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An Exploration of Hospital Prescribers' Perceptions of Design Features of Electronic Health Record Systems and the Impact on Decision-Making: A Multi-Site Qualitative Study

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INTRODUCTION

- Electronic health record (EHR) systems are widely implemented worldwide[1].
- Hospital prescribers play a central role in patient care and rely heavily on EHR systems for various tasks, including prescribing.
- Their daily interactions with EHR systems provide valuable insights into effective system design features and areas for improvement.
- Limited evidence exists on hospital prescribers' perspectives on different EHR system designs and their impact on prescribing decision-making.
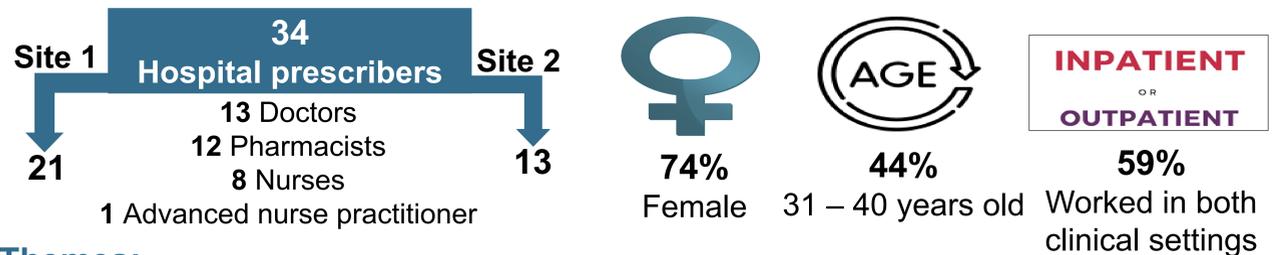
AIM

To explore hospital prescribers' opinions and experiences of different designs of EHR systems and their impact on prescribing decision-making in a hospital setting.

