How artificial intelligence decision aids inform shared decision-making from clinicians' and patients' perspectives? A systematic review.

Nehal Hassan[1], Robert Slight[2], Kweku Bimpong[1] Daniel Weiand[2], Akke Vellinga[3], Graham Morgan[4], Sarah Slight[1]

1 School of Pharmacy, Newcastle University, 2 Newcastle Upon Tyne Hospitals NHS Foundation Trust, Freeman Hospital, 3 School of Medicine, National University of Ireland Galway, 4 School of Computing, Newcastle University

Introduction: Shared decision-making process requires patients to take part in their health decision with their clinicians. However, this process requires tools to inform patients about making clinical decisions. Artificial intelligence decision aids offer an individualized and tailored information for patients that can inform giving consent and increase patients' confidence about their decisions..

Objective: To evaluate clinicians and patients' perceptions about informing shared decision-making processes through artificial intelligence decision aids in different medical and surgical specialties.

Inclusion and exclusion

Qualitative, quantitative, and mixed method study designs were included.

Search databases

MEDLINE, CINAHL, SCOPUS, and Embase to conduct this systematic review.

Registration

PROSPERO database registration:(CRD42020220320)

Data synthesis and extraction

- (CASP) Checklist was used for quality and bias assessment,
- Narrative synthesis → due to the subjective nature of the collected data

Central diagram

Increasing patients confidence and compliance about their health decisions

Promoting patients engagement and communication with their clinicians

Informing the clinical decision making of patients for consenting

Influence of AI decision aids on SDM

Improving satisfaction levels of patients towards their overall clinical care

Presenting risk estimated in an interactive and individualised manner

Barriers (1): Variations in health and technology literacy levels among patients

Barriers (2): Missing critical information from decision aids

Discussion and conclusion

- Artificial intelligence decision aids are effective clinical decision support tools for both patients and clinicians.
- Multiple factors affected the perceptions of clinicians such as the clinical setting (i.e. inpatient or outpatient) and speciality (i.e. medical or surgical).
- Patients' variability may affect the size of patient population benefited by decision aids, leading to patients' inequality.

Future directions

- These perceptions can guide the early development phases of decision aids to meet patients' and clinicians needs
- Future studies should identify the type and amount of information in decision aids that is considered sufficient to inform decision making from clinicians' perspective.

Contact: n.a.m.hassan2@newcastle.ac.uk @Nehal_Hassan_