

# Perspectives of OB-GYN Residents and Faculty on Resident Simulation Curricula: A Mixed-Methods Study

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## ABSTRACT

**Introduction:** Simulation training facilitates skill development in low-risk environments and is increasingly widespread in residency programs. Recent simulation models have been developed for obstetrics and gynecology (OB-GYN). Simulation curricula can include a wide range of training methods. To optimize the effectiveness and acceptability of simulation curriculum, key stakeholders' (ie, residents and faculty) perspectives should be obtained before implementation.

**Methods:** This study used convergent-parallel mixed methods. Electronic surveys were completed by 19 of 32 OB-GYN residents (59%) and 18 of 53 OB-GYN faculty (34%). Two focus groups were conducted, one with residents (n=12/32, 38%) and one with faculty (n=6/53, 11%). Focus group transcripts were inductively coded independently and then collaboratively by 3 coders. Codes were categorically analyzed to elicit themes.

**Results:** Focus group themes included (1) important simulation topics and content, (2) optimal timing of simulation activities, (3) ideal simulation curriculum structure, (4) barriers to education, (5) factors that shape participants' perspectives, and (6) using simulation to improve resident education. Survey responses supported these themes.

**Conclusions:** This study elucidates resident and faculty perspectives on simulation training. Both groups endorsed key ideas, including the need for a structured and standardized curriculum. Currently, no simulation curriculum standards exist. Findings demonstrate the importance of communication between residents and faculty to create an effective training curriculum that addresses the unique needs and barriers of both trainers and trainees.

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## INTRODUCTION

Simulation training facilitates skill development in a low-risk environment and is increasingly widespread in residency programs. Simulation-based learning in residency training is supported by growing evidence in the surgical education literature.

Literature demonstrates that obstetrics and gynecology (OB-GYN) and surgery simulation training improves resident knowledge, technical skills, comfort levels, and self-evaluation of competence.<sup>1-5</sup> Residents not only develop fundamental surgical skills, but these skills translate to specific procedures in the operating room (OR).<sup>6,7</sup> A primary reason simulation models are so effective is that they adhere to basic educational principles: (1) continuity or step-by-step instruction, (2) repetition, (3) a low-stress environment, and (4) opportunities for formative feedback.<sup>6</sup> Furthermore, research demonstrates that residents and surgical educators support simulation-based assessment of technical skills in surgery.<sup>8</sup> These findings support the need for and feasibility of widespread

implementation of simulation curricula within resident training.

Although simulation training is increasingly supported and prevalent, no comprehensive, standardized simulation curriculum has been widely adopted. Simulation curricula can include a wide range of training models, which can make effective curriculum development challenging.<sup>8</sup> Furthermore, different specialties have different needs regarding simulation curricula. Although most simulation models and curricula have been developed for general surgery trainees, several more recent models specifically target

OB-GYN residents.<sup>1,3,4,9,10</sup> For example, the Council on Resident Education in Obstetrics and Gynecology (CREOG) Surgical Skills Task Force developed resources for surgical simulation education that can be included in a curriculum. To optimize the effectiveness and acceptability of a simulation curriculum, key stakeholders' (ie, residents and faculty) perspectives should be obtained prior to implementation.<sup>8</sup> One way to acquire these data is through qualitative and mixed-methods studies. To date, few qualitative studies exist in the surgical education literature.<sup>11</sup>

This study aims to obtain OB-GYN resident and faculty perspectives via qualitative and quantitative methods to inform the development of a comprehensive OB-GYN resident simulation curriculum.

## METHODS

Grounded theory qualitative research tradition within a constructivist paradigm was used to design the project.

### Setting and Participants

This study was a single-specialty, single-site needs assessment for OB-GYN residents in 2023. Participants were OB-GYN residents and faculty at the Medical College of Wisconsin, an academic, tertiary-care training program in Milwaukee, Wisconsin.

