

## **Opportunities and Challenges in Using Smartphone Sensor Data to Capture Surgeon Behavior and Wellbeing: A Qualitative Analysis of Surgical Residents' Perspectives**

Joseph M. Tarquine; Alayna M. Robinson; Chelsea R. Olson, MD; Regan Williams, MD; Alexander Feliz, MD; Alex Haynes, MD, MPH; Ashley Hendrix, MD; Ian Solsky, MD, MPH

**INTRODUCTION:** Burnout is common in surgical trainees, but behaviors underlying resident wellbeing are poorly understood. Digital phenotyping, a research methodology involving smartphone sensor data collection, may provide new insights into residents' physical and psychosocial functioning. Resident perspectives on this approach have not been defined.

**METHODS:** General surgery residents from a single academic institution were recruited to participate in focus groups conducted with a structured interview guide to elicit perspectives on wellness and digital phenotyping. Focus groups were recorded, transcribed, double coded in NVivo, and analyzed using thematic analysis. A post-focus group survey was administered and analyzed.

**RESULTS:** Over four focus groups, 16 of 48 residents participated. All PGY-years were represented. Most participants were interns (43.75%) and female (56.25%). Perspectives differed by PGY-year, but wellness was commonly described as multidimensional and personal. Residents expressed that training programs held some responsibility for their wellbeing but were conflicted as to the extent that faculty should know and intervene upon their wellness. Residents acknowledged that smartphone data could capture aspects of behavior but questioned the impact of this information on their wellness and training experiences. Most were open to having their smartphone data collected for research. Survey responses aligned with focus group themes (Figure 1).

**CONCLUSION:** Further research is needed to define digital phenotyping's utility in studying resident wellness. Trainees are willing to participate in these efforts if performed responsibly.

Resident wellness is multifaceted, and emerging technologies such as smartphone sensor data may provide valuable insights.

### Survey Responses (n=16)

