington [33]). The HAD-S is a 14-item self-report rating scale that measures both anxiety and depression. It has been found to be a reliable instrument for assessing symptom severity and causes of anxiety disorders and depression in both somatic, psychiatric and primary care patients and in the general population [34]. The Q-LES-Q is a 16-item self-report questionnaire that evaluates overall enjoyment and satisfaction with physical health, mood, work, household and leisure activities, social and family relationships, daily functioning, sexual life, economic status, overall well-being and medications [32]. PBQ is a 25-item self-report scale that is designed to detect disorders of the mother-infant relationship. The PBQ has been found to provide diagnosis of various forms of abnormal mother-infant relationships with high inter-rater reliability and reliability of consensus diagnosis. Strong sensitivity and high internal consistency have also been demonstrated [35].

Maternal Happiness and Paternal Depression: a Novel Concept

Paternal postpartum depression is a public health concern as it is associated with increased community care costs, psychological and mental health consults, and outpatient hospital services [36]. It has been established that the presentation of post partum depression in men correlates strongly with female partner's depressive symptoms [37-39]. Other findings show that fathers may develop depression only after the mother develops depression [40]. Male partners have reported to feel less supported and experience fear, confusion, frustration, helplessness, anger, a disrupted family, and uncertainty about the future [36]. However, additional factors that make fathers predisposed or at risk for developing postpartum depression have not been extensively studied.

There is empirical evidence to support use of a number of scales to detect paternal postpartum depression. The EDPS scale (Edinburgh Postnatal Depression Scale) was found to have a sensitivity of 89.5% and a specificity of 78.2% in detecting paternal postpartum depression [41]. Just as mothers may be screened with the EPDS, a new survey to be completed by mothers has been proven to be effective at screening

the father for postpartum depression. The EPDS-partner survey is one that can be answered by the mother at routine visits and could potentially allow physicians an avenue to reach out to men. In a study conducted by Fisher, Kopelman and O'Hara [42] the EPDS-P was found to be a very useful tool in screening for paternal depression via maternal report. Paternal self-report via the EPDS and IDS (Inventory of Depressive Symptomatology) correlated significantly with EPDS-P report by their partners [42]. Paternal suicidality was not able to be detected via the EPDS-P and therefore needs further exploration.

Another screening tool, the Gotland Male Depression Scale (GMDS), was proven to be effective in detection of depression within six weeks postpartum in a study by [43]. The GMDS may be a more effective tool at screening for paternal depression in the postnatal period because it is tailored to address the various ways men experience depression [43]. Results from this study also found that one-fifth of those experiencing depression were not detected by EPDS but detected by GMDS. Madsen Effectively, since fathers may be reluctant to fill depression questionnaires, the EPDS-partner scale could be filled by new mothers and provide an initial screen for potentially depressed fathers; the GMDS could be a confirmatory screen filled out by the men themselves [44].

Few studies have investigated the effects of paternal depression on the family functioning unit in the postnatal period. Ramchandani et al. [45,46] investigated the association between paternal postpartum depression and family/child functioning in the first 3 months of the child's life. Depressed fathers reported higher levels of dissatisfaction, lower levels of affection, and lower levels of relationship satisfaction when compared to nondepressed fathers. There were few differences in infant temperaments as perceived by fathers with only weak evidence that depressed fathers perceived their infants as more distressed. This study implicates that parental disharmony could have deleterious effects on caring for the baby and subsequent child development [47]. The authors also investigated the effects of postpartum depression when children were followed until 3.5 years old; children, especially boys, scored higher in three problem areas including emotional issues, conduct, and hyperactivity [45,46]. In addition, when children were followed until 7years old, a correlation was found between paternal depression at 8weeks postpartum and a psychiatric diagnosis in children. Twelve percent of children were diagnosed with ADHD, oppositional defiant/conduct disorder, or anxiety and depressive disorders [45,46].

