Students' perception of operative surgical procedures live streaming virtual teaching sessions

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Objective

The World Health Organization (WHO) officially declared COVID-19 a global pandemic on March 11, 2020 (1)(2). Medical educational forums continued in an online format, utilizing various educational technology tools and virtual rounds to conduct teaching activities in accordance with the Association of American Medical Colleges (AAMC) Guidelines (3). This included surgical clinical education and training. However, there is limited evidence about the effectiveness and perception of these approaches in surgical operative teaching for medical students. Virtual training has continued to grow in popularity over recent years in medical education (4)(5). Some concerns rose regarding potential educational gaps, particularly in clinical surgery clerkships and operative exposure that are not easily replaced by virtual learning. The purpose of this study was to examine students' perception and learning outcomes of virtual operative surgery.

Methods

Surgical operative teaching sessions were arranged for medical students through use of a Go-Pro camera mounted on the head of the operating surgeon and live streamed to the students through WebEx platform. Other students completed traditional operative surgical experiences following return to clerkships. All students were asked to voluntarily complete a post-course survey, indicating their level of satisfaction. The following domains were included in the survey questionnaire: student learning support, impact on surgery rotation, and use of virtual operative sessions after the COVID-19 pandemic. QualtricsXM was utilized for primary data collection.

Results

Students rated their respective experiences on a scale of 1-5. Higher scores portended better experiences. Regarding student support for learning, in-person and virtual rotators scored 4.33 and 4.50, respectively. In-person students rated a 4.33 out of 5 for positive course satisfaction, whereas virtual students rated their course a 4.17 out of 5. T-test analysis revealed no statistical difference between in-person and virtual rotators on any collected parameters. Overall, student satisfaction in their general surgery course did not appear to be greatly impacted by the modality in which OR experience was attained.

Table 1: Perceived Operating Room Experiences between students enrolled in in-person and virtual clerkship formats

Statement	In-Person OR Experience	Rating	Virtual OR Experience	Rating	T-Test
Supported Student Learning	P1	4	V1	5	
	P2	4	V2	3	
	P3	5	V3	4	
			V4	5	
			V5	5	
			V6	5	
	Average Rating	***4.33***	***Average Rating***	***4.50***	***0.739***
Sessions Positively Impacted Clerkship	P1	4	V1	5	
	P2	4	V2	3	
	P3	5	V3	2	
			V4	5	
			V5	5	
			V6	5	
	Average Rating	***4.33***	***Average Rating***	***4.17***	***0.801***
Sessions Should Be Continued Post-COVID	P1	5	V1	5	
	P2	4	V2	3	
	P3	5	V3	3	
			V4	5	
			V5	4	
			V6	4	
	Average Rating	***4.67***	***Average Rating***	***4.00***	***0.225***

Conclusion

The COVID-19 pandemic was a challenge to medical school students and administrators. Internet-based education has been utilized in various other specialties in medical schools, residencies, and continued medical education training; e.g., case presentations, board prep, and research conferences (6), virtual patients (7), and various medical school sub-internships (8).

At this institution, using an educational technology tool of virtual-based operative procedures live streaming was identified as an acceptable alternative to traditional in-person experience at our university. The feedback from our students supports the continued use of this approach. While virtual experiences do not replace the utility of in-person OR experience, education delivery through this media produced sufficient learning experiences for students in today's COVID-19 environment. Technology continues to grow and with it the opportunities to diversify, streamline, and improve educational platforms are abundant. This becomes paramount in the current pandemic-impacted world. Inversely, continued larger studies are needed to identify the specific advantages and challenges to improve overall educational experiences moving forward for medical students.

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