



Online Obstetrics and Gynecology Medical Students Clerkship During the Covid-19 Pandemic: a Pilot Study

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Abstract

Background The Covid-19 pandemic and social distancing resulted in the need for an immediate transition of all medical education to online education with a concern that such a pandemic might recur.

Objective To assess the feasibility of an online clinical rotation in Obstetrics and Gynecology during the Covid-19 pandemic and to identify effective pedagogical modalities as well as obstacles to online learning.

Methods A questionnaire was sent to the students and staff at the end of the 3-week online rotation. The online curriculum included synchronous learning such as problem-based learning, video demonstrations and discussions, as well as asynchronous pre-recorded lectures. Questions addressed expectations, previous experience, difficulties encountered, effectiveness of different types of pedagogy, and willingness to participate in online education in the future.

Results We received 27 completed questionnaires, 77% response rate. Overall course rating was 4.14/5 from the students and 3.38/5 from the staff. Previous experience in online education had a positive correlation with higher overall course evaluations; however, low expectations of effectiveness of online learning prior to the course did not correlate with the overall course rate. Challenges identified were absence of bedside teaching and lack of feedback. Effective pedagogical modules were problem-based learning and videos. Additionally, 72% stated that online learning should be part of the formal curriculum.

Conclusion Further research into tele-teaching should be part of medical school strategic plan to ensure meaningful learning in these emerging modalities not limited to exceptional situations such as pandemics.

Keywords Medical education · Online education · Covid-19 · Pedagogical modules · Clinical rotation

Introduction

The Covid-19 pandemic has resulted in social distancing in many countries including Israel. Lockdown started mid-March with closure of the whole educational system including medical schools. The restrictions recommended by the Center of Disease Control and Prevention [1] as well as the Israeli Health Ministry (Israeli Health Ministry [2]) on social gathering and the unknown time limit have resulted in the need for an immediate transition of all medical education in the middle

of the academic school year to online education with the concern that a summer semester might not be a feasible option and that the next academic year might still be under the same circumstances [3].

The use of online technologies has increased over the last number of decades and has been part of medical education and medical care. This technology has the potential of providing an efficient and economic learning environment with the advantages of easier and effective access to information [4]. Medical graduates are expected to be familiar with the latest technologies and to ensure flexibility and adaptation to the changing healthcare environment. Therefore, academic staff have an important role in guiding and supporting medical students in effective e-learning. Despite the widespread introduction of such technology, the effectiveness of e-learning has been difficult to quantify [5]. Obstacles to the development and use of online learning in medical education are time constraints, lack of technical skills, inadequate infrastructure, and negative attitudes of all involved [6].

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Online education during the pandemic was recently addressed by an Australian study which aimed to identify issues and challenges of online anatomy teaching, emphasizing on the key elements for education which included enabling synchronous teaching across remote sites, expanding offerings into the remote learning space, and embracing new pedagogies [7, 8]. In addition, alternative teaching options such as short lectures along with videos demonstrating surgery were adopted to address concerns regarding resident delayed training during the pandemic [9, 10].

The aim of our study was to evaluate the feasibility of an online clerkship in Obstetrics and Gynecology (ObGyn). Specifically, we aimed to identify effective pedagogical modalities which are more effective in online learning as well as the obstacles that were encountered. Secondly, we aimed to assess the willingness for future learning in this modality since a Covid-19 or other outbreak situation might recur.

Methods

Description of the Curriculum of the ObGyn Rotation at the Hebrew University in Jerusalem (Affiliated with Five Medical Centers) The curriculum includes two weeks of introductory lectures followed by a multiple choice question examination. Thereafter, a 6-week clinical rotation for groups of 16–20 students in each department, which includes “bedside” teaching in small groups of 3–4 students and group learning, based on a combination of lectures and problem-based learning. The faculty involved in the rotation teaching is 20 members. Students are encouraged to present a case for group discussion along with review of the literature. Final students’ clinical competency assessment is performed by a structured oral case-based exam and national written exam.

