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Personal tracking devices may hold information crucial for diagnosing, preventing, and managing illnesses. A literature review and interview study with doctors were conducted to identify the opportunities and barriers for using self-tracked data in clinical decisions.

Health and Wellbeing Data

The popularity of mobile apps and consumer devices for tracking personal information has created **detailed data sources** about health and wellbeing. These benefits have led calls to investigate using consumer technology within healthcare to support clinical decision making, in turn leading to **improved patient outcomes and reduced healthcare costs**.

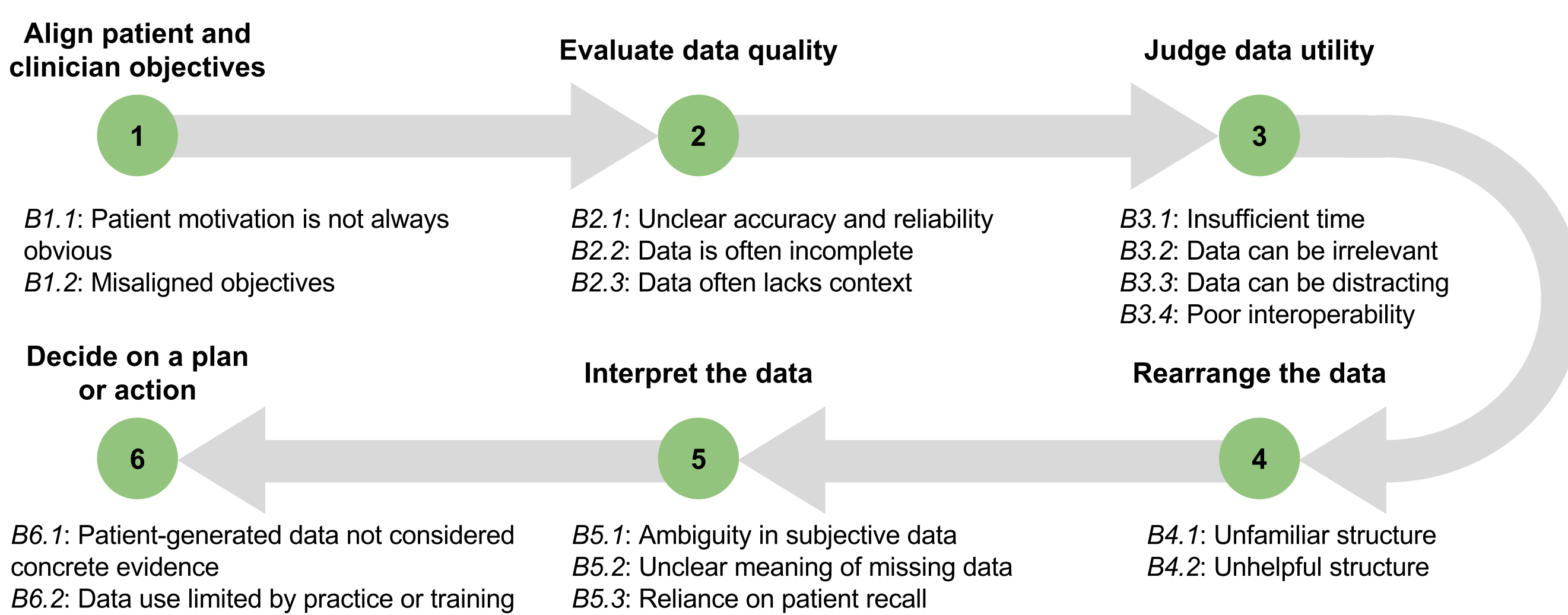
Literature review

A literature review was conducted to establish a list of existing studies of self-tracked data in clinical settings. **22 studies** were identified, spanning across Computer Science and Health Science.

Interview study

13 clinicians across several clinical roles, including cardiology, general practice, nursing, and oncology were interviewed about their experiences with self-tracked data and how such data could help their practice.

