

Cognitive performance limitations in operating rooms

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Abstract

Currently there is a lack of validated and applied models concerning cognitive performance limitations and human error in medical work environments. The dirty dozen model (Dupont, 1997), for instance, an established concept of human performance limitations and error causation in aviation maintenance, was applied to surgical context – especially to ophthalmology. The 12 categories presented in this concept are: lack of resources, complacency, lack of teamwork, stress, lack of communication, distraction, lack of knowledge, lack of awareness, lack of assertiveness, fatigue, social norms and pressure. Roughly the whole population of surgically practicing ophthalmologists in Germany (N = 1063) was surveyed in regard to the relevance of various performance limiting factors. The questionnaire included a quantitative as well as a qualitative section, where participants were able to state experienced examples for each category. So, this study concerned the general perceptions and judgments of surgeons on their own as well as team-based cognitive performance limitations during surgery. The response rate of this survey was about 20%. The results indicate that pressure, lack of communication and stress are the most considerable categories. A factor analysis based on these 12 categories was performed. The results of this analysis were the two factors organisational context and social interaction. Thus, the results indicate a strong negative impact of organisational and social factors on the cognitive performance of surgeons in operating rooms.

Introduction

Human error in medical care causes many lethal incidents (Calland et al., 2002), about half of which are estimated to be preventable (Mishra et al., 2008). Patient safety studies conducted in the United States show that more than 60.000 Americans die each year due to adverse events while being hospitalised (Brennan et al., 2004; Thomas et al., 2000; Awad et al., 2005). Moreover, other research even suggests that up to 98000 U.S. patients die each year from preventable medical errors (Sexton, Thomas & Helmreich, 2000). In addition, Thomas and colleagues' study (2000) shows that almost fifty per cent of all adverse events (46.1 %) occur in operating