METHOD

- **Study design:** Qualitative study.
- **Clinical settings:** Two large NHS teaching hospitals in London.
- **EHR systems:** Well-established commercial integrated EHR systems.
- **Study duration:** From May to July 2023.
- **Participants:** Medical, nursing, and pharmacy prescribers.
- **Data collection:** Pre-interview survey (for demographics and clinical and EHR experiences), followed by semi-structured interviews (audio-recorded and transcribed verbatim).
- **Data analysis:** inductive thematic analysis approach outlined by Braun and Clarke [2].
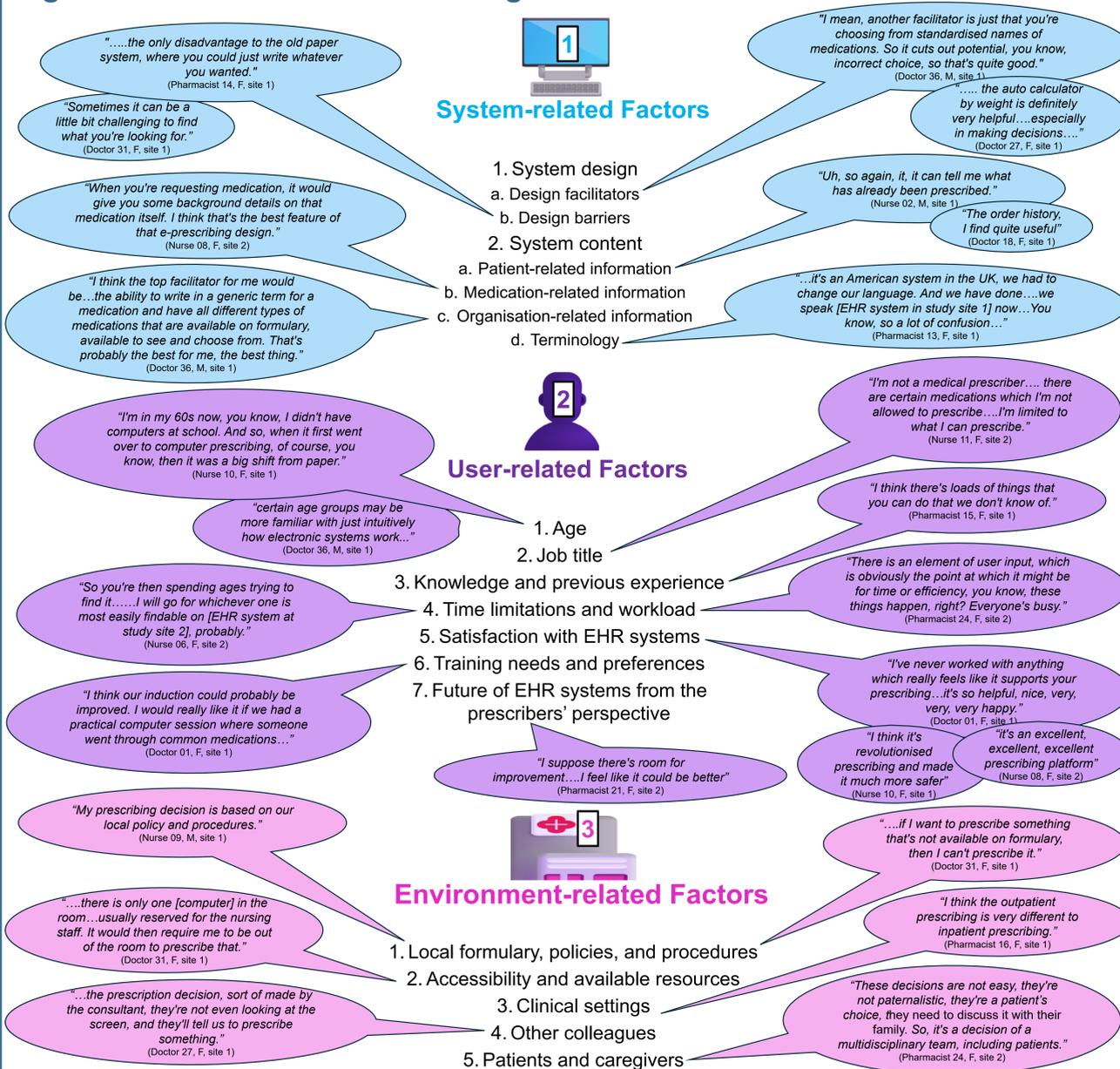- **Ethical approval:** UCL Research Ethics Committee (Project ID 21517.001).

RESULTS

Participants' demographics:

Site 1 — **34 Hospital prescribers** — Site 2
13 Doctors
12 Pharmacists
8 Nurses
1 Advanced nurse practitioner
21 / 13

- **74%** Female
- **44%** 31 – 40 years old
- **59%** Worked in both clinical settings
- **INPATIENT OR OUTPATIENT**

Themes:

Three key groups of factors were identified along with subthemes that they perceived to influence prescribing decision-making, as shown in Figure 1.

Figure 1: Themes and subthemes generated from semi-structured interviews

1 System-related Factors

1. System design
   a. Design facilitators
   b. Design barriers
2. System content
   a. Patient-related information
   b. Medication-related information
   c. Organisation-related information
   d. Terminology

- "…..the only disadvantage to the old paper system, where you could just write whatever you wanted." (Pharmacist 14, F, site 1)
- "Sometimes it can be a little bit challenging to find what you're looking for." (Doctor 31, F, site 1)
- "When you're requesting medication, it would give you some background details on that medication itself. I think that's the best feature of that e-prescribing design." (Nurse 08, F, site 2)
- "I think the top facilitator for me would be…the ability to write in a generic term for a medication and have all different types of medications that are available on formulary, available to see and choose from. That's probably the best for me, the best thing." (Doctor 36, M, site 1)
- "I mean, another facilitator is just that you're choosing from standardised names of medications. So it cuts out potential, you know, incorrect choice, so that's quite good." (Doctor 36, M, site 1)
- "….. the auto calculator by weight is definitely very helpful….especially in making decisions…." (Doctor 27, F, site 1)
- "Uh, so again, it, it can tell me what has already been prescribed." (Nurse 02, M, site 1)
- "The order history, I find quite useful" (Doctor 18, F, site 1)
- "…it's an American system in the UK, we had to change our language. And we have done….we speak [EHR system in study site 1] now…You know, so a lot of confusion…" (Pharmacist 13, F, site 1)

