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Factors influencing clinicians' perceptions of interruptions as disturbing or non-disturbing: A qualitative study

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ABSTRACT

Objective: Emergency departments consist of multiple systems requiring interaction with one another while still being able to operate independently, creating frequent interruptions in the clinical workflow. Most research on interruptions in health care settings has focused on the relationship between interruptions and negative outcomes. However, there are indications that not all interruptions are negatively perceived by those being interrupted. Therefore, this study aimed to explore factors that influence when a clinician perceives interruptions as non-disturbing or disturbing in an emergency department context.
Method: Explorative design based on interviews with 10 physicians and 10 registered nurses at two Swedish emergency departments. Data were analyzed using qualitative content analysis.
Result: Factors influencing whether emergency department clinicians perceived interruptions as non-disturbing or disturbing were identified: *clinician's constitution*, *external factors of influence* and the *nature of the interrupted task*. The clinicians' perceptions were related to a complex of attributes inherent in these three factors at the time of the interruption. Thus, the same type of interruption could be perceived as either non-disturbing or disturbing contingent on the surrounding circumstances in which the event occurred.
Conclusion: Emergency department clinicians' perceptions of interruptions as non-disturbing or disturbing were related to the character of identified influencing factors.
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1. Introduction

A large number of preventable errors occur in health care. In the USA alone, some 98,000 hospital deaths (many preventable) per year are related to health system errors (Kohn et al., 1999). In a recent Swedish report, it was estimated that adverse events occurred in 14% of all patient care activities and approximately 62% of these were preventable, equivalent to about 124,000 patient-years (Swedish Association of Local Authorities and Regions, 2014). Errors are often attributed to frequent interruptions that may have detrimental effects on patient safety (Laxmisan et al., 2007; McGillis Hall et al., 2010; Westbrook and Li, 2013; Westbrook et al., 2010).

Most research on interruptions in a health care context has primarily focused on the negative aspects of interruptions (McGillis Hall et al., 2010; Tucker and Spear, 2006; Westbrook and Li, 2013; Westbrook et al., 2010) and how to reduce these negative elements (Pape et al., 2005; Peleg et al., 2000). The assumption that interruptions can negatively affect patient safety is based on results from experiments on cognition conducted in controlled laboratory settings showing that interruptions of mental processes are associated with increased risk of errors (Einstein et al., 2003; Eyrolle and Cellier, 2000). Further, these results have been extrapolated to specific work assignments carried out by health care clinicians. However, these assumptions have recently been challenged because of the obvious differences between the two settings (Hopkinson and Jennings, 2013). Three systematic reviews on interruptions in health

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care concluded that little evidence exists, suggesting that interruptions lead to errors in patient care (Grundgeiger and Sanderson, 2009; Hopkinson and Jennings, 2013; Rivera-Rodriguez and Karsh, 2010). Only a few studies have found a correlation between interruptions and health-related errors such as medication errors (Drews, 2007; Westbrook et al., 2010) or negative effects on the cognitive function of health care practitioners (Collins et al., 2007; Grundgeiger et al., 2010). One of the three systematic reviews cited above suggest that researchers should examine the healthcare system to understand the multiple goals that are being pursued among clinicians and not only look at interruptions as single events that one recipient perceives as negative (Rivera-Rodriguez and Karsh, 2010).

Emergency department (ED) clinicians in particular are frequently exposed to interruptions (Berg et al., 2013; Chisholm et al., 2011; Kosits and Jones, 2011). One reason for the frequent interruptions in ED settings is that they consist of multiple teams of clinicians that require interaction with one another while still being able to operate independently. Assertions that interruptions are mostly negative are based on knowledge about the negative effects of interruptions on working memory (Coiera et al., 2002). Of several studies on interruptions within the ED context, only two investigated ED clinicians' perceptions of interruptions with interviews as a complement to the observations (Laxmisan et al., 2007; Spencer et al., 2004). From interviews with ED clinicians, our research group found that some interruptions were regarded as expected and even necessary, whereas others were perceived as unwarranted (negative), especially if causing them a disturbed work process (Berg et al., 2013). The definition of interruption used was derived from a concept analysis of this phenomenon (Brixey et al., 2007).

