

WMER

Implementing an interactive and innovative obstetrics and gynaecology teaching session that incorporates mixed reality (MR) for second year medical students

Item Type	Internal Poster
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Citation	Sidiq S, Almey V. Implementing an interactive and innovative Obstetrics and Gynaecology teaching session that incorporates mixed reality (MR) for second year medical students. Internal poster: George Eliot Hospital NHS Trust; 2025.
Publisher	George Eliot Hospital NHS Trust
Download date	2026-03-10 03:25:18
Link to Item	https://westmid.openrepository.com/handle/20.500.14200/7929

Title: Implementing an interactive and innovative Obstetrics and Gynaecology teaching session that incorporates mixed reality (MR) for second year medical students.

Background: Medical students are required to develop knowledge and understanding that underpins the antenatal, intrapartum and postnatal period. Time constraints and varied clinical opportunities may limit students' exposure to specific Obstetrics and Gynaecology (O&G) experiences. Developments in technology, including MR can allow educators to offer experiential learning opportunities for learners that closely mimic the real world (Nuzhat *et al*, 2014; Atiomo *et al*, 2024).

Summary of work: Session designed to allow second year medical students to follow the journey of a simulated pregnant patient. Service Improvement Project planned for one academic year, involving delivery of session 12 times over 3 separate placement blocks, measuring student achievement of learning objectives, knowledge and confidence, and gathering qualitative feedback.

Activity Plan

Antenatal period	Activity
Booking appointment	Practice obtaining an Obstetric history
Lifestyle information	Activity box containing 13 objects allows students to discuss lifestyle recommendations during pregnancy (encouraged vs avoided)
Routine appointments and screening programmes	Review schedule of antenatal appointments including USS, identify the gestational age they are performed at
28 weeks antenatal appointment	Perform an Obstetric examination on a pregnant manikin
Symphysis Fundal Height (SFH) measurements/Obstetric Ultrasound Scans (USS)	Students presented with three different case studies and plot the measurements on the customised GROW chart
Awareness on Anti-D injections & Prophylactic Heparin Injections	Practice different injection administration techniques and understand sharps injury prevention
Preparation for labour	Review evidence and guidelines around WHO analgesic ladder, OASI bundle and perineal massage

Intrapartum period	Activity
Commencing labour	Explore different photographs and evidence of what may commence labour (e.g. eating pineapples)
Intelligent Intermittent Auscultation (IIA)	Practice listening to different fetal heart rates to build skills and confidence in accurate calculation
Partogram	Provided with a scenario to monitor maternal and fetal wellbeing during labour by effectively using the partogram
Cervical dilation	Visualise and feel cervical measurements ranging from 1cm – 10cm using a cervical dilation board

Birth	Activity
High-Fidelity manikin	Students provided with an opportunity to observe and facilitate a spontaneous vaginal birth and deliver the placenta
Mixed reality smart glasses	Using a headset to visualise the fetus in the uterus and understand fetal lie, presentation and position of placenta

Postnatal period	Activity
Routine postnatal assessment	Postnatal assessment in a simulated environment
Contraception	Understanding how effective contraception is by playing Jenga (game consisting wooden blocks)
Breastfeeding	Activity box containing 14 objects to explore the benefits of breastfeeding

Summary of results: 30 students have participated in the teaching session so far over 8 sessions. A further 16 students will participate in the next 4 sessions.

Confidence Likert Scale Measurement - Pre session 29% of students reported 'agree' or 'strongly agree' for their confidence levels of knowledge and understanding in the antenatal, intrapartum and postnatal periods, compared to 100% post session, suggesting a clear improvement in perceived confidence.

Knowledge Multiple-Choice Question (MCQ) – Pre session MCQ score of 80% reflected a good baseline understanding. Post session MCQ score of 88% demonstrated an improvement.

Qualitative feedback – in response to the question 'What did you enjoy?', a common theme noted amongst students was interactivity.

Conclusion: The O&G interactive teaching session enhanced medical students' knowledge and confidence and helped them achieve their learning outcomes. Additionally, students feedback comments were positive. So far there is support for continuing to deliver the session.

References:

1. Nuzhat A, Salem R O, Al Shehri F N, Al Hamdan N. Role and challenges of simulation in undergraduate curriculum. Med Teach [Internet]. 2014 Apr [cited 2025 Jan 17]; 36(Sup.1):S36-S73. Available from: <https://doi.org/10.3109/0142159X.2014.886017> .
2. Atiomo WU, Casper C, Symonds I, Obermair H, Gwako G, Vash-Margita A, Sosa C, Kihara A, Ezimokhai M, Fogarty P. A common curriculum in obstetrics and gynaecology for medical students globally. Int J Gynecol Obstet [Internet]. 2024 Apr [cited 2025 Jan 17]; 167:191-196. Available from: <https://obgyn.onlinelibrary.wiley.com/doi/epdf/10.1002/ijgo.15544>