Datamama, bringing pregnancy research into the future: Design, development, and evaluation of a citizen science pregnancy mobile application

Eva Gerbier[1], Yvan Vial[2], Jardena Puder[3], Olivier Le Dizes[4], Magali Andrey[4], Amar Arhab[4], Antje Horsch[5,6], Valérie Avignon[6], Camille Deforges[6], Déborah Fort[6], Michael Ceulemans[7,8,9], Celine Fischer[10], Isabelle Henriot[10], Diana Patricia Goncalves Pereira Pinto[10], Léo Pomar[2,11], Guillaume Favre[2], Françoise Damnon[2], Hélène Legardeur[2], Didier Page[12], Nohan Budry[12], Juergen Ehrensberger[12], Olivier Liechti[12], Alice Panchaud[1,13,14], David Baud[2,13]

[1]Service of Pharmacy, Lausanne University Hospital and University of Lausanne, Lausanne, Schweiz, [2]Materno-Fetal and Obstetrics Research Unit, Department "Woman-Mother-Child", Lausanne University Hospital, Lausanne, Schweiz, [3]Obstetric service, Department Woman-Mother-Child, Lausanne University Hospital, Lausanne, Schweiz, [4]Endocrinology Diabetes and Metabolism Unit, Department of medecine, Lausanne University Hospital, Lausanne, Schweiz, [5]Neonatology Service, Department Woman-mother-child, Lausanne University Hospital, Lausanne, Schweiz, [6]Institute of Higher Education and Research in Healthcare, University of Lausanne, Lausanne, Schweiz, [7]Teratology Information Service, Pharmacovigilance Centre Lareb's, Hertogenbosch, Niederlande, [8]Katholieke Universiteit Leuven, Department of Pharmaceutical and Pharmacological Sciences, Leuven, Belgien, [9]L-C&Y, KU Leuven Child and Youth Institute, Leuven, Belgien, [10]Clinic of Neonatology, Department "Woman-Mother-Child", Lausanne University Hospital, Lausanne, Schweiz, [11]University of Applied Sciences and Arts Western Switzerland, School of Health Sciences (HESAV), Lausanne, Schweiz, [12]School of Engineering and Management (HEIG-VD), University of Applied Sciences and Arts Western Switzerland, Yverdon-les-Bains, Schweiz, [13]Equally contributed to the work, [14]Institute of Primary Health Care (BIHAM), University of Bern, Bern, Schweiz

Background: Pregnancy mobile applications (apps) have grown in popularity over the past decade, with some being used to promote study recruitment or health behaviors. However, no app serves as an all-in-one solution for collecting general data for research purposes and providing women with useful and desirable features. **Aim:** To create and develop a Swiss pregnancy mobile app as an innovative means to collect research data and provide users with reliable information. **Methods:** Determining the key features of the app involved a review of the literature and assessment of popular apps in the Swiss AppStore. A team of engineers developed the app, which includes a pregnancy timeline, questionnaires for data collection, medical articles and a checklist with appointment reminders. The content was written and reviewed by obstetricians and other experts. The questionnaires are distributed based on the participant's gestational age, by a chatbot. The project was authorized by the ethics commission in the canton of Vaud. Recently, an online survey of ten questions, advertised on Datamama's home screen, was conducted to assess the participants' use of the app (27.11.- 19.12.2022). **Results:** A review of 84 articles and 25 popular apps showed the need for a comprehensive pregnancy app. The development of Datamama took two years and included the creation of 70 medical articles and 29 questionnaires covering 300 variables. After six months of launch, there were 800 users with a 73% average participation rate in the questionnaires. Sixty-five women completed the survey, with 70.8% using the app once to multiple times per week. The primary reason for using the app was to help research by answering the questionnaires (67% rated it first), followed by access to medical information (54% rated it second). Women rated the information as clear, understandable, and interesting (median mark 9/10). 98.5% trusted data handling on the app. The average grade for recommending the app was 8/10, with suggestions for increasing medical content and adding individualized content based on gestational age. **Conclusion:** Datamama is the first pregnancy app to address the needs of both patients and researchers. Initial feedback from participants was positive, highlighting future challenges for success. Future work will consist in improving the app, validating the data and use it to answer specific pregnancy-related research questions. **Conflict of Interest:** No

Acute postoperative pain, not always the complication you expect

Valerie Fuchs, Christina Sattmann, Fehres Olav, Seraina Schmid

Spital Grabs, Gynäkologie und Geburtshilfe, Grabs, Schweiz

Introduction: The most likely reason for acute abdominal pain shortly after curettage is due to perforation of the uterus. However, the following case demonstrates that one must not leave the possibility of pre-existing illnesses and events of other origins out of consideration. **Case Report:** Following prenatal diagnosis of trisomy 21 – verified with chorionic villus biopsy – a 39-year old woman in the 15th gestational week of pregnancy chose to undergo induced abortion with 400 µg Misoprostol. Subsequently we performed a curettage due to retained placental tissue. Her medical history showed two previous first trimester miscarriages. Due to essential hypertension, the patient was prescribed ASS 100 mg as pre-eclampsia prophylaxis. Three hours after the curettage, the patient experienced sudden-onset right flank pain and an abrupt deterioration in general condition. A FAST ultrasound revealed a 10 cm echogenic retroperitoneal mass along the right hemiabdomen. Emergency CT-scan further revealed an active bleed within a formerly undiagnosed renal angiomyolipoma (RAML) of the right kidney. The patient was transferred to the nearest interventional radiology department for embolisation. Her post-embolisation hemoglobin count dropped from 107 g/l to 74 g/l. Five days following intervention, the patient was discharged. A follow-up MRI three months later showed a stable 16 cm RAML. Before future pregnancy, a prophylactic re-embolisation should be considered. **Conclusion:** Renal angiomyolipoma is a rare tumor with an incidence of 0.13 - 0.3%. Women are affected four times more often than men. Research suggests the average size of tumors is approximately 10 cm and that tumor size alone does not correlate