2 User-related Factors

1. Age
2. Job title
3. Knowledge and previous experience
4. Time limitations and workload
5. Satisfaction with EHR systems
6. Training needs and preferences
7. Future of EHR systems from the prescribers' perspective

- "I'm in my 60s now, you know, I didn't have computers at school. And so, when it first went over to computer prescribing, of course, you know, then it was a big shift from paper." (Nurse 10, F, site 1)
- "certain age groups may be more familiar with just intuitively how electronic systems work…" (Doctor 36, M, site 1)
- "So you're then spending ages trying to find it……I will go for whichever one is most easily findable on [EHR system at study site 2], probably." (Nurse 06, F, site 2)
- "I think our induction could probably be improved. I would really like it if we had a practical computer session where someone went through common medications…" (Doctor 01, F, site 1)
- "I'm not a medical prescriber…. there are certain medications which I'm not allowed to prescribe….I'm limited to what I can prescribe." (Nurse 11, F, site 2)
- "I think there's loads of things that you can do that we don't know of." (Pharmacist 15, F, site 1)
- "There is an element of user input, which is obviously the point at which it might be for time or efficiency, you know, these things happen, right? Everyone's busy." (Pharmacist 24, F, site 1)
- "I've never worked with anything which really feels like it supports your prescribing…it's so helpful, nice, very, very, very happy." (Doctor 01, F, site 1)
- "I think it's revolutionised prescribing and made it much more safer" (Nurse 10, F, site 1)
- "it's an excellent, excellent, excellent prescribing platform" (Nurse 08, F, site 2)
- "I suppose there's room for improvement….I feel like it could be better" (Pharmacist 21, F, site 2)

3 Environment-related Factors

1. Local formulary, policies, and procedures
2. Accessibility and available resources
3. Clinical settings
4. Other colleagues
5. Patients and caregivers

- "My prescribing decision is based on our local policy and procedures." (Nurse 09, M, site 1)
- "….there is only one [computer] in the room…usually reserved for the nursing staff. It would then require me to be out of the room to prescribe that." (Doctor 31, F, site 1)
- "…the prescription decision, sort of made by the consultant, they're not even looking at the screen, and they'll tell us to prescribe something." (Doctor 27, F, site 1)
- "…if I want to prescribe something that's not available on formulary, then I can't prescribe it." (Doctor 31, F, site 1)
- "I think the outpatient prescribing is very different to inpatient prescribing." (Pharmacist 16, F, site 1)
- "These decisions are not easy, they're not paternalistic, they're a patient's choice, they need to discuss it with their family. So, it's a decision of a multidisciplinary team, including patients." (Pharmacist 24, F, site 2)

CONCLUSIONS

- Many factors can influence prescribing decisions while using EHR systems, including system, user, and environmental elements.
- Hospital prescribers agree that EHR systems are useful prescribing tools; however, design improvements are needed to enhance their usability.
- Participants suggested integrating patient data, clinical guidelines, and personalised prescription recommendations into EHR systems to support better prescribing decisions.
- Further research is needed to assess how different EHR designs impact prescribing decisions, to guide effective system development and optimisation.

REFERENCES

1- Cahill, M., Cleary, B.J. & Cullinan, S. (2025) The influence of electronic health record design on usability and medication safety: systematic review. BMC Health Serv Res 25, 31.
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