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Potential Uses of Assistive Robotic Systems in Acute Inpatient Care

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Abstract. Potential uses of assistive robotic systems in acute inpatient care were defined based on the Framework for Complex Interventions developed by the Medical Research Council (MRC). This process of definition requires the consideration of personal-related and contextual factors.

Keywords. Assistive Robotics, Nursing Robotics, Qualitative Research, REsPonSe

1. Introduction

Participative and practice-related approaches to developing application scenarios are being increasingly used in the development of complex robotic interventions [1]. This also applies to the REsPonSe project, whose aim is to develop potential uses for a digital, robotic assistance system for acute inpatient care, in order to alleviate the workload of nursing staff.

2. Methods

The research design was based on the Framework for Developing and Evaluating Complex Interventions of the Medical Research Council (MRC), which includes four phases. Data collection was undertaken in the first phase Developing/Identifying Interventions [2]. Twelve individual episodic-narrative interviews [3] were carried out with nursing and support staff from acute inpatient care. The data were analysed successively and iteratively according to the following coding techniques of Saldaña [4]: Descriptive-, Process-, Initial-, Magnitude-, Values-, Focused-, and Axial-Coding. A validation of the results was carried out in a project workshop.

3. Results

The potential uses of assistive robotic systems can be divided into five areas: nursing and patient-related tasks, digital communication, organizational tasks, documentation and

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information, and delivery and pick-up activities. Surgical, urological and oncological departments were discussed as possible deployment locations of use. The use of assistive robotic systems in intensive care units or psychiatric departments was considered inappropriate by those interviewed. Furthermore, personal-related and contextual factors such as illness, biography, age, technical ability and stress were identified by interviewees as influencing factors with regard to the development and application of assistive robotic systems.

4. Discussion

The interviewees could all see potential uses for assistive robotic systems in a clinical setting. However, the interviewees evaluated the potential for increased workload resulting from the use of robotic systems critically, for example, due to technical problems. In addition to the robotic system and its potential uses, environmental and contextual factors associated with the different clinical departments, such as stress and disruptions to workflow, can have varying effects on the levels of acceptance of system users [1].

5. Conclusion

In addition to technical aspects such as usability, aesthetics and feasibility of implementation, research and technology development in this area needs to focus more on the initial systemic situation of the relevant location of use with its specific cultural and patient-related factors.

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