Clinical workflow for using self-tracked data



Filling gaps between consultations

"Patients say, 'I may get one episode a week,' which doesn't give you a proper timeframe. I don't think when people think back on it they get an accurate reflection of what it is. So **having it diarised** on a daily basis is a **better and accurate way of evaluating that timeframe**."
- Participant 1 (Oncologist)



Treatment planning

"It comes down to symptoms, and therefore symptoms is your only target for treatment. So **that data is the only parameter that's going to let me decide whether to use treatment or not**. And if you have treated them, whether it's worked."
- Participant 2 (Cardiologist)

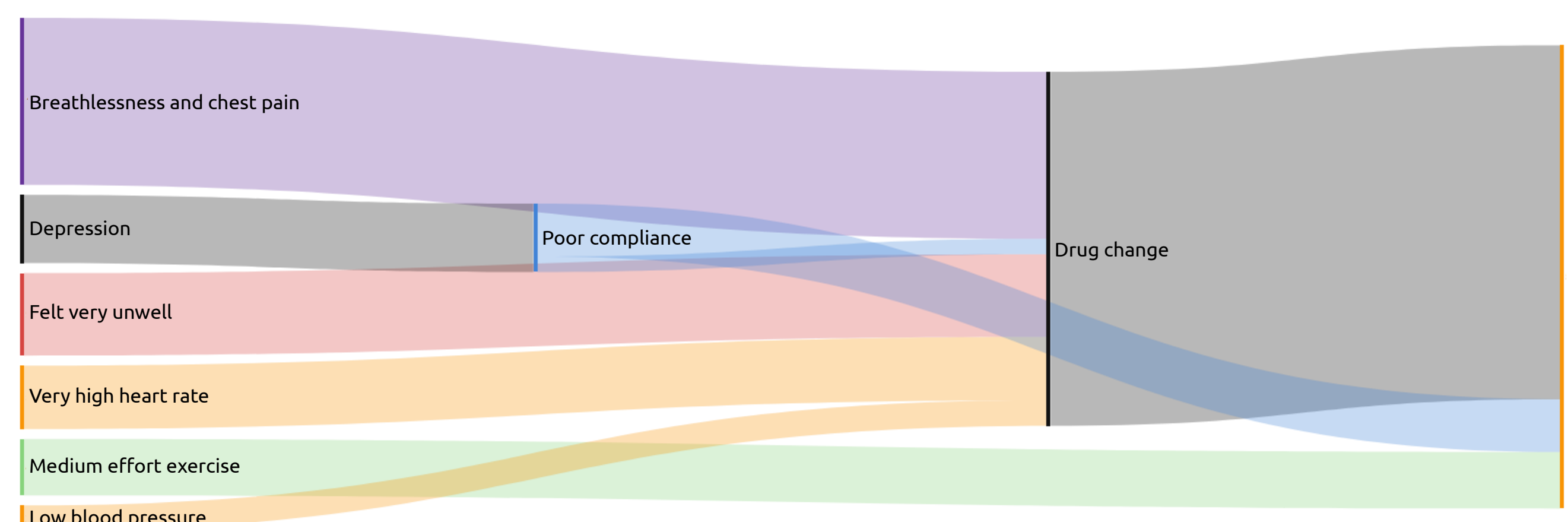


Doctor-patient collaboration

"It allows you to sit down with the patient and say, 'if we look at your symptoms, you rank low compared to others. Your potential gain from this procedure is less than for others. But if you accept that, and understand the risks, then that's fine.' It gives you a stronger way of **counselling the patient**."
- Participant 3 (Cardiologist)

How can self-tracked data be represented?

The below visualisation has been co-designed with 4 clinicians (3 cardiologists, 1 nurse). It consists of a Sankey diagram which shows what might have caused the event on the right (in this case, palpitations). This diagram thus condenses a lot of information into a single diagram.



Conclusions and Future

Self-tracked data may be useful for clinicians as **additional evidence** when making clinical decisions. Difficulties exist in ensuring that this data is of sufficient quality and represented in a standard way.

The next stage of this research will be to identify techniques for using self-tracked data effectively in clinical settings. This will take the form of a co-design activity, in which clinicians will help design a tool for using self-tracked data. This will help identify how self-tracked data could be used in a future data-driven and preventative healthcare.