Revisiting Patient-Clinician Interaction in 2022: Challenges from the Field and Opportunities for Future Research

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Abstract. The goal of this workshop is to revisit the concept of patient-clinician interaction, a classical concept of CSCW research in healthcare. While the CSCW community has been working on patient-clinician interaction for decades, the last years have seen a number of changes to care provision, motivated by the COVID-19 pandemic, the strong uptake of remote care technologies, or the introduction of patient-generated data technologies. Recent advancements in Artificial Intelligence (AI) in healthcare also promise to impact patient-clinician interactions as we know them. For all these reasons, the workshop will engage in participatory discussions to take stock, analyse challenges from the field, reflect on opportunities for technologies, and craft future research agendas for CSCW research in healthcare.

Background and Motivation

The CSCW community has had an interest in healthcare since its early days. The first CSCW papers were published on the second edition of the ACM CSCW conference (Gorry et al., 1988; Engestrom et al., 1988), and the inaugural ECSCW conference published two papers related to healthcare (Bødker and Grønbæk, 1989; Pettersson, 1989). In the years that followed, CSCW welcomed a consistent stream of studies focused on different aspects of healthcare (Fitzpatrick and Ellingsen, 2013). Patient-clinician interaction has been an important topic for the CSCW community, with studies looking at the communication issues, shared decision making practices, impacts of using technologies in medical appointments, or remote care provision; focusing on supporting strong partnerships between clinicians, patients, and their caregivers (Aarhus et al., 2009).

More recently, researchers employed patient-generated data to increase self-awareness, disease monitoring, and clinical communication or decision-making (Bardram and Frost, 2018; Cerna et al., 2020; Figueiredo et al., 2020). Patient-generated data has influenced patient-clinician interactions introducing data work before, during, and after the medical appointments, supporting distributed collaborative care (Islind et al., 2019) and revealing social and emotional experiences of patients and caregivers in the process (Kaziunas et al., 2017; Costa Figueiredo et al., 2021). Data collection has been facilitated by consumer wearable devices and mobile health applications (Nunes et al., 2015), with patient-generated data and technologies becoming collaborative sense-making tools (Costa Figueiredo et al., 2017) and boundary negotiating artifacts between patients and clinicians (Chung et al., 2016). Another stream of research focused on supporting asynchronous and distributed interactions (Andersen et al., 2011), highlighting the importance of designing technology features that support the alignment of concerns among patients and clinicians (Andersen et al., 2019).

The COVID-19 pandemic has brought additional challenges to patient-clinician interaction. Early in the pandemic, many medical appointments in the Europe, United States, and the rest of the world, had to be made over telephone or videoconference technologies, for minimising the risk of transmission (Frick et al., 2021; Raj et al., 2022). Videoconference technologies enabled care to take place, but also contributed to shifting expectations and re-adapting the role of the involved stakeholders (Bhat et al., 2021). On the one hand, clinicians perceived that virtual medical appointments saved time for additional diagnosis and treatment planning (Frick et al., 2021). On the other hand, video medical appointments were perceived as not good enough for patients as the technology did not enable them to feel the same level of empathy and care (Bhat et al., 2021) leaving them worried that their symptoms might be dismissed (Raj et al., 2022). Patients with less technology literacy or access were especially affected (Raj et al., 2022), thus families, volunteers, or municipality workers mobilised to support them in training or using videoconference and other care-related technologies (Miele and Nunes, 2022). Having said this, the COVID-19 pandemic has

continued to evolve, and care provision is provided as a mix between in-person and remote care provision, which merits additional study.

Recent advancements in AI also hold the promise to improve patient-clinician interactions. AI-based systems are expected to support diagnosis through chatbots (Athota et al., 2020), to enable patients to find patterns in their symptoms and engage in self-care (Hollis et al., 2017; Desai et al., 2019), or to support clinical care by passively "listening" to conversations during medical appointments (Langston, 2019). Communicating the role and ways of operating of these systems will be complex in many cases, leaving clinicians with an additional task in their hands (Schiff and Borenstein, 2019). The introduction of AI agents in the patient-clinicial interaction is also likely to impact the distribution of responsibility and accountability, and new occupations may be needed to curate and serve as communication bridges between patients, clinicians, and medical information records (Nov et al., 2021). Nevertheless, there are many open questions. For example, will patients consider AI agents as an extension to the clinician's role and perspective, or, on the contrary, as a partner to the patient ready to support preparations for care encounters? Will the AI agent be a team player, or an individual member that is the source of conflict or issues? All of these questions are worth discussing and the workshop is interested in welcoming research that focuses on them.

Workshop Goal and Themes

The goal of this workshop is to revisit the concept of patient-clinician interaction in 2022. The time when we organise the workshop is characterised by the COVID-19 pandemic, a strong uptake of remote care technologies, and thriving research developments in AI in healthcare, all of which promise to change healthcare provision and infrastructures. Revisiting the concept of patient-clinician interaction at this time will help uncover challenges from the field and opportunities for technology, as well as to craft future agendas for CSCW research in healthcare.

The workshop will promote a participatory design approach involving researchers, patients, and clinicians (rheumatologists). While researchers will present their position papers at the start of the workshop, all participants will be encouraged to discuss the position papers. In the second part of the workshop, researchers will engage with patients, to discuss their experiences and practical challenges while using or interacting with healthcare services, and with clinicians, to discuss their experiences and challenges in patient-monitoring, adding other layers to the discussions on patient-clinician interactions.

