SCIENTIFIC RESEARCH PROJECT PROPOSAL – TEMPLATE – PLS WRITE DOWN IN ENGLISH

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Title of SRP project: Patient acceptability of AI-assisted transvaginal ultrasound systems for endometriosis diagnosis
Location of SRP project: The project will be conducted within an existing collaboration of the Medical Informatics department, eHealth Living and Learning lab research group and the Gynaecology department of the Amsterdam UMC. The student will be positioned within the Medical Informatics department.

Introduction
Endometriosis is a chronic disease affecting approximately 10 percent of women of reproductive age. A large delay in diagnosing endometriosis remains, and interventions should be implemented to reduce this diagnostic delay. Studies suggest that interventions should focus on improving the knowledge and the skills of healthcare professionals and developing good non-invasive diagnostic aids [1,2]. Transvaginal ultrasound (TVUS) has potential as a diagnostic modality, as it is a rapid technique that is more cost-effective than surgery or MRI. However, it is highly operator dependent and accuracy outcomes for diagnosing endometriosis largely vary between expert and non-expert TVUS operators [3, 4]. Artificial Intelligence (AI) technologies are posed as potential solutions to increase the diagnostic value of TVUS by providing assistance to healthcare professionals when conducting TVUS. Hereby, improving its diagnostic ability and reduce diagnostic delays. Most studies in this field so far, have focused on the technical feasibility of this technique. However, its technical feasibility alone would not be sufficient to effectively implement it into clinical practice. For effective adoption of interventions it is also important to consider the needs of patients in relation to the introduction of such a novel technology.

Description of the Problem and SRP Project
Firstly, the difficulties in the diagnostic trajectory, particularly related to the use of TVUS, should be better understood, and how these challenges affect endometriosis patients themselves. This will be achieved through a review of existing literature. Through this, potential use cases for AI-assisted TVUS to improve the diagnostic trajectory will be derived.

In addition to this, it is important to explore what factors influence patients' acceptability of an AI-assisted TVUS system intended to address challenges in the endometriosis diagnostic pathway. The ScanVio system will be used as a use case to discuss their acceptability needs [5]. ScanVio is a real-time AI-assisted guidance system for TVUS that is currently under development. A preliminary evaluation study of the system will be conducted within the Amsterdam UMC, where patients will undergo a TVUS examination supported by the ScanVio system. Interviews will be conducted following this examination to determine what factors influence patient acceptability. These results will further inform the design of AI-assisted TVUS systems to ensure its acceptability to patients.

Research objective and research questions
RQ1: What challenges in the endometriosis diagnostic pathway, particularly in the use of transvaginal ultrasound, exist which could be potentially addressed by AI systems?

- This research question will be addressed through a literature review. The student is expected to perform the searches and extract and synthesize the results.

RQ2: How do patients perceive the acceptability of an AI-assisted transvaginal ultrasound system to address current challenges in the endometriosis diagnostic pathway?

- This research question will be answered through semi-structured interviews with endometriosis patients. The student will be involved in data collection by conducting interviews, analysing the data and reporting on it.

Both the ELLLA group and the Department of Gynaecology hold non-WMO umbrella approvals for observational research, including semi-structured interviews. Ethical approval for the SRP project data collection can therefore be obtained under these existing approvals.

Expected results

This project will result in a scientific manuscript involving a minimum of two chapters: a literature review to identify challenges in the endometriosis diagnostic pathway and an experimental study to define patients' acceptability needs to AI-assisted TVUS systems. At least one of these could be adapted to an academic paper to be published in a scientific journal or presented at a relevant conference.

The outcomes of the study will result in actionable recommendations to ScanVio developers to improve the product's design to ensure it aligns with patient needs. These findings will be of relevance to a larger audience working on AI solutions to support endometriosis diagnosis.

References

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2. Bourdon M, Chloé Maignien, Géraldine Giraudet, J Estrade, Émilie Indersie, Céline Solignac, et al. Investigating the medical journey of endometriosis-affected women: results from a cross-sectional web-based survey (EndoVie) on 1,557 French women. Journal of Gynecology Obstetrics and Human Reproduction. 2023 Dec 1;102708–8.
3. Tolsgaard MG, Ringsted C, Dreisler E, Klemmensen A, Loft A, Sorensen JL, et al. Reliable and valid assessment of ultrasound operator competence in obstetrics and gynecology. Ultrasound in Obstetrics & Gynecology. 2014 Mar 12;43(4):437–43.
4. Fraser MA, Agarwal S, Chen I, Singh SS. Routine vs. expert-guided transvaginal ultrasound in the diagnosis of endometriosis: A retrospective review. Abdominal Imaging. 2014 Sept 19;40(3):587–94.
5. Scanvio Medical [Internet]. Scanvio.com. 2026 [cited 2026 Sept 10]. Available from: https://www.scanvio.com

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