

Evaluating the Effectiveness of Early Exposure: Obstetrics and Gynecology Two-Week

Virtual Elective

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Abstract

Key Words: virtual elective, obstetrics and gynecology elective, medical school curricula

Introduction

Clinical clerkships continue to remain an integral part of undergraduate medical education.¹ It provides an immersive learning opportunity for medical students to apply, solidify and expand the foundational knowledge acquired throughout their first two years of medical school. Rotations are most often completed in surgery, pediatrics, psychiatry, neurology, obstetrics/gynecology (OB/GYN), family medicine and internal medicine.² After exposure to each specialty, students may be evaluated on their acquired clinical skills and/or clinical knowledge dependent upon their medical school curricula.³ There has been no empirical evidence on the correlation between duration of each clerkship with final examination scores⁴, other than in pediatrics which saw a negative correlation with decreased rotation duration.³ However, student self-perceived preparedness and comfortability did increase with early exposure to clerkship rotation content⁵, and increased number of learning experiences positively correlated with clerkship duration.⁶

Until now, clerkships, particularly in obstetrics and gynecology, have either been offered through simulation labs, didactics or in the healthcare setting dependent upon the pedagogical approach of each institution's curricula.⁷ However, due to the recent pandemic of coronavirus-2019, medical students now have decreased accessibility to these aforementioned educational settings. This has provided an innovative opportunity for clerkship directors to provide the same clinical experience to students in a novel way – virtually. Recently, the Larner College of Medicine at the University of Vermont created a two-week virtual simulated clerkship elective encompassing the full spectrum of the OB/GYN clerkship.⁸ Students are taught through educational learning objective videos and teaching cases, basic science videos and uWISE quizzes.⁸ On the final day of the clerkship, each students' clinical knowledge is examined via a

100 question uWISE quiz testing their proficiency and understanding of the information acquired throughout the course.

As of to date, this virtual clerkship has yet to be evaluated on its effectiveness in increasing student success in traditional clerkship, defined here as self—perceived preparedness, increased confidence with clinical knowledge, and final examination scores for the in- person 6-week OB/GYN clerkship.

Based on a study conducted by Surmon et al (2016), four main themes corelate with students’ perception of preparedness – positive influences, learning to adapt, and potentially modifiable influences, which encompasses positive and negative influences and negative influences – refer to *Figure 1*. Our systematic review of self-perceived preparedness will focus on the modifiable factors of positive and negative influences encompassing competence, curriculum, and learning. We hypothesize that students who take this virtual elective will have increased self-perceived preparedness, increased confidence with OB/GYN clinical knowledge, and higher uWISE test scores on their traditional nonvirtual OB/GYN clerkship than students who did not take the OB/GYN virtual elective.

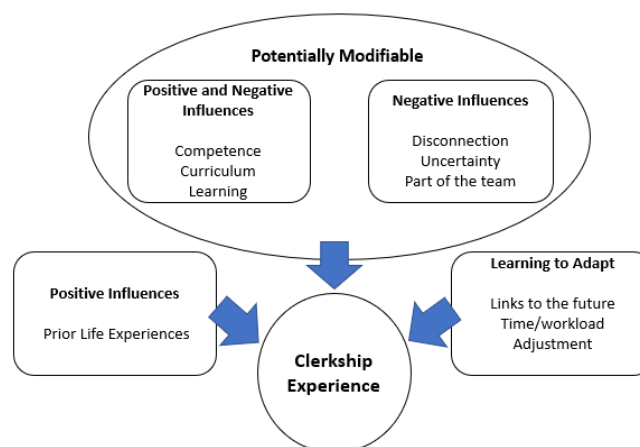


Figure 1: Illustration of factors affecting students' perception of preparedness for clerkship

The aim of this research is to evaluate how early virtual exposure to clerkship content affects students self-perceived preparedness, increased confidence with clinical knowledge, and final examination scores for their in-person 6-week OB/GYN clerkship.

Hypothesis/Specific Aims/Research Questions

RQ1: Does taking a two-week virtual OB/GYN elective increase student confidence in their understanding of OB/GYN clinical knowledge?

RQ2: Does taking a two-week virtual OB/GYN elective increase final uWISE scores for the in-person 6-week OB/GYN clerkship, compared to students who do not take the two-week virtual OB/GYN elective?

RQ3: Does taking a two-week virtual OB/GYN elective increase students self-perceived preparedness for the in-person 6-week OB/GYN clerkship?

RQ4: Will students have a positive experience with learning about the OB/GYN specialty virtually?

Methods

Context/Protocol

All data will be collected from third-year medical students at Wright State University Boonshoft School of Medicine, who have elected to take the two-week virtual OB/GYN elective. On the last day of the virtual elective, students will be required to email the clerkship director

their answers for assigned case questions. Medical students will attend a minimum of four of the five webinar sessions facilitated by the clerkship director.