Other reviews of literature have linked negative outcomes in parental habits towards raising their children in parents with depression. Recently, Paulson has done studies to show that depressed mothers and fathers engage in less positive interactions with children particularly in enrichment activities like reading, telling stories and singing songs. Indeed, the depression that a father may suffer during the postpartum period does have an effect on the parent-child relationship [48]. Davis et al. found also found that depressed parents were less likely to read to their children and report a higher incidence of spanking as discipline [49].

Compared to maternal postpartum depression, treatment specific for paternal postpartum depression is at present ambivalent. Psychotherapy targeted at interpersonal family relations & parenting is indicated for mild depression, while a combination of psychotherapy and pharmacotherapy is recommended for moderate to severe depression. It is recommended that therapy treatment for depressed fathers should be focused on addressing the specific cause of the depression [39]. This could include parenting classes, relationship

conflict resolution, or support groups for fathers. Pharmacotherapy consists of the use of antidepressants including SSRIs, SNRIs, TCAs, or atypical antipsychotics depending on specific patient factors. SSRIs are most commonly used based on their efficacy and relative lack of serious side effects as assessed in numerous trials [50]. Recovery is more likely with combination therapy [51,52]. Fathers with psychosis and/or suicidal ideation should be referred to a hospital and consulted with a psychiatrist.

Limitations and Gaps

Many facets about paternal postpartum depression remain to be explored. Few studies have assessed specific differences in the prevalence, presentation, diagnostic and treatment methods for the management of paternal postpartum depression and its association with family functioning and overall family well-being. It remains to be seen if race and ethnic origin can be important factors for the development of paternal postpartum depression; hence, studies need to be conducted in more diverse samples at different time points of pregnancy to extensively discover risk factors for the development of paternal postpartum depression. Screening for paternal postpartum depression may pose a more difficult challenge than screening mothers. For one, fathers' involvement in postnatal care visits and well-child exams tend to vary depending on career and availability to accompany the mother. Healthcare is structured in a way that the mother and child are at the center of attention for these visits and as such, there are numerous ways to screen mothers, but very few that have been developed just for fathers.