Covid-19 Outbreak Educational Program Changes Immediate adaptations were made by each of the five affiliated ObGyn departments independently to an online 3-week clinical course with a daily timetable. The rotation included asynchronous learning of pre-recorded lectures and links to relevant reading literature. Each day included 5 synchronous learning by ZOOM (Zoom Voice Communications Inc., San Jose, CA) platform. Synchronous learning included lectures, problem-based learning (PBL), and case discussions. Additional interactive learning such as Kahoot was also used.

The type of pedagogical learning used was left to the discretion of the faculty staff members. It is important to emphasize that most of the faculty staff do not have formal previous training or experience to provide online medical education. Furthermore, pre-recorded online lectures are available; however, other online links such as videos or podcasts are not gathered in the university library available to the students or faculty staff [11].

Two different questionnaires were sent to the students and academic staff at the end of the course. The questions addressed issues including expectations from the course, previous experience in online learning or teaching, and challenges or difficulties encountered during learning. Additionally, the students and academic staff were asked to assess the efficacy of different types of pedagogical methods used such as lectures, discussions, and PBL sessions. Academic staff were also asked about their willingness to have further training in online education and to take part in such a teaching module in the future (questionnaires provided in supplementary materials 1 and 2).

The students and the staff were asked to answer the questionnaire on a 5-point scale and each submission was coded as 1—strongly disagree and 5—strongly agree.

Descriptive statistics were analyzed as mean with standard deviation. Pearson’s correlation was used to determine the correlation between the answers and the overall evaluation of the course. Correlation is significant at the 0.05 level (two-tailed). The grading was compared between the students’ evaluations and the staff evaluations using independent samples *t* tests, assuming unequal variances [12].

Due to the urgent and rapidly evolving nature of Covid-19, it was not possible to secure an ethical approval prior to sending the questionnaires. However, an IRB approval was obtained in retrospect with waiver of informed consent. Moreover, it was made clear that respondents were providing data and by doing so were consenting for the data to be used.

Results

Thirty-five questionnaires were sent to academic staff and students. We received 27 (77.1%) completed questionnaires, 13 out of 20 departmental academic staff members and 14 out of 15 students. The average age of the staff members was 48, with 39% women. The average age of the students was 27, with 76% women. Staff member teaching experience of over 10 years was reported by 85% of the responders.

The overall rating of the course was 4.14/5 from the students and 3.38/5 from the staff. Interestingly, female students and female staff evaluated the course higher than males although not statistically significant (4 ± 0.37 vs 3.22 ± 1.19 , $p = 0.07$). Previous teaching experience did not correlate with the overall evaluation of the course ($r = 0.20$, $p = 0.40$). Previous experience in online education was reported by 20% of the students and 15% of the academic staff, which had a positive correlation with higher course evaluations ($r = 0.64$, $p = 0.02$). Prior to the course, 4/14 (28%) of the students and none of the staff members expected online education to be effective. However, this low expectation did not correlate with the overall satisfaction of the course ($r = 0.03$, $p = 0.91$).

The challenges identified in online Obstetrics and Gynecology clerkship during the pandemic are presented in Table 1. Technical challenges identified were similar for students and academic staff, except for eye contact which was rated higher for staff member than for students ($P < 0.001$). The factors that significantly correlated with the overall assessment of the course were absence of bedside teaching ($r = 0.50$, $p = 0.05$) and feedback ($r = 0.50$, $p = 0.03$). Technical difficulties, learning environment, and the size of the group were not identified as significant obstacles.

In order to understand what makes online learning successful, the students and the staff members were asked to rate the effectiveness of the different pedagogical modules. The results are presented in Fig. 1. Overall, the pedagogical modules which were perceived as most effective were PBL and the use of videos ($r = 0.70$, $p = 0.00$). PBL, guided learning, and use of videos were rated higher by the students than by the faculty staff ($p = 0.05$, 0.00 , and 0.05 , respectively). Discussions, lectures, and interactive applications were rated similarly by the students and by the staff ($p = 0.09$, 0.20 , and 0.22 respectively).