Possible themes for position papers include, but are not limited to:
- Technology-supported patient-clinician interaction during COVID-19;
- Patient-generated data and patient-clinician interaction;
- AI-in-the-loop within patient-clinician interaction;

- Intended and unintended consequences of technology-supported patient-clinician interaction, including emotional work, and other types of invisible labour;
- Ethical considerations in technology-supported patient-clinician interaction;
- Patient-led research and its contributions to technology-supported patient-clinician interaction;

Pre-Workshop Plans

Workshop promotion

We will create a website for the workshop that will support the promotion and archival of workshop contributions and results. Before the workshop, the website will display the call for papers, workshop plan, and brief biographies of the workshop organisers. After the workshop, the website will also include the position papers from participants, short notes about the session, and pictures from the workshop.

To promote the workshop widely, we will distribute the call through social media as well as scientific mailing lists from CSCW, Human-Computer Interaction (HCI), Design, and Science and Technology Studies (STS).

Position paper submission and selection

We encourage submissions from researchers, engineers, designers, data scientists, social scientists, clinicians, and patients, who are interested in the workshop topic. Position papers can describe or discuss case studies, experiments, prototypes, ethnographic fieldwork or qualitative studies, theoretical accounts, literature reviews, and critical reflections. Position papers should be submitted using the ECSCW template, and have up to 4 pages (excludes references).

Our plan is to disseminate the call for papers in early march. The submitted papers will be lightly reviewed by the workshop organisers. Position papers will be selected based on their quality, originality, and fit to the workshop topic. Notifications to authors will be sent by the end of April and camera-ready versions of the position papers will become available at the workshop website two weeks before the workshop.

Video presentation of position papers

Authors of accepted position papers will prepare 5-minute videos about their work. The videos will be added to the workshop website two weeks before the event, to enable participants to start reflecting about the work of authors before the workshop takes place. The videos from the position papers will also enable website visitors to become familiar with the work presented and discussed at the workshop.

Participants, equipment, and materials

The workshop will host up to 20 participants, including organisers, patients, and clinicians. Required equipment includes a projector. Organisers will bring workshop materials like flip-charts, post-its, pens, or paper.

Workshop Activity Overview

Position paper presentations: The workshop will start with presentations by position paper authors. The authors from each paper will have five minutes for making a presentation and five minutes for answering questions from the audience. Following these presentations, the organisers will facilitate a large group discussion focusing on issues, challenges, or opportunities that were raised in different position papers and corresponding presentations.

Group discussions with patients and clinicians: Following the lunch break, researchers will seat in small groups together with a patient with a rheumatic condition or a rheumatologist. The goal of discussions will be to enable the exploration of issues, challenges, or opportunities for patient-clinician interaction. After one hour, researchers will change group, enabling most participants to speak with both patients and clinicians. Moreover, as patients and clinicians watched researchers presentations it will also be possible to discuss how the technologies or study results, presented earlier in the workshop, would be applicable to their everyday lives or clinical work.

Large group discussion At the end of the workshop, the groups will share their insights with the larger group. Organisers will note down main issues, challenges, and opportunities for future research, and will encourage reflection from the group about them. Finally, the organisers will discuss the next steps and organize with participants how to proceed (e.g., regarding the summary blog post).

Group dinner: The workshop will finish with an optional group dinner to continue discussions and foster collaborations between workshop participants.

Post-Workshop Plans

The position papers and corresponding videos will be uploaded to the workshop website. Following the authorisation of participants, we will also share pictures or short videos from the workshop. Finally, we will be writing a blog post summarising the conversations for the EUSSET.eu blog or Medium.

Workshop Organizers

Francisco Nunes is a senior researcher at the Human-Centred Design department at Fraunhofer Portugal AICOS. His research focuses on understanding and designing technologies for self-care and informal care contexts.

Nervo Verdezoto is a Senior Lecturer at the School of Computer Science and Informatics at Cardiff University. He has investigated the invisible work across multiple care settings. His recent work explores how care infrastructures and socio-technical and cultural practices influence maternal health in the Global South.

Tariq Osman Andersen is a associate professor of Health Informatics at the Department of Computer Science, University of Copenhagen. His current research focuses on co-design and socio-technical evaluation of AI-based tools for improving patient-clinician interaction in cardiac care.

Stina Matthiesen is an assistant professor in Software, Data, People and Society at the Department of Computer Science, University of Copenhagen. Her research focuses on analysing and co-designing data-driven technologies for patient-clinician collaboration and clinical decision support in cardiac care.

Chia-Fang Chung is an assistant professor in Informatics at Indiana University Bloomington. Her research examines how the design of ubiquitous computing and personal informatics systems can support relationships, health behaviour, and care.

Sun Young Park is an associate professor at the University of Michigan in the Stamps School of Art and Design and the School of Information. Her research uses design ethnography to study patient engagement, patient–provider collaboration, patient-centred health technology, and technology adaptation.

Woosuk Seo is a Ph.D. candidate at the University of Michigan in the School of Information. His current work focuses on designing technology to enhance health communication and collaboration between child patients with chronic illness and their parents.

Paul Studenic is a rheumatologist and post-doctoral researcher at the Medical University of Vienna and Karolinska Institute. His research focuses on outcomes in inflammatory rheumatic diseases, with a special emphasis on methodology, patient perspective and digital health.

Acknowledgments

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