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Engaging Stakeholders in a Substantive and Transparent Way When Implementing Ethics in Medical AI: A Qualitative Study

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Abstract. Implementing ethics is a complex problem requiring stakeholders engagement. Engaging in fair and transparent way with stakeholders is part of the complexity. This qualitative study applies principles and techniques of Critical Systems Thinking while engaging with stakeholders in the context of implementing ethics for a COVID-19 AI. In a reflexive manner, the study examines the participatory process and its output leading to recommendations.

Keywords. ethics, AI, healthcare, machine learning, implementation, participatory process, systems thinking

1. Introduction

The COVID-19 crisis created an opportunity for the rapid development and deployment of medical AI apps such as population monitoring or symptom checkers. Implementing ethics in medical AI is a complex issue for which a Critical Systems Thinking approach is a good fit [1]. This study explores how to do so.

2. Methods

We set up a stakeholders' engagement process that was egalitarian, inclusive, and transparent involving all stakeholders of a fictitious COVID-19 app. The fictitious app was inspired by real COVID-19 apps. Participants were recruited through the social and professional network of the researchers and were representative of patients, clinicians, and AI technology stakeholders. The participatory process consisted of three online 90-minute conversation groups, during which participants were presented with a visual diagram of the patient-clinician-AI system and asked to map the flow of knowledge between the agents. Individual exit interviews were conducted to understand the participant's experience of the participatory process. The qualitative analysis covered both the outcome and the process itself.

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3. Results

Twelve males and thirteen females participated in the conversation groups. Median age was 54 years spanning 29 to 82 years. Half were living in rural areas, half in urban settings spanning diverse cultural and professional backgrounds. Most participants reported a positive experience with the participatory process, with six of them feeling empowered that they made a difference. One perceived barrier to participation was a lack of knowledge about AI. The participatory process was shaped as dialogues which were respectful and offered an opportunity to gain a better understanding of each participant's position. Knowledge transfer happened among participants.

Nine themes emerged from the analysis: (1) identification of new stakeholders, (2) distinction made between hard knowledge (that could be generated by a machine) and soft knowledge (that is qualitative and includes emotions or feelings), (3) the importance of the readiness of the different agents of the system for giving or receiving the information for effective communication, (4) the importance of considering how the information and knowledge could influence the recipient by design and whether it could be deceptive or coercive, (5) risks associated with data privacy breaches need to be considered, (6) values embedded in the system should be made transparent, (7) considering the unintended consequences of the system such as what happens to those unable or unwilling to use the system, or the environmental cost of the system, can reveal ethical issues, (8) the purpose of the system can be perceived differently depending on the stakeholders and there is a need to check for the alignment of these perceptions, (9) the importance of the custodians of the data and the process of implementing ethics.

4. Conclusion

A participatory process anchored in Critical Systems Thinking is well suited to implementing ethics in medical AI. The consultative process should happen at inception and be carried on regularly with any update and should strive for diversity of backgrounds and inclusiveness of all stakeholders. Asking to map the flow of knowledge through the different agents of the system using a visual representation is an effective means to surface assumptions and ethical issues. A set of six questions has been developed that should be used during the consultative process and to guide the AI designer and developer.

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