Regarding professional aspects, 92% of the staff reported that they felt worried (agreed and strongly agreed) that the students did not experience a conventional clinical rotation. They commented that the course needs an additional clinical experience in the future. In addition, 31% of the responders felt that the course addressed emotional challenges during the Covid-19 outbreak. However, 14% of the students expressed (reported as disagree or strongly disagree) that emotional support should be part of online education in such an outbreak. Moreover, 72% of the responders stated that online learning should be part of the clinical clerkship in the future and showed willingness for future professional development in this modality.

Discussion

The Covid-19 pandemic has changed our lives in many aspects and some practices will probably remain with us. Social distancing affects the way we practice medicine and will affect

the way we will teach the next generation of physicians [13]. Facing future hazards of infectious outbreaks and pandemics, tele-teaching technologies have the potential to provide an alternative to in-person lectures; however, a structured plan and evaluation of the medical school adaptations are urgently required to ensure that students will complete the educational objectives of clinical knowledge and skills [14].

In the present study, we found that online education was more effective than perceived by faculty members and students prior to the course; with a joint agreement that such education modules should be part of the formal curriculum. The most effective pedagogical strategy reported was PBL and the use of videos and interactive learning were valuable as well. The main difficulties encountered were lack of eye contact, immediate feedback, and absence of bedside teaching. Interestingly, technical issues or previous teaching experience was not identified as a major challenge for online learning [7, 8].

It is well established that engagement is crucial to student learning and satisfaction in online courses. Student engagement is defined as “the student’s psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote” [15, 16]. Our study emphasized that PBL is effective in online learning, possibly since this method encourages student engagement. Previous studies evaluating Web-based medical education have found that incorporating simulation to medical education has the advantage of feedback, opportunities for repeated practice, and team-focused communication skills [17]. Preclinical students that had undergone telemedicine-assisted surgical and anatomy teaching had high acceptance and satisfaction rates [18]. Implementing clinical simulation or surgical training modules have the potential of an added value in the future pandemics that might require longer periods of online learning and less options of bedside teaching.

Notably, faculty members and students agreed that additional clinical rotation is necessary. Use of telemedicine might be able to overcome the loss of clinical bedside experience. The pandemic has accelerated the use of telemedicine in hospitals and outpatient clinics. These technologies are filling geographic and health system gaps, outside the pandemics,

Table 1 Challenges in online Obstetrics and Gynecology clerkship

	Student responses Mean \pm SD (1–5) (1—strongly disagree; 5—strongly agree)	Faculty member responses Mean \pm SD (1–5) (1—strongly disagree; 5—strongly agree)	<i>P</i> value
Technical (internet connection etc.)	2.10 \pm 0.70	2.07 \pm 0.90	0.85
Interaction with peers and teacher (eye contact etc.)	2.20 \pm 1.70	3.80 \pm 0.60	0.00
Absence of bedside teaching	4.40 \pm 1.10	4.07 \pm 0.90	0.36
Feedback and assessment	2.90 \pm 1.90	3.20 \pm 0.20	0.44
Learning environment	2.60 \pm 1.70	2.40 \pm 1.20	0.70
Number of students in the group	2.60 \pm 1.70	2.00 \pm 1.00	0.16

