

Automated Dose Dispensed Medicine in Home Care

Subjects: Medical Informatics

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Automated dose dispensing (ADD) systems are today used around the world but little is known about how patients react to receiving the daily doses of medicine from a machine rather than from a human. This entry reveals a general satisfaction towards ADD robots as an intervention.

Keywords: automated dose dispensing ; Perceptions ; User experience ; Primary healthcare

1. Background

Automated dose dispensing (ADD) systems are today used around the world. The ADD robots are placed in patients' homes to increase medication safety as well as medication adherence; however, little is known about how ADD robots affect the patient's day-to-day lives, receiving the daily doses of medicine from a machine rather than from a human healthcare professional.

2. Healthcare Professionals' Perceptions and Experience with ADD

The professionals were, in general, positive about implementing ADD robots, but a few had concerns about the trust towards the technology, regarding whether it would dispense the correct doses at the correct time. When implementing ADD robots, healthcare professionals need to be informed and trained accordingly in order for the implementation process to run smoothly without any setbacks and prevent resistance. Regarding trust, ADD robots change the workflow of the professionals, because of changes in work tasks in the environment, and trust would need to be gained through experience with ADD robots, which takes place over a longer period. For those professionals who had been working with ADD robots for a longer period, the experiences were that patient medication management was one of the most positive outcomes of using ADD robots. After the implementation phase, where work routines were changed, the health professionals perceived ADD robots as a reliable technology that provides safety for the patient ^[1]. Some papers reported that even though an implementation was completed successfully, some professionals still checked the patients, because their trust towards the technology had still not been established ^{[1][2][3]}.

3. Patient Perceptions and Experience with ADD Robots

The patients were overall satisfied with their ADD robot, where most patient experience studies reported increased medication management and medication adherence ^[4]. Patients reported that they had better control of their own medication after receiving an ADD robot, which could be because the technology provided structure to their medicine dispensing. For some patients, this meant that they were able to actively take control over their own treatment, as the ADD system contained their specific medication and dispensed it at fixed times every day. A study from 2007 mentioned that many patients from the included patient group experienced non-compliance. However, this was only experienced when the patients were manually taking medication from multi-dose sachets at home ^[5]. This study was published in 2007 and the ADD technology has progressed since then, and user issues with ADD robots have gradually changed in characteristics. Some of the more recent studies mentioned that not all selected patients were suited for the technology, while others had not lost their capacity to administrate their own medication but, nevertheless, they were initiated on an ADD robot ^{[6][3][7]}.

Patients were overall satisfied with the functionalities of their ADD robot. According to some of the studies, only small design flaws were of concern among the patients and one of the main issues was the visibility of printed text on the medicine sachets, where the text was hard to read. Consequently, a number of patients experienced difficulties in reading which medication they were receiving. Several patients reported that they found it difficult to open the medicine sachets, while others had to be instructed multiple times, to be able to use the ADD robot. These appeared to be start-up issues in

the initial phase of the implementation. 'Ease of use' was mentioned in the included publications as different patient groups reported that this technology was easy to use, and they relied on the dispenser to handle their medication.

4. Future Research

Different gaps were found in the literature, including missing information on how professionals felt about the changes in their work routines after implementing ADD robots. The studies focused on the perception towards ADD robots as an intervention and on patient outcomes. For patients, there was no information regarding experiences or perceptions on how it had affected them after incorporating an ADD robot into their daily life, and how it was perceived before versus after the implementation. This is relevant to investigate in future studies. The included publications did not investigate how ADD robots changed the environment of the users when implemented. Currently, there is no available literature within this field, which highlights the need for further research within the area.

5. Strengths and Limitations

While other researches have investigated ADD robots with a focus on medication adherence, the strength of this entry is the focus on patient experiences and changes in the environments and settings in which the ADD robots are included. However, the limitation of this scoping review is that it is only based on literature searches in two databases and therefore may not have identified all relevant articles within the area of perceptions of ADD.

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