Safety Science 70 (2014) 70–79

Contents lists available at ScienceDirect

Safety Science

journal homepage: www.elsevier.com/locate/ssci

Perceptions of time spent on safety tasks in surgical operations: A focus group study

Sindre Høyland [a,*], Arvid Steinar Haugen [b], Øyvind Thomassen [b]

[a] Centre for Risk Management and Societal Safety, Faculty of Social Sciences, University of Stavanger, 4036 Stavanger, Norway
[b] Department of Anaesthesia and Intensive Care, Haukeland University Hospital, 5021 Bergen, Norway

ARTICLE INFO

Article history:
Received 11 April 2013
Received in revised form 23 April 2014
Accepted 16 May 2014

Keywords:
Safety
Surgical operations
Operating room time
Surgical Safety Checklist
Focus groups

ABSTRACT

The drive for effectiveness and productivity in health care combined with a high percentage of adverse events in hospitals occurring in the operating room, suggest that more knowledge about safety in surgery is warranted. As a step in this direction, explorations of safety in surgical operations should account for the unique operational perspective of health care providers. In this article, we explore one particular safety aspect of surgical operations: frontline personnel's perceptions of operating room time, both in itself and in relation to the WHO's Surgical Safety Checklist. Specifically, we provide results from a focus group study undertaken in a surgical section of a Norwegian university hospital. The study included a total of 14 participants from the professions that typically comprise an operating team; surgeons, nurses, and anesthetists. Based on a content analysis of the collected material, we believe that strengthening both the structural conditions surrounding surgery and the safety mentality of managers and operating personnel can prevent compromises in safety tasks and instead allow priority to planning, diagnosis and checklists, with associated potential for improvement in awareness, preparedness, and systemizing as well as reduction in total operating room time. This might represent a key factor in improving patient safety in surgical operations. We also identify a need for deeper explorations that shed further light on the complexity of the operating room time phenomenon.

1. Introduction

Global surgical volume has increased over the past decades and exceeds now 231 million procedures annually (Weiser et al., 2008). This drive for effectiveness and productivity may lead to severe safety constraints and adverse medical events (Amalberti et al., 2005). Specifically, studies estimate that 3–17% of hospitalized patients worldwide suffer adverse events, and that 3–21% of adverse events lead to patient death (Baker et al., 2004; Brennan et al., 1991; Davis et al., 2002; de Vries et al., 2008; Schioler et al., 2001; Soop et al., 2009; Thomas et al., 2000; Vincent et al., 2001; Wilson et al., 1995). Studies also suggest that approximately 50% of all adverse events in hospitals occur in the operating room (Catchpole et al., 2008; Leape et al., 1991; Thomas et al., 2000). These figures point to the operating room as a "domain in which improved safety is an urgent and significant challenge" (van Beuzekom et al., 2012: p. 2). In addressing this challenge, explorations of safety in surgical operations should account for the unique operational perspective of health care providers (Lyndon, 2006; Makary et al., 2006). Supportive of this, Flin and Mitchell (2009) suggest that more scientific investigation of working life in the surgical domain is needed.

Accordingly, in the present article we explore surgical personnel's perceptions of operating room time, understood as the time spent on surgical, anesthesia, and safety tasks. Our particular focus on operating room time is based on an interview study conducted by Author 1 (Høyland, 2011) that aimed to understand how safety is achieved in surgical operations; that study revealed time as the most frequently occurring theme in the data material (ahead of "patient" and "operation"). The topic of operating room time is also covered within the existing body of literature; Zheng et al. (2012) found that time spent on a particular procedure was significantly affected by complexity of the operation and team size, while Catchpole et al. (2007) and Mishra et al. (2008) reported that minor problems, distractions, or equipment problems increased operating room time. Furthermore, a number of studies document time being wasted in the operating room, due to anesthetists and surgeons having to wait between patient cases (Saha et al., 2009), due to the late arrival by operating personnel (surgeons, anesthetist, and nurses) and patient as well as changes in operating schedule

* Corresponding author. Mobile: +47 922 30 965; fax: +47 51 83 10 50.
E-mail addresses: sindre.hoyland@uis.no (S. Høyland), arvid.steinar.haugen@helse-bergen.no (A.S. Haugen), oeyvind.thomassen2@helse-bergen.no (Ø. Thomassen).

http://dx.doi.org/10.1016/j.ssci.2014.05.009
0925-7535/

(Panni et al., 2013; Truong et al., 1996), or due to inappropriately prepared patients and insufficient staff (Weinbroum et al., 2003). Paradoxically, given the described waste of time, literature also portrays lack of time as a barrier to implementing new guidelines, such as checklists in the operating room (Grol and Grimshaw, 2003; O'Connor et al., 2013; Thomassen et al., 2010). Specifically, Aveling et al. (2013) documented that aspects of the checklist was often rushed or cursorily performed; Waehle et al. (2012) found that nurses regarded the checklist as another task they "had to do" in their struggle with limited time available; Fourcade et al. (2012) reported that the Surgical Safety Checklist takes too long to complete, and "that items could be ticked off even when items were not checked because of time constraints" (p. 194); and Lingard et al. (2005) found that the introduction of a checklist sometimes interrupted the anesthetists' and nurses' workflow.