Data Collection

Medical students will take an anonymous pre-survey and post-survey remotely. The pre-survey will be given on the first day prior to students beginning their course work. The post-survey will be given after students have completed their last day of course work. All medical students participating will be between ages 20 – 50 y.o. who are able to read and understand English.

Data Analysis

To determine if taking a two-week virtual elective increases student subjective confidence in their understanding of OB/GYN clinical knowledge, a survey will be utilized.

To determine if taking a two-week virtual OB/GYN elective increases final uWISE scores on the in-person 6 –week OB/GYN clerkship, compared to students who do not take the two-week virtual OB/GYN elective, a comparison chart will be utilized.

To determine if taking a two-week virtual elective increases students self-perceived preparedness for the in-person 6 – week OB/GYN clerkship, a survey will be utilized.

To determine if students have a positive experience with learning about the OB/GYN specialty virtually, a survey will be utilized.

Results

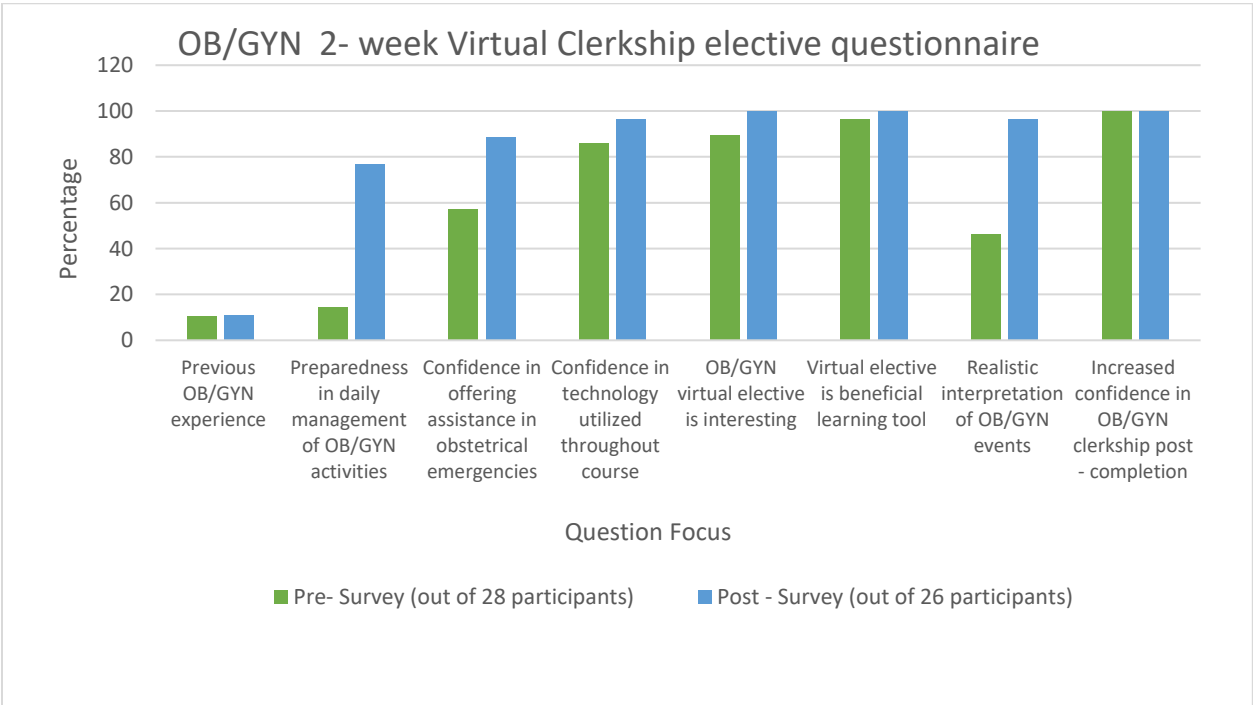
Survey results were analyzed via T-tests and Levine's Test for Equality of Variances. The pre-survey had a sample size of 28, and the post- survey had a sample size of 26. Statistical

significance ($p < 0.05$) was found in the following: 1. preparedness in daily management of OB/GYN activities ($p = 0.0001$). 2. confidence in offering assistance in obstetrical emergencies ($p = 0.009$). 3. confidence in technology utilized throughout this course ($p = 0.003$). 4. OB/GYN virtual elective is interesting ($p = 0.011$). 5. virtual elective is a realistic interpretation of OB/GYN events ($p = 0.0001$).

At the termination of the two –week virtual elective, there was no statistical significance in participants finding the virtual elective as a beneficial learning tool ($p = 0.278$) nor the number of participants who had previous OB/GYN experience ($p = 0.25$). Also, there was no statistical significance in the number of participants who thought the virtual elective would increase their confidence for the traditional OB/GYN clerkship post-completion ($p = 0.782$). There was no statistical significance between the UWise test scores of participants and nonparticipants ($p < 0.34$).

