Treatment Dashboard- a visual representation of patients' treatment regimens

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Research Background: Shared decision making facilitates and promotes Patient Centred Care (PCC). Decisions that combine a patient's values along with expert opinions tend to be superior to the ones that are solely made by health care professionals. However, patients often face communication barriers when engaging in treatment conversations with health care professionals. The shift from a doctor-centred to a patient-centred care approach creates a need to translate clinical information into a form that can be easily understood by patients so that they can actively participate in decisions about their own care. Presenting information visually is a very powerful way to communicate complex information in many fields but has not yet been explored for the presentation of health-related information for patients to participate in shared care. This study explores the role visuals can play in a patient's journey by designing and evaluating a visual representation of patients' treatment regimens called a 'Treatment Dashboard'.

Research objective: The purpose of this research is to discover how health information can be presented visually so that it can be easily understood by patients. The study sets out to produce a personalised visual aid called a Treatment Dashboard that can be used by patients as well as healthcare professionals. The main objective of this study is to gain an understanding of participants' perspective on a health information visualization diagram viz the Treatment Dashboard. A second objective is to understand factors that impact the use of health information visualisation.

Research design: The framework proposed by Design Science researchers for Information Systems by Peffers et al. (2007) was adopted to create and evaluate an artifact that was a set of visual aids. The study progressed in three phases: In the first phase, Multi-Disciplinary Meetings (MDMs) that follow a group decision making model with some similarities to shared care collaborations, were observed. MDMs have been identified as a useful setting that leads to a better treatment plan for the patient. The brief and incomplete verbal narration of a patient's journey by a clinician to MDM participants was identified as a limitation that could be addressed by summarising the journey visually; In the second phase of the study, diagrams for four different stages in a patient's journey were designed and evaluated. These were called: Snapshot Diagram, Diagnosis Diagram, Strength of Evidence Diagram and Patient Pathway Diagram. The

diagrams were analysed using a subset of Gestalt principles (Koffka, 2013). This was augmented with a qualitative analysis of interview data obtained by showing diagrams to participants from varied backgrounds; The themes that emerged from the qualitative analysis of the four Diagrams guided the third phase of the study where one of the Diagrams namely Snapshot Diagram which showed patient's treatment at a given point in time was redesigned and relabeled The Treatment Diagram. This diagram was enhanced, elaborated, and converted into an online, web-based Treatment Dashboard. The Treatment Dashboard was analysed and revised using Nielsen's user interface design Heuristics (Nielsen, 1994). Further, a Treatment Dashboard for a hypothetical case study was developed. The Treatment Dashboard was shown to participants from different age groups and varied backgrounds. Interview data was analysed thematically to understand how participants interpret and use treatment information presented visually.

Results: The study identified factors that impact the usage and adoption of visuals in healthcare. Some key findings were: Visualisation can help patients and health care professionals; Diagrams should be designed for a specific audience; a diagram that can be useful for a Healthcare Professional may not be suited to the needs of patients; the purpose for which the diagram is designed is identified as an important factor in a user's understanding of the visual; A User's health literacy level impacts their interpretation of the visual; Visualisation may lead to an increase in time while the users are learning to use the diagram.

Contributions:

The study illustrates the role visualisations can play in shared decision making by educating patients about their condition and/or treatment. It contributes to the literature on the patient's usage of visualisation in shared decision making by studying the factors that impact its usage. It identifies the key aspects of the usability issues that are related to the user's interpretation of the visual elements and the user's comprehension of the overall visual. It also provides new insights into factors that should be taken into consideration while designing patient-centric visualisations.

References

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