Background

- Healthcare settings are increasingly adopting health information technology (HIT) such as e-prescribing to improve the safety of medication use processes.
- Human Factors Engineering (HFE) researchers have examined patient safety issues that arise with HIT in hospital settings and have found that the use of HIT can introduce new kinds of medication errors.

Conceptual Framework

- To understand the patient safety issues that arise from using e-prescribing technology, the sociotechnical system (STS) approach was used as the guiding framework. This approach was developed by human factors engineers to characterize, evaluate, and improve human technology interactions.
- A sociotechnical approach, assuming a systems perspective which takes into consideration the social, technical, and environmental aspects of a systems is used to identify patient safety hazards that arise from using e-prescribing technology.

Methods

- 14 Pharmacists and 16 technicians were recruited from seven community pharmacies (three chains and four independent). These pharmacies included pharmacies using EHR, P2P and Pharmanet pharmacy dispensing systems that process a minimum of 10 e-prescriptions daily.

Data Collection

- Human factors engineering (HFE) approaches were employed to collect data. HFE is a science that deals with the understanding of the human ability and system properties to improve the design of technical systems. The approach included direct observations, think aloud protocol interviews.
- TYP used to provide detailed procedural information on pharmacy staff day-to-day interact with e-prescribing technology. A sociotechnical systems approach was used to identify patient safety hazards that arise from using e-prescribing technology.

Data Analysis

- Transcripts were analyzed using thematic analysis. Major and minor themes were identified based on the key components of the sociotechnical system theory.

Objectives

- To use the sociotechnical systems approach to identify patient safety hazards that arise from using e-prescribing technology.

Results

- Pharmacists frequently have to perform mental calculations of drug quantities and drug supply of patient prescriptions.
- Frequent errors because humans are only capable of retuning limited information in their working memory per time.
- Pharmacists memorize drug/patient information not easily visible on computer screens or displayed on multiple screens.
- Patients rarely obtained an e-prescription from the prescriber. Among pharmacy personnel - E-prescribing required louder communication among pharmacy staff due to the need to communicate patient information.
- There is a mismatch in the information in their working memory their computer screens or displayed on multiple screens.
- Pharmacists were less confident about answering patient questions on e-prescribing technology.
- Among pharmacy personnel - E-prescribing required louder communication among pharmacy personnel to clarify medication errors.

Conclusions

- The impact of interruptions, miscommunication between users in different healthcare settings, and cognitive burden on safety when using e-prescribing needs to be addressed by researchers, pharmacy organizations and individual users of e-prescribing technology.
- In this study pharmacists highlighted that the above issues are a safety risk when using e-prescribing technology that can easily lead to patient harm or harm.