	Pre- Survey (out of 28 participants) 'strongly agree'	Post – Survey (out of 26 participants) 'strongly agree'
Previous OB/GYN experience	10.7%	11.1%
Preparedness in daily management of OB/GYN activities	14.3%	76.9%
Confidence in offering assistance in obstetrical emergencies	57.1%	88.5%
Confidence in technology utilized throughout course	85.8%	96.2%
OB/GYN virtual elective is interesting	89.3%	100%
Virtual elective is beneficial learning tool	96.4%	100%
Realistic interpretation of OB/GYN events	46.4%	96.2%
Increased confidence in OB/GYN clerkship post – completion	100%	100%

	Statistical Significance (p < 0.05)
Previous OB/GYN experience	0.25
Preparedness in daily management of OB/GYN activities	0.0001
Confidence in offering assistance in obstetrical emergencies	0.009
Confidence in technology utilized throughout course	0.003
OB/GYN virtual elective is interesting	0.011
Virtual elective is beneficial learning tool	0.278
Realistic interpretation of OB/GYN events	0.0001
Increased confidence in OB/GYN clerkship post – completion	0.782
Uwise exam score difference between participants and non-participants	< 0.34



Discussion and Conclusion

Early virtual exposure increased student’s confidence and self – perceived preparedness for traditional in-person OB/GYN clerkships. Participants felt prepared in the daily management of OB/GYN activities, confident in offering assistance in obstetrical emergencies and confident in the technology utilized throughout this virtual clerkship elective. Participants also felt the virtual elective was interesting, and that it was a realistic interpretation of OB/GYN events.

There was no statistical significance regarding the virtual elective being a beneficial learning tool, or participants who thought they would have increased confidence for the traditional OB/GYN clerkship post-completion. This may be explained by 96.4% of participants who ‘strongly agreed’ in the pre-survey that the elective would be a beneficial learning tool, followed by 100% of participants who ‘strongly agreed’ in the post-survey. 100% of participants in the pre- and post-survey ‘strongly agreed’ they would have increased confidence for their traditional OB/GYN clerkship post-completion of the virtual clerkship elective.

Furthermore, there was no statistical significance between participants and their UWise examination scores, which may be explained by several factors. The time lapse between participation in the virtual elective and in-person 6-week OB/GYN clerkship may correlate with participants frequency of reviewing curricula as they were responsible for current clerkship requirements. The in-person 6-week OB/GYN clerkship curricula encompassed all information taught in the 2-week virtual elective. By its’ completion, all students were taught the same material.

Study limitations included the inability to evaluate UWise scores before and after completing the virtual clerkship elective. Future aims include investigation of how technology and consistent early virtual exposure can enhance medical education, clerkship performance, and recruitment of students into unmatched specialities.

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Survey Instrument: Two-week virtual OB/GYN elective Evaluation (#1 – 8 will appear on pre and post survey) (#9 – 15 will appear on post-survey only)

1. I have prior experience working in the field of obstetrics and gynecology.
Strongly Agree Agree Neutral Disagree Strongly Disagree
2. I feel prepared in my ability to assist in the daily management of OB/GYN duties.
Strongly Agree Agree Neutral Disagree Strongly Disagree
3. If, during my clinical rotation, a resident or attending desires assistance in managing an obstetrical emergency patient, I would volunteer.
Strongly Agree Agree Neutral Disagree Strongly Disagree
4. I feel / felt confident utilizing technology for this virtual course.
Strongly Agree Agree Neutral Disagree Strongly Disagree
5. I find / found the topics discussed throughout this virtual elective interesting.
Strongly Agree Agree Neutral Disagree Strongly Disagree
6. This virtual elective will be / was a beneficial learning tool for obstetrics and gynecology.
Strongly Agree Agree Neutral Disagree Strongly Disagree
7. This virtual elective will be / was a realistic interpretation of events I will see during my obstetrics and gynecology clerkship.
Strongly Agree Agree Neutral Disagree Strongly Disagree
8. The time spent involved in this virtual elective, will increase / has increased my confidence for my obstetrics and gynecology clerkship.
Strongly Agree Agree Neutral Disagree Strongly Disagree
9. The technology utilized for this virtual elective appropriately fit the needs and requirements for this course.
Strongly Agree Agree Neutral Disagree Strongly Disagree
10. The technology utilized during this virtual elective did not hinder my knowledge and understanding of the field of obstetrics and gynecology.
Strongly Agree Agree Neutral Disagree Strongly Disagree

11. Completing this virtual elective remotely aided in my knowledge and understanding of the field of obstetrics and gynecology.

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. The information in this virtual elective was presented in a way that was easy to comprehend.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. I would recommend this virtual elective to other medical students.

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. This virtual elective should be utilized in the future to prepare students for their obstetrics and gynecology clerkship.

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. The instructor was professional, easily accessible, and well-prepared for this virtual elective.

Strongly Agree Agree Neutral Disagree Strongly Disagree