

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Identification and interference of intraoperative distractions and interruptions in operating rooms

Sophia Antoniadis,^{a,b} Stefanie Passauer-Baierl, Dipl.-Psych,^a
Heiko Baschnegger, Dr,^c and Matthias Weigl, Dr^{a,*}

^a Institute and Outpatient Clinic for Occupational, Social, and Environmental Medicine, University Hospital, Ludwig-Maximilians-University, Munich, Germany

^b Department of Obstetrics and Gynecology, University Hospital Munich, Großhadern, Germany

^c Clinic of Anesthesiology, University Hospital, Ludwig-Maximilians-University, Munich, Germany

ARTICLE INFO

Article history:

Received 14 October 2013

Received in revised form

4 December 2013

Accepted 6 December 2013

Available online 12 December 2013

Keywords:

Interruptions

Observation

Operating room

Surgery teamwork

Distractions

Surgical teams

ABSTRACT

Background: Intraoperative interruptions potentially interfere with surgical flow, contribute to patient safety risks, and increase stress. This study aimed to observe interruption events in operating rooms (ORs) and to measure surgical team's intraoperative interference from interruptions during surgery.

Materials and methods: Sixty-five surgical cases were observed at two surgical clinics in Germany (mainly abdominal and orthopedic surgery). An established observational tool was successfully adapted to German ORs. Various disruptions to surgical work were captured with a predefined coding scheme. In addition, the severity of each observed interruption was rated on behaviorally anchored scale to define the level of OR team involvement. Pilot test supported tools' reliability.

Results: Mean intraoperative duration was 1 h, 23 min (standard deviation = 50:55 min). Overall N = 803 intraoperative interruptions and disruption events were observed. Most frequent were people entering or exiting the OR and telephone or beeper calls. On average, OR teams were distracted or interrupted 9.82 times per hour (standard deviation = 3.97). Equipment failures and OR-environment-related disruptions were rated as the highest interference of OR team functioning. The involved OR professions were differently affected by interruption events. Distribution of intraoperative interruptions within the procedure varied significantly; during early stages of the case, significantly more interruptions were observed.

Conclusions: The study demonstrates the high level of interference in ORs. Furthermore, it provides a useful measure for intraoperative workflow disruptions and their interference of OR team functioning. OR environments need to be well designed to reduce unnecessary interruptions and distractions, so that surgical teams can manage their surgical tasks efficiently and safely.

© 2014 Elsevier Inc. All rights reserved.

* Corresponding author. Institute and Outpatient Clinic for Occupational, Social, and Environmental Medicine, Ludwig-Maximilians-University, Ziemssenstrasse 1, D-80336 Munich, Germany. Tel.: +49 89 5160 5311; fax: +49 89 5160 5306.

E-mail address: matthias.weigl@med.lmu.de (M. Weigl).

0022-4804/\$ – see front matter © 2014 Elsevier Inc. All rights reserved.

<http://dx.doi.org/10.1016/j.jss.2013.12.002>

1. Introduction

There is a growing interest in surgical workflow with particular focus on interruptions and distractions in operating rooms (ORs) [1–4]. It stems particularly from a holistic systems view that emphasizes the contribution of the OR team and OR environment to safe and effective surgical care [5–7]. Research outside of health care (e.g., aviation, control rooms in high risk industries) demonstrated that interruptions and distractions can have detrimental consequences [8–10]. Similar studies in different hospital environments emphasized the high level of interruptions in health care, for example, in emergency rooms [11,12], inpatient wards [13], or postoperative handover procedures [14]. In regard to ORs, the empirical evidence on interruptions and distractions is still sparse [4,15,16].

ORs are complex working environments with a high cognitive demand and a variety of potential distractions and interruptions of the surgical workflow. There is growing evidence that highly interruptive OR environments contribute to detrimental clinical performance, for example, extended procedure durations, incomplete safety checks, or errors [3,4,16]. Surgical flow interruptions are an obstacle to effective surgical progress and hinder efficient case completion [1,15]. To create efficient and safe surgical care and reduce adverse events, ORs need to be well designed to enable smooth team performance [5,7].