References

1. Outcomes CoI B (2003) Improving Birth Outcomes: Meeting the Challenge in the Developing World. The National Academies Press, USA.
2. Hsiao EY, Patterson PH (2012) Placental regulation of maternal-fetal interactions and brain development. *Dev Neurobiol* 72: 1317-1326.
3. Bonnin A, Goeden N, Chen K, Wilson ML, King J, et al. (2011) A transient placental source of serotonin for the fetal forebrain. *Nature* 472: 347-350.
4. Brunton PJ, Russell JA, Hirst JJ (2014) Allopregnanolone in the brain: protecting pregnancy and birth outcomes. *Prog Neurobiol* 113: 106-136.
5. Brocato B, Zoerner AA, Janjetovic Z, Skobowiat C, Gupta S, et al. (2013) Endocannabinoid crosstalk between placenta and maternal fat in a baboon model (*Papio* spp.) of obesity. *Placenta* 34: 983-989.
6. Schlabritz-Loutsevitch N, Ballesteros B, Dudley C, Jenkins S, Hubbard G (2007) Moderate maternal nutrient restriction, but not glucocorticoid administration, leads to placental morphological changes in the baboon (*Papio* sp.). *Placenta* 28: 783-93.
7. Staneva A, Bogossian F, Pritchard M, Wittkowski A (2015) The effects of maternal depression, anxiety, and perceived stress during pregnancy on preterm birth: A systematic review. *Women Birth*.
8. Hayes BA (2010) From 'postnatal depression' to 'perinatal anxiety and depression': key points of the National Perinatal Depression Plan for nurses and midwives in Australian primary health care settings. *Contemp Nurse* 35: 58-67.
9. Wadhwa PD (2005) Psychoneuroendocrine processes in human pregnancy influence fetal development and health. *Psychoneuroendocrinology* 30: 724-743.
10. Wadhwa PD, Glynn L, Hobel CJ, Garite TJ, Porto M, et al. (2002) Behavioral perinatology: biobehavioral processes in human fetal development. *Regul Pept* 108: 149-157.
11. Sandelowski M, Jones LC (1996) Healing fictions: stories of choosing in the aftermath of the detection of fetal anomalies. *Soc Sci Med* 42: 353-361.
12. Wool C (2011) Systematic review of the literature: parental outcomes after diagnosis of fetal anomaly. *Adv Neonatal Care* 11: 182-192.
13. Lalor JG, Begley CM, Galavan E (2008) A grounded theory study of information preference and coping styles following antenatal diagnosis of foetal abnormality. *J Adv Nurs* 64: 185-194.
14. Hedrick J (2005) The lived experience of pregnancy while carrying a child with a known, nonlethal congenital abnormality. *J Obstet Gynecol Neonatal Nurs* 34: 732-740.
15. Côté-Arsenault D (2007) Threat appraisal, coping, and emotions across pregnancy subsequent to perinatal loss. *Nurs Res* 56: 108-116.
16. Côté-Arsenault D (2007) Threat appraisal, coping, and emotions across pregnancy subsequent to perinatal loss. *Nurs Res* 56: 108-116.
17. Walker CD, Kudreikis K, Sherrard A, Johnston CC (2003) Repeated neonatal pain influences maternal behavior, but not stress responsiveness in rat offspring. *Brain Res Dev Brain Res* 140: 253-261.
18. Weijerman ME, van Furth AM, Vonk Noordegraaf A, van Wouwe JP, Broers CJ, et al. (2008) Prevalence, neonatal characteristics, and first-year mortality of Down syndrome: a national study. *J Pediatr* 152: 15-19.
19. Okasha T, Elkholy H (2013) A synopsis of recent influential papers published in psychiatric journals from the Arab world (2012). *Asian J Psychiatr* 6: 606-608.
20. Pisoni C, Garofoli F, Tziella C, Orcesi S, Spinillo A, et al. (2015) Complexity of parental prenatal attachment during pregnancy at risk for preterm delivery. *J Matern Fetal Neonatal Med*.
21. Alhusen JL, Hayat MJ, Gross D (2013) A longitudinal study of maternal attachment and infant developmental outcomes. *Arch Womens Ment Health* 16: 521-529.
22. Palmer FB, Anand KJ, Graff JC, Murphy LE, Qu Y, et al. (2013) Early adversity, socioemotional development, and stress in urban 1-year-old children. *J Pediatr* 163: 1733-1739.
23. Essex MJ, Klein MH, Cho E, Kalin NH (2002) Maternal stress beginning in infancy may sensitize children to later stress exposure: effects on cortisol and behavior. *Biol Psychiatry* 52: 776-784.
24. Lupien SJ, King S, Meaney MJ, McEwen BS (2000) Child's stress hormone levels correlate with mother's socioeconomic status and depressive state. *Biol Psychiatry* 48: 976-980.
25. Tu MT, Grunau RE, Petrie-Thomas J, Haley DW, Weinberg J et al. (2007) Maternal stress and behavior modulate relationships between neonatal stress, attention, and basal cortisol at 8 months in preterm infants. *Dev Psychobiol* 49: 150-64.
26. Lederman RP (2011) Preterm birth prevention: a mandate for psychosocial assessment. *Issues Ment Health Nurs* 32: 163-169.
27. Sirvinskiene G, Zemaitiene N, Zaborskis A, Markuniene E, Jusiene R (2012) Infant difficult behaviors in the context of perinatal biomedical conditions and early child environment. *BMC Pediatr* 12: 44.
28. Fonagy P, Steele H, Steele M (1991) Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Dev* 62: 891-905.
29. Calderon J, Angeard N, Moutier S, Plumet MH, Jambaqué I, et al. (2012) Impact of prenatal diagnosis on neurocognitive outcomes in children with transposition of the great arteries. *J Pediatr* 161: 94-98.
30. Kumar RK, Newburger JW, Gauvreau K, Kamenir SA, Hornberger LK (1999) Comparison of outcome when hypoplastic left heart syndrome and transposition of the great arteries are diagnosed prenatally versus when diagnosis of these two conditions is made only postnatally. *Am J Cardiol* 83: 1649-53.
31. Levey A, Glickstein JS, Kleinman CS, Levasseur SM, Chen J, et al. (2010) The impact of prenatal diagnosis of complex congenital heart disease on neonatal outcomes. *Pediatr Cardiol* 31: 587-597.
32. Zigmond AS, Snaith RP (1983) The hospital anxiety and depression scale. *Acta Psychiatr Scand* 67: 361-70.
33. Stevanovic D (2011) Quality of Life Enjoyment and Satisfaction Questionnaire-short form for quality of life assessments in clinical practice: a psychometric study. *J Psychiatr Ment Health Nurs* 18: 744-750.
34. Brockington IF, Fraser C, Wilson D (2006) The Postpartum Bonding Questionnaire: a validation. *Arch Womens Ment Health* 9: 233-242.

