

Intraoperative video recording: capturing opportunities to advance health professions education research

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Background:

Intraoperative video recording (IVR) is a useful data collection modality for health professions education (HPE) research, and certifying organizations are increasingly adopting video-based operative assessments. We performed a scoping review characterizing current use of IVR in HPE research, with a focus on strategic, ethical, and technological considerations, to provide recommendations for future use.

Summary of Work:

Two surgeons, two education specialists, a resident, and four medical students followed Arsky and O'Malley's scoping review approach. Assisted by a librarian, the team utilized a MeSH search strategy to identify abstracts for screening. Paired researchers screened abstracts for studies with IVR that took place in the operating room (OR), with learners present. Pairs reviewed studies, extracting 29 data points until >95% interrater reliability was reached. Individuals then extracted with intermittent check-ins to prevent rater drift. Descriptive statistics summarized IVR use in HPE research.

Summary of Results:

7219 abstracts were screened, 263 full-text articles reviewed, 136 met inclusion criteria. Topics addressed included Surgical Performance (67%), Assessment (45%), and Teaching (33%). 32% included an educational intervention. Studies included quantitative (100%) and qualitative (22%) analyses, of oral (83%) and/or nonverbal (30%) communication. Field of view was most frequently endoscopic (50%); 70% of IVR studies included no audio. 71% of studies reported Institutional/Ethics Review Board (IRB) status (Exempt 14%, Full Review 24%, "Approved" 33%). Consent was variably obtained from study subjects (50%), and non-subjects (patients 25%, staff 7%).

Discussion and Conclusion:

Researchers relied heavily on easily acquired modalities (e.g., endoscopic view) which failed to capture body position, interaction with surgical equipment and personnel, and how teaching occurred. We recommend more precise reporting on how IVR data are collected, including information about recording devices and their placement in the OR, for study quality and reproducibility. Consent and IRB processes should be fully detailed. IVR could be leveraged to study intraoperative teaching or communication, reveal nonverbal cues essential for learning, define surgical skill learning trajectories, and examine socio-materiality in technology-laden ORs.

Take Home Messages:

HPE researchers should:

- Pose research questions capitalizing on underutilized IVR properties such as broad camera view and audio recording of team conversations.
- Report study design and IRB details fully.
- Recognize limitations of IVR for video-based assessment.