

Digital-assisted obstetric self-imaging beyond the due date: The eSTORK feasibility study

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Objective: The study aims to assess the feasibility of digital self-monitoring in pregnant women beyond their expected delivery date ($\geq 40+0$ weeks) using handheld ultrasound devices at home. We will evaluate whether self-administered sonographic imaging, including fetal heart rate monitoring and amniotic fluid assessment, with remote transmission to the providing healthcare professional, can be a viable alternative to multiple short-term follow-up visits at the hospital.

Methods: This monocentric, randomized, two-arm parallel feasibility study will include 50 participants. Twenty-five women will perform self-ultrasound at home, while 25 will receive standard in-hospital ultrasound monitoring. In this study, the Pulsenmore™ Home Ultrasound device was applied, providing real-time imaging while the obstetrician was simultaneously online, enabling telemetric ultrasound monitoring. Feasibility outcomes include image quality, adherence, user satisfaction, and the ability to assess fetal well-being remotely.

Results: This is an ongoing study in which patients are still being recruited. However, feasibility has been demonstrated with the first five patients who were able to perform the digital ultrasound monitoring at home beyond the scheduled time. Due to the size of the abdomen in advanced pregnancy, the technique was challenging but still feasible. In all cases, we were able to obtain some indications and impressions of the fetal head and abdominal circumference and retrospective measurements of the biometry could have been possible. It was definitely achievable to evaluate a biophysical profile, including heart rate, fetal movements and amniotic volume.

Conclusion: If the results from the first patients are confirmed, digital self-imaging could empower patients, reduce unnecessary hospital visits, and thus ease the burden on maternity wards. In addition, the technology could possibly be extended to high-risk pregnancies throughout their entire course. This approach could thus contribute to a more sustainable, resource-efficient, and barrier-free (in terms of access to healthcare) model of prenatal care, especially in regions with limited resources.



Figure 1 Example of a digitally guided self-performed ultrasound examination

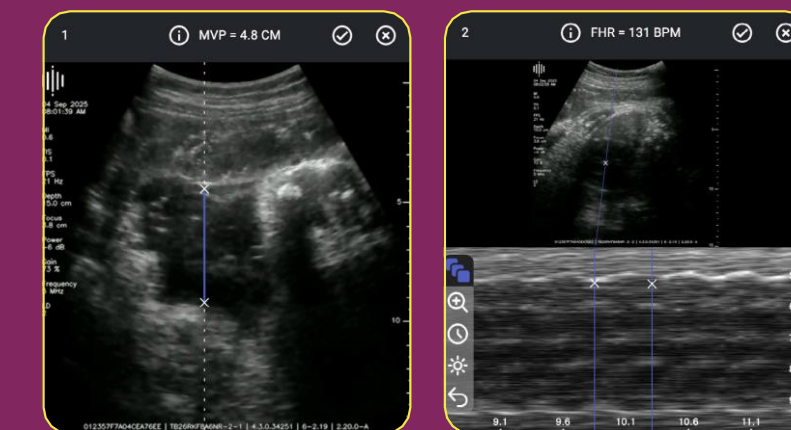


Figure 2 Assessment of the biophysical profile (Single deepest pocket of amniotic fluid and evaluation of the fetal heart rate)



Figure 3 Subsequent feasibility of fetal biometry