

# A Digital Service Logistics Information System for Emergency Department Care Coordination - Professionals' Experiences

Laura-Maria PELTONEN<sup>a,1</sup>, Armi KULOHEIMO<sup>a</sup>, Kristiina JUNTILA<sup>a</sup>, Sanna SALANTERÄ<sup>a</sup>

<sup>a</sup>*Department of Nursing Science, University of Turku, Turku, Finland*

**Abstract.** The aim was to describe nurses' and physicians' perceptions of a digital service logistics information system from an operative management perspective in emergency departments (EDs). A total of 24 professionals were interviewed. Based on the results the information systems support operative management of EDs but the professionals desire more detailed information about patients and staff to support situational awareness in the operative management of these units.

**Keywords.** Emergency Department, Information System, Care Coordination

## 1. Introduction

Although information management in health care today is widely digitalized and electronic health records have received attention, less is known about information systems developed for operational management. Timely access to important information is essential when managing the day-to-day operations of emergency departments (EDs) in hospitals as decisions typically must be made without delay [1].

This study focuses on a service logistics information system (Columna Clinical Care Logistics®) that displays information about patients, staff and care processes for the professionals. It is available in hospitals on screens, personal computers and mobile devices. The system aims to support easy access to important information for multiprofessional needs. The aim of this study was to describe nurses' and physicians' perceptions about this information system from an operative manager's perspective in an ED.

## 2. Methods

The study had a cross-sectional design. Data were collected in three EDs, including two emergency departments and one emergency inpatient ward in two central hospitals in Finland. A total of 24 professionals, including 7 physicians and 17 nurses, who were in charge of coordinating care, participated in the study. Data were collected through interviews with two open ended questions: 1) What do you think is good about the

---

<sup>1</sup> Corresponding Author, E-mail: [laura-maria.peltonen@utu.fi](mailto:laura-maria.peltonen@utu.fi).

service logistics system? and 2) what could be improved regarding the service logistics system? Data were collected in the autumn of 2018 and spring of 2018. Data were analysed using thematic content analysis [2].

### 3. Results

The mean age of the respondents was 42.4 years (SD 10.2) and their mean work experience was 17.2 years (SD 11.7). Three respondents worked only at office hours, three worked only beyond office hours and eighteen worked both during office hours and beyond. Issues regarding the information system were divided into three main themes.

- Support for care coordination: The system provides multidisciplinary task management support and a quick overview of patients, staff and processes, but the complexity of care needs and staff skills was not shown in sufficient detail.
- System implementation and usage: Personal traits and the information management culture influenced system usage, and professionals used the system to a different extent when measured at one year after implementation.
- Information exchange: A lack of information exchange with other systems limited the possible benefits in communication between care providers.

### 4. Discussion

The digital service logistics information systems support operative management of EDs. However, professionals desire more detailed information about patients and staff for situational awareness. Artificial intelligence could be used to support this task. Further, it takes a long time to learn how to use such an information system as it changes the professionals' work. Hence, the need of a long follow-up period needs to be considered when measuring the impact of such systems to ensure that all users use the system in the way expected. In conclusion, digital service logistics information systems can support professionals' situational awareness in EDs, but they should be developed based on evidence of information needs. Reliable use requires that all users use the system to its full potential.

### References

- [1] H. Lundgrén-Laine, E. Kontio, J. Perttilä, H. Korvenranta, J. Forsström, S. Salanterä, Managing daily intensive care activities: an observational study concerning ad hoc decision making of charge nurses and intensivists. *Critical Care* 15 (2011), 1–10.
- [2] U.H. Graneheim, B.A.N Lundman, Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness, *Nurse Educ Today* 24 (2004), 105–12.