

Software-Ergonomic Problems in Integrated Surgery Rooms

Seyffert, Anna-Maria, Fachgebiet Medizintechnik, Technische Universität Berlin, Berlin, Deutschland
Kraft, M., Fachgebiet Medizintechnik, Technische Universität Berlin, Berlin, Deutschland
Prümper, J., Wirtschafts- und Organisationspsychologie, HTW Berlin, Deutschland
aseyffert@zmms.tu-berlin.de

Introduction

In clinical work systems - like operating rooms - the surgery team always gives preference to the safety of the patient over their own safety. Integrated operating rooms feature a virtual interface to control all medical devices from within the sterile area, which has ergonomic deficiencies because of its concept of a consolidated control unit.

Methods

In a field study laparoscopic procedures were analyzed to evaluate the working conditions and procedures of the different roles of a surgery team, i.e. surgeon, surgeon's assistant, scrub - and circulating nurse. The workload of surgical teams during 79 surgeries for integrated and non-integrated operating rooms in Germany and Italy were measured with the NASA tlx. A preceding laboratory study, comparing user caused problems on virtual user interfaces to real interfaces in general, showed a significant higher frequency of user caused problems on virtual interfaces.

Results

The hypothesis of a significantly higher workload of the surgical teams in integrated operating rooms could not be proven by reference to the NASA tlx. However, significant correlations appeared in the level of frustration of group member, which appeared to be passed downstream in accordance with the hierarchy within the team.

Conclusion

The subjective workload assessment measured by the NASA tlx seems not to be an appropriate instrument to measure workload, since the entire surgical team perceives a high exposure to stress as normal, respectively does not perceive even a significantly increased frequency of user caused problems as relatively more stressful.

The result can be explained on one hand by reference to the strong group hierarchy and interdependence of the performance of tasks and on the other hand by a group of individuals which are prepared to accept exceptional physical and mental challenges and places little priority on their own work safety, but take pride in the high social recognition of their work.