Because there are indications that ED clinicians do not perceive all interruptions as disturbing, it becomes important to identify which interruptions are perceived as non-disturbing and which are perceived as disturbing, since disturbing interruptions may negatively affect clinicians' working conditions and patient safety. Therefore, the aim of this study was to explore factors that influence when a clinician perceives interruptions as non-disturbing or disturbing in an ED context.

2. Methods

2.1. Study design, setting and sample

This study has an explorative qualitative design using semi-structured interviews. The study was conducted in 2012 with participants selected from two Swedish EDs for adults. One ED was located at a regional university hospital with approximately 83,000 patient visits per year and the other at a medium-sized county hospital with some 58,000 patient visits per year. The sample was made up of 10 registered nurses (RNs) and 10 physicians (five from each ED). These are professions characterized by knowledge work, concentration-demanding assignments as part of decision-making processes and other work processes dependent on the working memory. Purposive sampling (Polit and Beck, 2012) was used to obtain a sample of men and women who were diverse in age and work experience. Two of the researchers (LMB and ASK) selected the participants who were contacted via e-mail. Inclusion criteria were at least three years of professional experience from ED work to provide enough experience to be able to reason and reflect upon interruptions that occur during ED work. Nine men and 11 women were selected, aged 30 to 60 years, with work experience ranging from 3 to 30 years. The study was approved by the Research Ethics Review Board in Stockholm (2012/2237-32). Written informed consent was obtained before inclusion in the study, and participants were informed they could withdraw from the study at any time without having to justify their decision.

2.2. Methods and measurements

Semi-structured telephone interviews were conducted by two external (professional) interviewers. As professional interviewers, they had extensive experience in conducting telephone interviews in health care, and the quality of the interviews was thereby high. A semi-structured, open-ended interview guide developed by the research group was used. The interview guide was pilot-tested by two of the researchers (LMB and ASK), while the professional interviewers were listening. The pilot work led to the repositioning of some questions. Using the interview guide, the participants were asked to describe their perception of interruptions and disturbances during clinical work in the ED as well as to report influencing factors. The telephone interviews were performed when the participants were off duty. The interviews lasted from 12–57 minutes (mean 30 minutes). All interviews were tape-recorded and transcribed verbatim by the professional interviewers.

2.3. Analysis

The interviews were analyzed using inductive qualitative content analysis (Krippendorff, 2004). The transcribed interview text was read multiple times to obtain a sense of the whole. The text was then divided into textual units, followed by condensation. All condensed textual units from the perspective of being *the recipient* of an interruption (the unit of analysis) were extracted for analysis. Furthermore, the respondent's perception of an interruption as being non-disturbing or disturbing was used as an overarching framework for the analysis of the texts. All condensed textual units in the analysis were given a code, and the codes that dealt with the same content were sorted together into subcategories, categories and main categories in relation to non-disturbing and disturbing interruptions (Table 1). The factors that influenced the respondents' perceptions of interruptions as disturbing or not were mentioned over and over again and some of them were mentioned by all respondents. Further, the data were easy to fit into the different subcategories and categories, indicating that data saturation was reached. To achieve trustworthiness in a qualitative study, the notions of credibility, dependability and transferability need to be considered (Graneheim and Lundman, 2004). The principal author (LMB) had overall responsibility for the analysis and assured that each step of the analysis was continuously discussed and agreed within the research group. In order to strengthen credibility, three of the co-authors independently carried out analysis of subsets of the data,

Table 1
Examples of the analysis of factors influencing the respondents' perception of interruptions as non-disturbing or disturbing.

Condensed textual unit	Code	Subcategory	Category	Main category
It is good to be interrupted if you need to attend to something more important (such as attending to a critically ill patient) compared with what you were doing previously.	Interruptions that contain information about more prioritized assignments are positive.	Relevance of the interruption	Environmental influencing factors	Non-disturbing interruption
It is disturbing to be interrupted when you are doing something that requires concentration, such as preparing medication.	Interruptions during concentration-demanding activities are disturbing.	Required level of focus and concentration	Nature of the interrupted task	Disturbing interruption

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