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Vertical integration of anatomy and women's health: Cross campus blended learning

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I. INTRODUCTION

For safe practice of medicine, proficiency in anatomy is important. Anatomy is mainly taught in the pre-clinical years. Knowledge retention decreases over time and this will affect clinical and practical application during clinical years (Jurjus et al., 2014; Zumwalt et al., 2007). Literature shows that integrating relevant anatomy with clinical teaching will reinforce the basic concepts and fill these knowledge gaps. Rajan et al. (2016) in their study show that integrating neuroanatomy refresher sessions to clinical neurological case discussions was effective in building relevant knowledge.

Monash University practices a vertically integrated curriculum to promote meaningful learning. In a vertically integrated curriculum, clinical and basic sciences are integrated throughout the program, to provide relevance to basic sciences for clinical practice (Malik & Malik, 2010; Wijnen-Meijer et al., 2020).

As part of the clinical skills development, the Women's Health (WH) team at Monash university Malaysia in 2010 started episiotomy workshops. Episiotomy is a procedural skill, as future doctors working in Malaysia are expected to know. To perform and repair this surgical procedure safely as well as to identify potential complications, an in-depth knowledge of perineal anatomy is essential.

In 2019, the Anatomy and WH team came together to integrate a refresher anatomy component to the ongoing episiotomy workshops. The objective was to reinforce

anatomy relevant to the episiotomy procedure to promote meaningful and lifelong learning.

The anatomy component was integrated virtually because the clinical and preclinical campus are located at different sites about 300km apart. The preclinical Sunway campus is located at Bandar Sunway and the Clinical School Johor Bahru (CSJB) campus is located at Johor Bahru.

Our aim was to see if this approach of virtually integrating refresher anatomy components with the episiotomy workshops will be relevant and beneficial to student learning.

II. METHODS

This cross-campus, blended learning approach, a combination of online (anatomy review session) and face-to-face (episiotomy workshops) sessions, was started in 2019 before the COVID-19 pandemic. These integrated sessions were conducted for year 5 medical students during their O&G rotation with each group attending the session only once. The anatomy sessions were remotely conducted by the anatomy team. All practical hands-on training workshops were conducted in the clinical skills lab (CSJB campus) by the WH team for the students attending onsite. The two sites were connected via a web conferencing platform/ application (Zoom).

Before the pandemic, the online anatomy sessions and the hand-on workshops were conducted synchronously. The anatomy session was in the form of a 30-minute lecture demo-presentation using various models, cadaveric plastinated specimens and images. This lecture-demo was broadcast virtually from the Monash Anatomy and Pathology e-Learning (MAPEL) Lab in Sunway campus to the clinical skills lab at CSJB. This was followed by the practical training on performing and repairing episiotomy on mannequins supervised by the WH team (see Appendix A).

During the COVID-19 pandemic, we altered the delivery format of the anatomy component due to the restrictions. The real time virtual anatomy demo-presentation was replaced by a pre-recorded video lecture uploaded to a Moodle learning management system for students to view asynchronously, before attending the workshop. During the workshop, a knowledge assessment quiz (using online polling application) was remotely conducted by the anatomy team. Each question was discussed in detail with explanation and feedback provided by both teams. This was followed by the practical, hands-on training for students attending onsite in the clinical skills lab at CSJB (see Appendix A).

At the end of the sessions, students responded to a voluntary, anonymised online survey questionnaire. The questionnaire consisted of both quantitative questions based on 5-point Likert scale and qualitative open-ended questions.

III. RESULTS

In 2021, we conducted seven integrated workshops, with a total of 59 students attending. Thirty-two students (54%) responded to the survey questionnaire, out of whom the majority (87.5%) had either observed or assisted an episiotomy procedure on real patients. Based on their feedback, most students had viewed the pre-recorded video lectures and found them useful.