We define intraoperative interruptions and disruptions as events during the surgical procedure that potentially distract the OR team or OR member from a primary task or momentarily interrupt their task [17]. In OR teams, interruptions disturb surgical workflow and are responsible for goal obstruction and detrimental task execution, thus, jeopardizing effective surgery and patient care [3]. In addition, disruptive OR environments may affect the communication among OR staff and the quality of intrateam coordination [15,18]. In regard to surgical quality, one observational study by Wiegmann et al. [3] demonstrated that interruptions during surgery are associated with erroneous surgical performance.

To the best of our knowledge, there are few studies that focused primarily on assessing distraction and interruption events in real world ORs. Applied observational studies using valid and reliable assessments within real ORs enable more robust investigation of surgical flow interruptions [4,17]. Capture of perioperative disruptions is a major step in creating an efficient environment for surgical teams [17,19]. Second, there is still limited knowledge of the potential interference of interruption events for surgical team functioning. In regard to the complex dynamics and multiple activities in the OR, some distractions and interruptions may involve only single team members, whereas others involve the whole surgical team [17]. Therefore, research is necessary to identify the degree of intraoperative interference for both single clinicians and the entire OR team.

Our study set out to objectively identify distraction and interruption events during surgical procedures and to contribute to the growing intraoperative interruptions evidence base. Specifically, we sought to:

- (1) identify and count the type of interruptions that occur during surgical procedures, and measure the interference of those events for the surgical teams;
- (2) compare with what extent the various OR professions are individually affected; and
- (3) to identify phases with increased interruption levels during surgical procedures.

2. Methods

2.1. Design

Expert observation of surgical procedures was applied, using an established tool. Structured observations have been shown to be useful in various hospital settings [19,20]. Particularly applied to ORs, the detailed identification of workflow interruptions and distractions is a feasible way to obtain information on interruption levels [4,17]. The Ethics Committee of the Faculty of Medicine, Munich University, gave ethical approval for this study (No. 539-11).

2.2. Study setting and sample

Observations were conducted in two surgical clinics of a German University Hospital as part of an internal project on OR teamwork. The study included OR teams from several surgical specialties, including general or abdominal, orthopedic, and plastic surgery.

A total of 65 procedures were sampled from the following surgical disciplines: vascular ($N = 5$, 7,7%), abdominal or general ($N = 33$, 50,8%), orthopedic or trauma ($N = 23$, 35,4%), and plastic surgery ($N = 4$, 6,2%). The observed intraoperative phase of surgery covered the time from incision to closure. The observation dates were selected randomly. Data were collected only during day shifts, and surgical procedures were selected from the departmental case list. Emergency procedures and procedures with a prospected duration of >4 h were excluded (to avoid staff rotation during the procedure and as the observational method is particularly demanding of attention). Team composition varied, as overall eight ORs were available. However, there was generally still some consistency in surgical and nursing personnel, who are consistently assigned to particular ORs. All ORs were comparable in terms of work organization, size, equipment, and staffing levels.

The surgical OR team was considered as the staff assigned to a surgical case, comprising three main professions [17]: (1) anesthetists and their assistants (including anesthesia nurse); (2) nursing group consisting of sterile nurse, circulating nurse, and occasionally any assisting nurse; and the (3) surgical group that comprised the operating and assisting surgeons including any surgical trainee.

2.3. Data collection procedure

All participants were informed before observation through departmental meetings and intranet information. Participation was voluntary, and consent was obtained from all OR

Download English Version:

<https://daneshyari.com/en/article/4300218>

Download Persian Version:

<https://daneshyari.com/article/4300218>

[Daneshyari.com](https://daneshyari.com)