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William C. Boyer DHSc, MS

Lehigh Valley Health Network, William_C.Boyer@lvhn.org

Hubert K. Huang MS, MEd

Lehigh Valley Health Network, hubert_k.huang@lvhn.org

Charles Scagliotti MD, FFACS

Lehigh Valley Health Network, Charles.Scagliotti@lvhn.org

Robert Ruhf

Lehigh Valley Health Network, Robert.Ruhf@lvhn.org

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Evaluation of Stress on Laparoscopic Skills of Surgical Residents in Simulation-Based Education

William C. Boyer, DHSc, MS; Hubert K. Huang, MS, MEd; Charles Scagliotti, MD, FACS; Robert Ruhf
Lehigh Valley Health Network, Allentown, Pennsylvania

Background:

Intraoperative stress may impact surgical performance negatively and compromise patient safety. Limited research exists that examines the relationship between stress and laparoscopic performance of surgical residents. Arora (2010) noted only three studies that examined how laparoscopic procedures lead to greater stress levels and poorer technical performance. Additionally, two studies look at how expert surgeons experience less stress and impaired performance compared with juniors. While Lee (2005) examined laparoscopic surgery and stress among thirteen medical residents, correlation between stress and performance was not considered and stress was self-reported. Hassan (2005) objectively measured resident laparoscopic skills but stress-coping was also self-reported. This study will seek to establish an empirical link between surgical residents' laparoscopic performance and stress as measured by physiologic assessment in a simulation setting.

Methods:

Approximately 30 PGY1 through PGY5 surgical residents will complete five task stations using the Fundamentals of Laparoscopic Surgery (FLS) task trainer. The five task stations assist residents in preparation for the FLS exam. The FLS measures basic laparoscopic technical skills, eye-hand coordination, ambidexterity, and depth perception. Assessment of the residents' laparoscopic performance will be measured and documented manually and through simulator software, including object drops, accuracy of tasks, and time of completion. Stress will be assessed objectively by heart rate, blood pressure, respiratory rate, and Galvani Skin Response and subjectively by a pre- and post-assessment survey. Comparisons will be done with other stress measurement tools, such as the Imperial Stress Assessment Tool (ISAT) and the State Trait Anxiety Inventory (STAI) for reliability. Data will be analyzed using SPSS.

Results:

The results of this study will contribute to the limited research on surgical residents, laparoscopic skills, simulation training, and stress. In a surgical education context, the findings can inform stress management programs in resident surgical education. Future studies could compare the resident's stress from laparoscopic surgery and open surgery.

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Contact Information:

William C. Boyer, D.H.Sc., M.S.
Medical Educator, Lehigh Valley Health Network
Assistant Professor, University of South Florida College of Medicine
610.402.2520
William_C.Boyer@lvhn.org

