

Implementation and Evaluation of a Novel Operating Room Curriculum for the Obstetrics and Gynecology Clerkship

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OBJECTIVE: Primary objective is to estimate the effect of an operating room (OR) curriculum on obstetrics and gynecology (Ob/Gyn) students' clinical knowledge related to the OR. Secondary objective is to estimate the effect of the curriculum on student confidence and satisfaction related to the OR experience.

STUDY DESIGN: Prospective cohort study of 6 Ob/Gyn clerkship groups from September 2011 to June 2012. Three control groups received usual teaching and 3 intervention groups received the OR curriculum plus usual teaching. The primary outcome was the measurement of student knowledge using preclerkship and postclerkship questionnaires. Student confidence and satisfaction related to the OR experience were also measured using questionnaires. Standard clerkship evaluations were reviewed to rate the quality of faculty teaching. Between-group scores were compared using Student *t* test. A total of 26 students per group were needed to detect a 20% difference in between-group change in clinical knowledge ($\alpha = 0.05$, 80% power).

SETTING: Women and Infants' Hospital, Providence, Rhode Island, a tertiary care teaching hospital for the Warren Alpert Medical School of Brown University.

PARTICIPANTS: Ob/Gyn clerkship students.

RESULTS: Overall, 70 students were enrolled—68 completed evaluation measures immediately after clerkship and 27 at 6 months after clerkship. More intervention subjects were fourth-year students ($p = 0.03$) and had completed surgery clerkships ($p = 0.003$). At baseline, groups

demonstrated similar clinical knowledge and confidence ($p > 0.05$). Although there was no difference between groups in knowledge scores immediately after clerkship, at 6 months, the intervention group had greater retention in clinical knowledge scores (1.2 ± 2.6 vs 3.5 ± 1.8 ; $p = 0.02$). At clerkship completion, intervention group was more satisfied with student-faculty interaction (mean sum score = 14.7 ± 3.5 vs 16.9 ± 3.0 ; $p = 0.01$). On review of standard clerkship evaluations, intervention subjects gave significantly higher scores for quality of faculty teaching (3.82 ± 1.18 vs 4.39 ± 0.67 ; $p = 0.01$).

CONCLUSIONS: Our OR curriculum improved knowledge retention, increased student satisfaction with student-faculty interactions in the OR, and improved faculty teaching evaluation. (J Surg 71:521-529. © 2014 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: clerkship, curriculum, medical student, operating room

COMPETENCIES: Patient Care, Medical Knowledge, Interpersonal and Communication Skills

INTRODUCTION

It is well understood that the operating room (OR) can be a challenging place for medical student learning, and educational research and scholarship has questioned the value of medical student learning within the OR.^{1,2} Current OR teaching for the obstetrics and gynecology (Ob/Gyn) clerkship relies primarily on observation, resident and faculty motivation, and largely ad hoc teaching. Much educational scholarship concentrates on OR instructional methods, rather than content taught to the medical student within the OR.^{3,4}

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A curriculum based on defined learning objectives has been shown to improve student satisfaction with a learning experience.^{3,5,6} Distinguishing between learning objectives that are best fulfilled while the student is in the OR and those that can be addressed outside of the OR is important. Therefore, a defined curriculum based on specific intra-operative learning objectives for the Ob/Gyn clerkship may improve student learning and satisfaction with the OR experience, increasing its value.

We formulated learning objectives using information gained through prior focus groups regarding faculty and student perceptions of learning experiences in the OR during the Ob/Gyn clerkship.⁷ Using these learning objectives, we built an OR instructional strategy, or curriculum, that was used by medical students during the Ob/Gyn clerkship. The primary objective of this study is to estimate the effect of this OR curriculum on improving Ob/Gyn students' clinical knowledge related to the OR. Our secondary objective is to estimate the effect of the curriculum on student confidence and satisfaction related to the OR experience.

MATERIALS AND METHODS

We conducted a prospective cohort study of medical students at Warren Alpert Medical School of Brown University rotating through their Ob/Gyn clerkship from September 2011 to June 2012. This student population includes third- and fourth-year students, as students may delay core clerkships until their fourth year. All students completing their Ob/Gyn clerkship during the study period were eligible. This study was approved by the Institutional Review Board at Women and Infants' Hospital (Providence, RI).

A detailed description of the study was provided to students on the first day of each clerkship, and informed consent was obtained. Participating students were asked to complete baseline study questionnaires at the time of consent, at the end of their 6-week clerkship, and at 6 months after clerkship completion. They also completed an oral examination during the last week of their clerkship. Students in 6 clerkship blocks were eligible: students in clerkships 1 to 3 received usual teaching (control), whereas students in clerkships 4 to 6 received usual teaching plus an OR curriculum (intervention described later). We chose not to randomize rotations as the effect of curriculum implementation on faculty teaching may influence outcomes of subsequent rotations not randomized to the curriculum. We chose not to randomize students within rotations for similar reasons. In addition, there could be social interaction threats such as diffusion, compensatory rivalry and reactivity, and resentful demoralization within a rotation.⁷

Usual Teaching in Ob/Gyn Clerkship (Received by Intervention and Control Group)

Usual teaching for students in the OR consists of a 2-week gynecologic surgery block without OR learning objectives. Additional components include the following:

- (1) A 35-minute scrubbing, gowning, and gloving demonstration.
- (2) A 10-minute orientation to surgical instruments, including names and common use, carried out on the first day of the clerkship.
- (3) A 1-hour surgical skills laboratory given at some point during the clerkship, covering general instrument handling, suturing technique, and basic knot tying.
- (4) An experience card, with the following categories of gynecologic procedures that students are expected to observe or assist on, during the clerkship: abdominal hysterectomy, laparoscopy, tubal ligation, vaginal hysterectomy, hysteroscopy, and dilation and curettage.

OR Curriculum Intervention (Received Only by Intervention Group)

We developed an OR curriculum for the Ob/Gyn clerkship. Based on focus groups, we previously published a framework outlining student and faculty objectives and expectations of the OR experience in Ob/Gyn.⁸ Using this framework, we developed specific learning objectives to include in our OR curriculum. We also included OR objectives listed in educational topic 41, "Gynecologic Procedures," of the ninth edition of the Association of Professors of Gynecology and Obstetrics (APGO) Medical Student Educational Objectives.⁹ Final learning objectives for the OR curriculum were categorized as follows: (1) developing a foundation of clinical knowledge, (2) surgical technique and skill acquisition, (3) personal insight into a career choice, and (4) surgical culture and OR function. Learning objective format followed the APGO Medical Student Educational Objectives, using the categories intended learning outcome, level of competence, teaching method, and evaluation method ([Appendix 1](#)).

[Table 1](#) outlines the components of our OR curriculum, a brief description of each, and which learning objectives are addressed when applicable. To meet our defined learning objectives, we developed 5 components in our OR curriculum: (1) orientation of surgical faculty to curricular learning objectives, (2) orientation of students to curricular learning objectives, (3) computer-based instructional content, (4) experience and skill cards, and (5) student reflective assignment.

- (1) *Orientation of surgical faculty* to learning objectives occurred via email communication before

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