Pregnancy-related lumbopelvic pain (PLPP) affects 50-90% of pregnant women and often persists during the postpartum period. It limits the ability to return to work, sports, and daily activities, significantly impacting the quality of life and making PLPP a leading cause of sick leave during and after pregnancy. Despite its high prevalence, PLPP is frequently dismissed as a normal part of pregnancy, and current preventive and treatment strategies remain insufficient due to the limited understanding of its multifactorial etiology.

This prospective cohort study aims to address this knowledge gap by identifying proprioceptive, fear-related, and inflammatory predictors for PLPP onset during pregnancy and its persistence postpartum. Specifically, three main objectives will be addressed: (1) to investigate changes in these factors over time and their differences between women with and without PLPP, (2) to examine correlations among these factors in women with PLPP, and (3) to determine their predictive value for developing PLPP during pregnancy and its persistence postpartum.

To achieve this, 211 primiparous women without PLPP at the time of inclusion will be recruited and assessed during the 1st and 3rd pregnancy trimesters and at six weeks and nine months postpartum. Data collection includes sociodemographic variables, lifestyle determinants, and a clinical evaluation of PLPP. Proprioceptive factors are evaluated through postural responses to back and ankle muscle vibration (a strong stimulus for proprioceptors) and body perception tests. Furthermore, fear-related factors are evaluated using task-specific questions, and various questionnaires such as the Pain Catastrophizing Scale and the Depression Anxiety Stress Scale-21. In addition, inflammatory markers, including serum cytokines and C-reactive protein, are analysed using flow cytometry.

Multivariate models will be used to identify predictors of PLPP, while canonical correlation and logistic regression will explore interactions between proprioceptive, psychological, and inflammatory variables. This protocol aims to establish a predictive framework for PLPP, paving the way for future targeted interventions to improve maternal health outcomes.

Currently, the study has been submitted to the Ethics Committee Research UZ/KU Leuven (EC Research, S69463), and data collection is expected to start in February 2025.