

INFLUENCE OF MATERNAL MENTAL HEALTH ON BREASTFEEDING AND INFANT MICROBIOME

Authors: Lourdes Benlliure^{1,3}, Maria Mambloña¹, Mireia Julià^{2,3}, Carlota Alcover^{2,3}, Eva Padrosa^{2,3}, Esther Insa^{2,3}, Tanit Sánchez^{2,3,4}, Susana Vargas⁵, Carmen Hernández⁵, Maia Brik⁴, Roser Palau-Costafreda^{2,3}

1: Hospital del Mar, Barcelona, Spain. 2: ESIMar Escuela Superior de Enfermería Hospital de Mar, Universitat Pompeu Fabra-affiliated, Barcelona, Spain. 3: SDHEd Social Determinants and Health Education Research Group and IMIM Hospital del Mar Medical Research Institute, Barcelona, Spain. 4: VHIR Vall d'Hebron Institut de Recerca, Barcelona, Spain. 5: Research Group in Nutrition and Mental Health (NUTRISAM), Universitat Rovira i Virgili, Tarragona, Spain.



BACKGROUND

Postpartum is known as a period of special vulnerability related to maternal mental health. Globally, one in five women is estimated to develop postpartum depression¹ Elevated cortisol levels change composition in gut microbiota too, particularly a reduction in beneficial bacteria and higher cortisol levels in breast milk were associated with maternal stress and anxiety.²

OBJECTIVES

This proposal will explore the interactions between breastfeeding, maternal mental health and infant microbiome, proposing new directions for research:

MENTAL HEALTH AND BREASTFEEDING

To explore the impact of maternal stress during the perinatal period on the type and duration of breastfeeding.

MENTAL HEALTH AND HUMAN MILK MICROBIOME

To study changes on human milk in relation with childbirth indicators and perinatal mental health on breastfeeding mothers from Hospital del Mar.

MENTAL HEALTH AND INFANT MICROBIOME

To evaluate the association between breastfeeding and infant microbiome during the first six months of life.



HYPOTHESIS

Maternal stress and depression during the perinatal period affect negatively on breastfeeding, exclusively breastfeeding comes down, increasing the practice of introducing commercial milk formula (CMF) and stopping breastfeeding sooner.

Mental health disorders as postpartum depression, dystocic childbirth, traditional separation and mixed breastfeeding methods, change milk composition, variates predominant species on human milk and have an effect on mother and infant health during postpartum.

Breastfeeding, especially when complemented by a supportive caregiving environment and high maternal satisfaction, is associated with changes in microbiome in infants and mums during the first months of life, in contrast to other forms of infant feeding or situations involving maternal mental health challenges.

METHODS

STUDY DESIGN

This study is inside Mindmum project, a multicenter longitudinal study about mental health during pregnancy and postpartum.



POPULATION

Pregnant women over 18 years old, recruited between 12-14 weeks, and their offspring up to 24 months postpartum.

Participating centres:

VARIABLES AND OUTCOMES

- 1 We collect perinatal stress perception, Type of birth, Antibiotic use, Diet/exercise/meditation adherence.
- 2 We analyze milk samples in relation to redcap surveys results.
- 3 We study mum and babies microbiome, inside postpartum assessment.

VARIABLES

Maternal:
Intention to Breastfeed
Initiation of Breastfeeding
Perception of Support During Breastfeeding
Supplementation and Breastfeeding
Problems or Difficulties During Breastfeeding
Time Between Birth and Start of Infant Feeding
Use of Antibiotics
Obstetric outcomes

Offspring:
Neonatal outcomes at birth
Infant Feeding
Skin-to-Skin Contact
Infant's Weight
Infant's Weight at Discharge
Postpartum Neonatal Pathology

Biomarkers:
Data from wearables



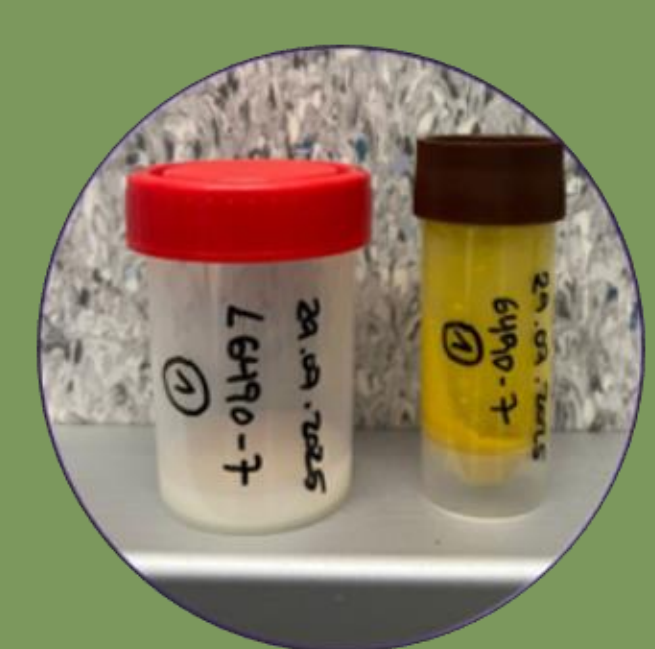
Personal and obstetric:
Maternal and neonatal health data



Self reported questionnaires and evaluations



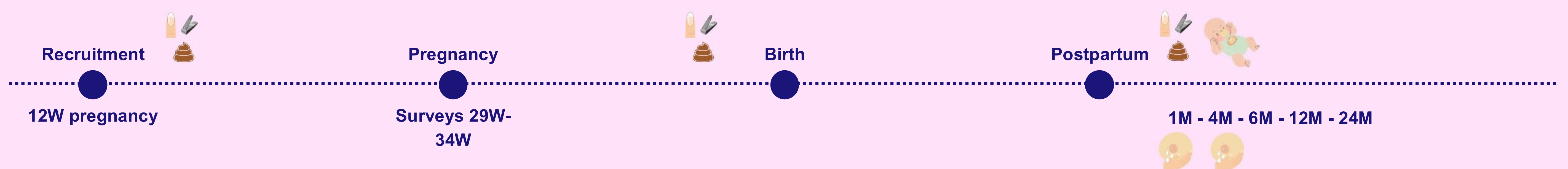
Microbiome:



PROGRESS

Collecting milk and stool samples from mums and babies
Storing samples at -80 degrees in a special freezer
Checking the results of the questionnaires in Redcap
Completing birth and postpartum data

During next months we will start milk and stool microbiome study.



REFERENCES

- (1) Shimao M, Matsumura K, Tsuchida A, Kasamatsu H, Hamazaki K, Inadera H. Influence of infants' feeding patterns and duration on mothers' postpartum depression: a nationwide birth cohort —The Japan Environment and Children's study (JECS). *J Affect Disord.* 2021;285:152
(2) Kortensniemi M, Slupsky CM, Aatsinki AK, Sinkkonen J, Karlsson L, Linderborg KM, Yang B, Karlsson H, Kailanto HM. Human milk metabolome is associated with symptoms of maternal psychological distress and milk cortisol. *Food Chem.* 2021 Sep 15;356:129628. doi: 10.1016/j.foodchem.2021.129628. Epub 2021 Mar 20. PMID: 33836356.