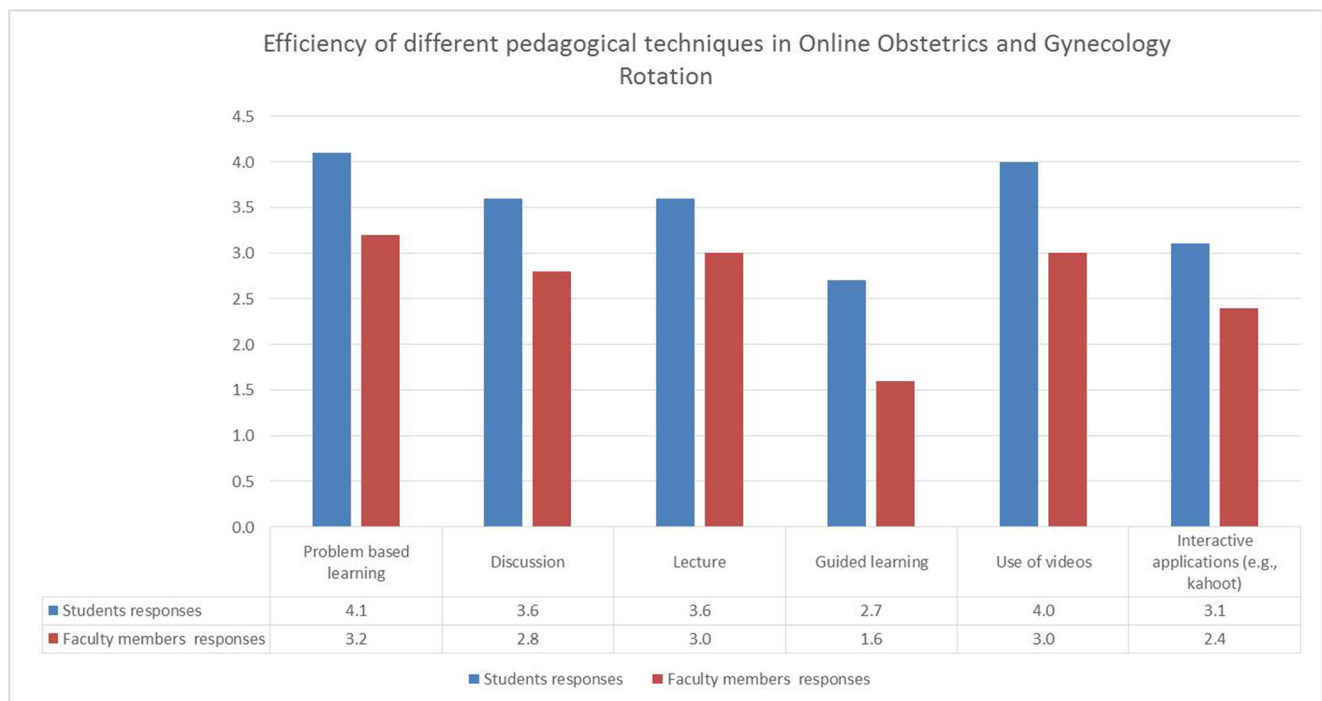


Fig. 1 Efficacy of different pedagogical modules in online ObGyn rotation

and may serve as a future platform in the medical education. Previous studies that assessed student satisfaction from telemedicine training have found that such competencies were most valuable by students and that those exposed to telemedicine training will feel more comfortable using such technologies in their practice in the future [19]. We suggest that telemedicine competencies should be part of the formal curriculum including addressing professional aspects unique to ObGyn such as multicultural aspects, compassion, communication skills, and ethical issues [19].

Finally, the majority of the faculty members expressed their interest in additional training with online education. Interestingly, in the present study, both students and faculty did not identify technical difficulties as a major obstacle as opposed to previous reports. Most teachers teach as they were taught; however, in the present generation, online teachers lack a role model [20]. We suggest that preparatory steps should be taken for professional development of online teaching in addition to technology tools. Continuing professional education should include formal workshop, development of an online resource, and short informal sessions with instructors [21].

The limitations of the present study are the limited sample size, the understructured online teaching program, and the use of technical resources. Although a pilot study, we consider that its strengths are based on the presentation of the possibilities and the potential of online to be used for clinical medical rotations such as rapid establishment of online teaching facilities as well as identification of future platforms for a structured online course.

Conclusion

Online education was found to be more effective than perceived prior to the course, during the Covid-19 outbreak. The most effective pedagogical strategy reported was PBL and the use of videos and interactive learning. We suggest that future research into tele-teaching and developing telemedicine competencies should be part of the strategic plan of medical schools in order to ensure comprehensive and meaningful learning in these emerging modalities.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s40670-020-01181-y>.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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Practice Points

- Online education was more effective than perceived by faculty members and students prior to the course.
- The most effective pedagogical strategy reported was PBL and the use of videos and interactive learning.
- The main difficulties encountered were lack of eye contact, immediate feedback, and absence of bedside teaching.
- Tele-teaching and telemedicine competencies should be part of the formal curriculum.
- Continuing professional education should include emphasis on online teaching modalities.

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