As shown in Figure 1 below, 96% agreed that organization and content of pre-learning materials were effective in achieving the learning outcomes, 96% agreed that this approach refreshed their anatomy knowledge, 91% felt that the anatomy sessions were relevant to the episiotomy workshop, 96% agreed that this approach of integrating anatomy was beneficial and 93% found that this approach was effective in their understanding and application in real time practice.

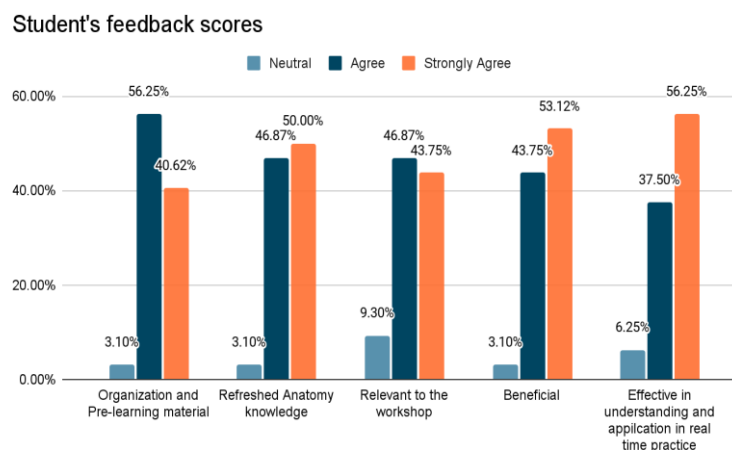


Figure 1. Student responses in evaluating impact (based on a 5-point Likert scale) of virtual integration of relevant anatomy in the episiotomy workshop

Qualitatively, the responses to open-ended questions were grouped as either most or least beneficial. Most beneficial to the students was that it helped them to revise and correlate relevant anatomy, consolidate and highlight the important concepts. Least beneficial to students were the non-clinical aspects, overlapping content between the uploaded lecture video and the real time zoom session, insufficient models and the lack of online engagement. Overall, the students responded positively towards this learning approach.

IV. DISCUSSION

Based on student feedback, more than 90% responded positively towards this virtual integrated approach of reviewing relevant anatomy during the hands-on workshop. This 'just-in-time' review approach, even when conducted virtually, allows them to focus on applying only pertinent knowledge to the hands-on session and subsequently when dealing with real-time episiotomy repair on patients.

The limitations of the study include the internet network bandwidth at the two distant sites and the restrictions posed by the ongoing COVID-19 pandemic. Replacing the live anatomy demonstrations, time constraints, social distancing and the use of face shields/face masks made online interactions more challenging.

V. CONCLUSION

This is an ongoing project, requiring further evaluation to assess the impact of this pre-internship training strategy on key procedural skills learning and future practice that is expected in obstetrics.

To conclude, incorporating relevant, refresher anatomy sessions into clinical teaching, even when held virtually, can benefit students to review the core concepts of basic sciences and apply it to clinical practice. This allows for the development of clinical skill competency and ultimately safe patient care.

Notes on Contributors

Vidya Kushare initiated and designed the project, conducted the virtual anatomy review sessions, prepared the video, the quiz and the feedback questionnaire, performed the data collection and data analysis, wrote the manuscript and presented this in a conference.

Bharti M K was involved in the design of the project, conducted the virtual anatomy review sessions, prepared the video and edited the manuscript.

Narendra Pamidi was involved in the design of the project, editing the manuscript and providing references.

Lakshmi Selvaratnam was involved in the planning and development of the project, providing references, providing feedback, writing and editing the manuscript.

Arkendu Sen was involved in the design of the project, providing feedback, editing the manuscript and providing references.

Nisha Angela Dominic initiated and designed the project, conducted the hands-on workshop sessions, prepared the

quiz and the feedback questionnaire, performed the data collection, editing the manuscript and providing references.

All the authors have read and approved the final manuscript.

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Declaration of Interest

The authors have no conflict of interest.

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Appendix A: Flow chart showing episiotomy workshop methodology - indicating differences before and during the pandemic.

