

# SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

**Action number:** COST Action CA 18211

**STSM title:** “Women’s experiences in different maternity care settings and fundamentals of biomechanics in pregnancy and childbirth: A knowledge-exchange research program”.

**STSM start and end date:** 18/10/2022 to 29/10/2022

**Grantee name:** Roser Palau Costafreda

## **PURPOSE OF THE STSM:**

(max.200 words)

In recent years, there has been an increase in health interventions performed during the healthcare processes, with childbirth being one of them. The use of childbirth interventions, and especially cesarean sections, has been increasing, accompanied by variability between centers and regions around the world. Routine use of childbirth interventions also leads to unintended consequences for the health of women and newborns. In the context of reproductive care and childbirth, the United Nations published in 2019 a report, aiming to apply a human rights-based approach to different forms of mistreatment and violence that women experience in reproductive health services with a focus on obstetric violence. The literature points to the potential negative effect of the type of treatment women receive during pregnancy and childbirth on mental health after childbirth. These effects impact not only on health, but on social relationships and ultimately on society in general.

Understanding childbirth physiology and the reduction of interventions may result in better satisfaction levels with the childbirth experience, having immediate and long-term impact on their health and relation with the newborn.

The main purpose of this STSM is to understand and improve knowledge about childbirth physiology and its biomechanics to improve women’s experience at birth.

Additional objectives:

- To improve analytical skills and documentary analysis as an Early Career Investigator.
- To build relationships with other researchers to create new collaborations and strengthen existing networks.

## **DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS**

(max.500 words)

From the first day of the STSM I had daily scheduled meetings with Dr Anastasia Topalidou at the end of the day (5pm-6pm) to discuss and have feedback from daily activities and organization of the following day. We were working closely together on a daily basis, while organizing additional networking activities and events.

18/10/21- Meeting with the host (AT). Welcome and induction. Familiarization with facilities and procedures. Induction to thermal imaging application in maternity care.

Group meeting with host, Dr (AT), early career researcher midwife (AEV), PhD student (JC), Dr NS and GT (Prof in Perinatal Health and our Director of Research). Discussion of different approaches to birth research.

19/10/21- Involvement in SKEL project (project team member). Full day of script development for recordings with PPI group and recording of different situations. Recording 4 different situations with two different methods for biomechanics analytics. Meeting and discussion of

projects with a Postdoc researcher, discussion of qualitative methodology to implement when studying women's experience at birth. Networking and planning for future research.

20/10/21- Postgraduate Seminar Day. THRIVE research centre, University of Central Lancashire. Hybrid event connecting researchers investigating birth and neonates. Presentation of my PhD work and preliminary outcomes. The presentation was entitled: "*Birthing Better: women's experiences in different maternity care settings*" and feedback from senior researchers.

Preliminary outputs from the SKEL project, conducted the previous day, were also presented. Meeting and discussion of the 'Birthing Better' project with a postdoc researcher. Feedback and qualitative methodology learning.

21/10/21- In depth day understanding thermal imaging and hands on training with device use to implement a dual study between UK and Spain. Critical review of thermal imaging articles applied to maternity care.

22/10/21- Critical review of qualitative studies related to "BioLET: Biomechanics of Labour - Observational and Ethnographic Data Collection Tool. v1.0." Creation of a collaboration plan for future projects between Spain-UK. Actions for continuation of activities, collaboration, and future research projects.

23/10/21- Attendance at Lancashire Science Festival.

24/10/21- Work and development of the BioLET tool (UK & Spanish versions). Activities related to the INBIRTH (International Research Network for the study of Biomechanics in PRenancy and ChildbirTH).

25/10/21- Critical review of articles with thermal imaging applications to analyze emotions. Design and planification of study to use thermal imaging during antenatal and postnatal period to understand bonding between woman and newborn and woman and caregivers.

26/10/21- Preparation of records for the systematic scoping review

27/10/21- Systematic scoping review

28/10/21- Systematic scoping review

29/10/21- Systematic scoping review

### **DESCRIPTION OF THE MAIN RESULTS OBTAINED**

The STSM's aim and objectives were fully obtained.

In addition to the main aims and objectives, this highly trans-disciplinary STSM project resulted in the creation of a plan for future projects between the two counties and expansion of the ECR network working in the field of women experiences during birth.

Main results obtained:

1. Conduction and completion of the SKEL project (A Synchronized Azure Kinect-based tracking system for the biomechanical Evaluation of Labour: A proof of concept study), were I actively participated as a project team member (from the design of the methodology to the execution of the project). SKEL uses different sensors and AI to extract biomechanical data during labour. During this STSM we were able to test several scenarios and two video analysis techniques. SKEL is a groundbreaking project that aims to develop the very first completely non-invasive and non-destructive imaging technique for the recording of the biomechanics of childbirth.
2. Introduction to fundamentals of thermal imaging application for use in medical research. I had the chance to be introduced to the use of thermal imaging, to conduct independently similar projects in Spain. In addition, I was introduced to thermal imaging as a tool for research in psychology and detection of emotions, reactions, behaviors.
3. Systematic scoping review on methods that have been used for the assessment of fetal movements during pregnancy. I participated in the second stage of screening and charting. Continuation of activities, after the end of the STSM period.
4. Knowledge on biomechanics of pregnancy and childbirth, methods used and limitations etc. Establishment of the base to conduct relevant studies in Spain (knowledge exchange).
5. Expansion of network (both research and clinical).
6. Development of the BioLET tool (UK-Spanish version).
7. Improvement of transdisciplinary research skills.

**FUTURE COLLABORATIONS (if applicable)**

- SKEL project second stage (grant application for feasibility study)
- Board member of d INBIRTH Network (International Research Network for the study of Blomechanics in PRegnancy and ChildbirTH). Expansion of network and related activities. Use of the BioLET to design an observational study in Spain using an ethnographic approach to understand birth environment and biomechanics of labour.
- Development of a thermal imaging project to conduct pioneering activities in my home country.
- Continue the systematic scoping review until publication.