35. Bjelland I, Dahl AA, Haug TT, Neckelmann D (2002) The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *J Psychosom Res* 52: 69-77.
36. Van Bussel JC, Spitz B, Demyttenaere K (2009) Anxiety in pregnant and postpartum women. An exploratory study of the role of maternal orientations. *J Affect Disord* 114: 232-42.
37. Musser AK, Ahmed AH, Foli KJ, Coddington JA (2013) Paternal postpartum depression: what health care providers should know. *J Pediatr Health Care* 27: 479-485.
38. Goodman JH (2004) Paternal postpartum depression, its relationship to maternal postpartum depression, and implications for family health. *J Adv Nurs* 45: 26-35.
39. Paulson JF, Bazemore SD (2010) Prenatal and postpartum depression in fathers and its association with maternal depression: a meta-analysis. *JAMA* 303: 1961-1969.
40. Nazareth I (2011) Should men be screened and treated for postnatal depression? *Expert Rev Neurother* 11: 1-3.
41. Cox J (2005) Postnatal depression in fathers. *Lancet* 366: 982.
42. Edmondson OJ, Psychogiou L, Vlachos H, Netsi E, Ramchandani PG (2010) Depression in fathers in the postnatal period: assessment of the Edinburgh Postnatal Depression Scale as a screening measure. *J Affect Disord* 125: 365-368.
43. Fisher SD, Kopelman R, O'Hara MW (2012) Partner report of paternal depression using the Edinburgh Postnatal Depression Scale-Partner. *Arch Womens Ment Health* 15: 283-288.
44. Madsen SA, JT (2007) Paternal depression in the postnatal period assessed with traditional and male depression scales. *Int J Mens Health Gender* 4: 26-31.
45. Melrose S (2010) Paternal postpartum depression: how can nurses begin to help? *Contemp Nurse* 34: 199-210.
46. Ramchandani PG, O'Connor TG, Evans J, Heron J, Murray L, et al. (2008) The effects of pre- and postnatal depression in fathers: a natural experiment comparing the effects of exposure to depression on offspring. *J Child Psychol Psychiatry* 49: 1069-1078.
47. Ramchandani PG, Stein A, O'Connor TG, Heron J, Murray L, et al. (2008) Depression in men in the postnatal period and later child psychopathology: a population cohort study. *J Am Acad Child Adolesc Psychiatry* 47: 390-398.
48. Ramchandani PG, Psychogiou L, Vlachos H, Iles J, Sethna V, et al. (2011) Paternal depression: an examination of its links with father, child and family functioning in the postnatal period. *Depress Anxiety* 28: 471-477.
49. Paulson JF, Dauber S, Leiferman JA (2006) Individual and combined effects of postpartum depression in mothers and fathers on parenting behavior. *Pediatrics* 118: 659-668.
50. Davis RN, Davis MM, Freed GL, Clark SJ (2011) Fathers' depression related to positive and negative parenting behaviors with 1-year-old children. *Pediatrics* 127: 612-618.
51. Cipriani A, Furukawa TA, Salanti G, Geddes JR, Higgins JP, et al. (2009) Comparative efficacy and acceptability of 12 new-generation antidepressants: a multiple-treatments meta-analysis. *Lancet* 373: 746-758.
52. Cuijpers P, Dekker J, Hollon SD, Andersson G (2009) Adding psychotherapy to pharmacotherapy in the treatment of depressive disorders in adults: a meta-analysis. *J Clin Psychiatry* 70: 1219-1229.