A Comparison of Multiple Performance Outcomes Pre and Post Implementation of High Fidelity Clinical Simulation in OB/GYN and Family Medicine Clerkships

Jose F. Pliego, M.D., Kimberly L. van Walsum, Ph.D. and Marc Via, MD
Scott & White Memorial Hospital and The Texas A&M University System Health Science Center College of Medicine, Temple, Texas

BACKGROUND/PURPOSE
• Many medical schools are investing considerable resources in high fidelity clinical simulation facilities, and considerable effort in shifting curricula from traditional models involving the separation of basic and clinical sciences and traditional teaching, to new models integrating basic and clinical sciences and involving reflective and experiential learning in high-fidelity simulation environments. Is this a worthwhile investment?

METHODS
• This study analyzed preexisting data collected on student clerkship performance in a total of 21 clerkship rotations in OB/GYN and FMED. ANOVA analyses compared differences in mean clinical grades in clerkships, NBME scores, and clerkship OSCE ratings for 15 clerkship rotations before and 6 clerkship rotations following implementation of high fidelity simulation in the clerkship curricula for the Departments of Obstetrics & Gynecology and Family & Community Medicine at the Texas A&M University System Health Science Center and College of Medicine.
• This was an educationally exempt study under the IRB of Scott & White Memorial Hospital.

PARTICIPANTS
• Participants for this study were medical students in their third year clerkships in Obstetrics/Gynecology (n = 223) and Family/Community Medicine (N = 238). Preexisting data on student performance consisted of scores from 15 clerkship rotations prior to the implementation of clinical simulation in the OB/GYN and FMED clerkship curricula, and scores from 6 clerkship rotations following implementation of clinical simulation in the OB/GYN and FMED clerkship curricula.

RESULTS
• Preexisting data analyzed included NBME conversion scores, ratings on clinical performance in clerkships (both OB/GYN and FMED), evidence based medicine grade (FMED only), OSCE scores and final grades (OB/GYN only).

DISCUSSION
• This study of the outcome scores for medical students in clerkships in OB/GYN (n = 223) and FMED (n = 238) found the following:
• Implementation of clinical simulation in clerkship curricula did not have a statistically significant effect on most outcome measures in OB/GYN and FMED clerkships.
• A statistically significant difference was found in OB/GYN NBME and Clinical scores following implementation of clinical simulation in the clerkship curricula. This difference was in a negative direction.
• These statistically significant results are difficult to interpret due to potential confounds with cohort effects, and expectancy bias and as well as changes in the OB-GYN OSCE that increased its difficulty.
• However, we may also tentatively interpret these changed scores in OB/GYN knowledge and clinical practice as potential evidence of the need to become more systematic in the use of clinical simulation for engaging students in greater integration of clinical knowledge and best practices in clinical medicine.

CONCLUSIONS
• The impact of simulation-based education in undergraduate medical education may not be consistently demonstrable using traditional measures such as clinical grades, NBME, or OSCE scores.
• Clinical simulation has features of efficiency, safety, and standardization that may recommend it over traditional methods for teaching and assessing clinical skills in undergraduate medical education.
• Students report an affinity for high fidelity clinical simulation as a teaching tool within clerkship curricula.
• With new methods of teaching in medical education there may be requirements for new methods of outcomes assessment that account for variables other than rote knowledge.
• Future research is recommended to verify the validity and generalizability of clinical simulation as a teaching and assessment tool in medical education.
• The authors continue to assert that thoughtful strategic simulation-based curricula may improve students’ performance in both knowledge and clinical practice domains.

OBSTETRICS & GYNECOLOGY SIMULATION CLERKSHIP RESULTS

Mean scores on NBME and Clinical Significantly Different * P < .003; ** P < .00003

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<th>OB/GBYNNBME</th>
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<th>OB/GBYNOSCE</th>
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FAMIIY MEDICINE SIMULATION CLERKSHIP RESULTS

Mean scores in Clinical, NBME, EBM not significantly different


OBGYN SIMULATION CLERKSHIP RESULTS

Mean scores in Clinical, NBME, EBM not significantly different

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Descriptives

Component

Mean

Variance

Std. Deviation

Upper Bound

Lower Bound

** RESULTS
• Results indicated that there were NO significant differences in the mean pre-post simulation clerkship scores in the following:
  - FMED and OB/GYN NBME conversion scores
  - FMED Evidence Based Medicine score
  - FMED Clinical score
  - OB/GYN OSCE score
  - OB/GYN Final score
• Results indicated that there WERE statistically significant differences in the mean pre-post simulation clerkship scores for the following:
  - OB/GYN NBME conversion score (p < .003)
  - OB/GYN Clinical score (p < .000)
  - These pre-post differences were in a negative direction.