Given the drive for effectiveness and productivity and associated risk of adverse events in the operating room, as indicated above, further knowledge about health care perceptions of time and safety in the operating room is warranted, including connections to checklists.

2. Theory

While existing studies address operating room time, most do so indirectly or in conjunction with other topics. As a common denominator for these studies, the perceived influence of time on surgical operations exhibits an interesting duality. Operating room time is portrayed as being a concern to performance and outcome in surgery. For example, Carl et al. (2010) looked at complications associated with perioperative issues and found that longer operating room times could derail a surgical outcome, even one with an otherwise uneventful surgical technique. In another study, Stepaniak et al. (2010) focused on cost-reduction by improved scheduling of surgery and found that scheduling similar consecutive cases and performing with a fixed team results in lower turnover times and preparation times, which reduces total operating room time. These findings, along with findings on the importance of timeliness in the information transferred between operating room team members (Wong et al., 2011), suggest that operating room time is an obstacle that must be controlled to ensure optimal performance and outcome.

In contrast, other studies have viewed operating room time as an advantage to surgery. For example, Riffaud et al. (2010) found that the operating time is lower for the senior surgeons due to greater economy in time and in gestures during the particular procedure, which implies that spending time to hone one's skills can reduce total operating room time. The positive link between experience, seniority, and technical skill level is supported by Moorthy et al. (2005). Another positive view on operating room time is that of Altpeter et al. (2007), who identified the value of an expanded surgical time-out for enabling real-time data collection and feedback from all team members in the operating room. This finding is supported by Lee's (2010) documentation, which stated that the operating room time used on extended surgical time-out in pediatric surgery improved communication and did not disrupt the operational workflow. Finally, Brown et al. (2010) explored the change in operating room personnel from the day team to the evening team in cardiovascular surgery. They found that, despite significant length being added to the total operating department time, they could not demonstrate an impact on traditional outcome measures (operative death, reoperation for bleeding, blood transfusion, and so forth). Brown et al.'s finding is not unique; Crandall et al. (2010) found that Injury Severity Score, mortality, and number of patients with operations performed on the same day were higher for transfers within two hours, compared to transfers exceeding two hours.

Depending on their perspectives, the above-mentioned studies suggest that operating room time represents an element of operations that must either be controlled to minimize its influence on performance and outcome, or utilized to enhance specific aspects of the operating team (namely, improving feedback and communication). In this article, we have not focused on the performance and outcome aspects of operating room time, which is clouded by the conflicting findings of Carl et al. (2010) and Brown et al. (2010) and Crandall et al. (2010); instead, we have focused more broadly on surgical personnel's perceptions operating room time in surgical operations. Moreover, the descriptions of surgical time-out in the above-mentioned literature suggest that the use of surgical time-out could be a natural step in gaining insights into operating room time. The surgical section we studied (cf. "methods") had been adapted (two years ago) and was currently using the WHO's Surgical Safety Checklist during everyday operations. This provided an opportunity to explore the perceptions of checklist usage among operating personnel after two years of use, which could potentially reveal insights into the relationship to operating room time. In terms of facts, the Surgical Safety Checklist is divided into three sections or phases: "Sign-in," "Time-out," and "Sign-out." The Sign-in focuses on the particular safety steps that must be performed prior to induction of anesthesia, including communication with the patient. The Time-out should be conducted when the entire operating team is present, immediately prior to the incision. Important discussion points during Time-out include a "roundtable introduction" of each team member (with name and role/function), the name of the patient and the planned procedure, site, risk factors, infection concerns, and so forth. Finally, the Sign-out constitutes elements such as the name of the performed procedure, counting instruments and swaps, messages to be passed along to post-operative sections, and review of equipment (including difficulties).

To summarize, literature suggest that the concepts of operating room time and checklists are closely linked, giving rise to two specific aims in our study; to explore surgical personnel's perceptions of operating room time, both in itself (Aim 1) and in relation to Surgical Safety Checklist usage (Aim 2).

3. Methods

3.1. Study design

The study was performed in a surgical section of a Norwegian university hospital, between November of 2011 and January of 2012. We applied the focus group methodology (Krueger and Casey, 2000), which is understood as "a way of collecting qualitative data, which – essentially – involves engaging a small number of people in informal group discussions, 'focused' around a particular topic or set of issues" (Wilkinson, 2004: p. 177). The main advantage of focus group interviews lies in the informal nature of the method, where instead of asking questions to each participant, the moderator(s) actively encourages interaction between group members (Wilkinson, 2004). This creates a less threatening situation and a freedom that encourages interviewees to be more forthcoming (Hammersley and Atkinson, 2007) and to explore issues they perceive as important (Kontos and Naglie, 2009). In sum, the informal nature of the methodology, and the group context, facilitates an interactive discussion and reflection that is hard to achieve using other methods.

3.2. Participants

We conducted three focus group interviews (Kyrkjebø et al., 2006). The first interview involved operating room nurses and