### Study Recruitment and Data Collection

Survey development was informed by literature on simulation in medical education.<sup>2,12</sup> Electronic surveys were created using a secure online survey tool (Qualtrics) and sent via email to all OB-GYN residents (n=32) and faculty (n=53). Qualtrics does not collect identifying data, including respondent IP addresses or other personal information. Qualtrics also uses Secure Sockets Layer (SSL)/Transport Layer Security (TLS) encryption technology, ensuring data security and access only to intended personnel. The survey investigated participants' perspectives on simulation education in residency and asked residents to rate the necessity of simulation activities for 31 different OB-GYN skills.

Two focus groups were conducted: one with residents (n=12) and one with faculty (n=6) (Appendix). During a didactic learning session, all OB-GYN residents were invited to participate in a focus group. All OB-GYN faculty were invited via email. The resident focus group was held during protected education time and led by a resident research team member (ML). The faculty focus group was led by a faculty research team member (MB). Focus groups were semistructured, using a list of questions about useful simulation activities for OB-GYN residents, benefits of different activities for various postgraduate year levels, and barriers to simulation education (Appendix). Sessions were audio recorded and manually transcribed by the research team using Microsoft Word (Microsoft Corp). Participants were deidentified during the transcription process, and the recordings were stored in password-protected devices.

**Table 1.** Resident Study Participants by Postgraduate Year Level

Postgraduate Year Level	Survey Respondents N=19	Focus Group Participants N=12
PGY-1	7	7
PGY-2	6	3
PGY-3	4	2
PGY-4	2	0

Abbreviation: PGY, postgraduate level.

**Table 2.** Faculty Study Participants by Specialty

Specialty	Survey Respondents N=18	Focus Group Participants N=6
General obstetrics-gynecology	6	3
Maternal fetal medicine	5	3 (subspecialists)
Gynecology oncology	2	
Minimally invasive gynecology	1	
Reproductive endocrinology/infertility	1	
Adolescent gynecology	1	
Family planning	1	
Urogynecology	1	

### Data Analysis

This study used convergent-parallel mixed methods. Survey responses were analyzed using descriptive statistics for multiple-choice questions and content analysis of open-ended questions to elicit themes. Focus group transcripts were inductively coded independently and then collaboratively by three coders. The focus group coding team consisted of two OB-GYN residents (ML, CP) and one OB-GYN faculty member with prior qualitative analysis experience (MB). A fourth research team member (KK), who holds a PhD in education and has significant qualitative analysis experience, provided mentorship during the analysis. Codes were categorically analyzed collaboratively (ML, CP, MB) to elicit themes. Excel (Microsoft Corp) was used for organization.

The study was approved by the Medical College of Wisconsin Institutional Review Board (Reference ID# PRO00046633). To limit the Hawthorne effect of using an investigator as a focus group leader—which could have affected participants' perception of their ability to speak freely—each focus group was led by a peer. The team included a clinical educator (MB) and two resident learners and educators (ML, CP).

## RESULTS

Surveys were completed by 19 of 32 residents (59%) and 18 of 53 faculty members (34%). Survey respondents included residents from all postgraduate years and faculty from general OB-GYN as well as subspecialties: minimally invasive gynecology, maternal fetal medicine, urogynecology, gynecologic oncology, reproductive endocrinology, pediatric and adolescent gynecology, and family planning. Focus groups were attended by 12 of 32 residents (38%;

**Table 3.** Convergent and Divergent Perspectives of Residents and Faculty Across Six Themes

Convergent Ideas	Different Ideas	
	Residents	Faculty
<b>Theme: Important simulation topics and content</b>		
<ul style="list-style-type: none"> <li>• Low and high frequency skills</li> <li>• Fundamental skills and knowledge</li> <li>• Procedural steps</li> <li>• Consent</li> <li>• Clinical decision-making</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult conversations</li> <li>• Hospital processes</li> </ul>	<ul style="list-style-type: none"> <li>• High risk/emergency skills</li> </ul>
<b>Theme: Optimal timing of simulation activities</b>		
<ul style="list-style-type: none"> <li>• Simulation activities tailored to postgraduate year level</li> <li>• High risk/low frequency skills/situations should be simulated more frequently</li> <li>• Practice before patient care</li> </ul>	<ul style="list-style-type: none"> <li>• High frequency skills do not need to be simulated repeatedly</li> </ul>	<ul style="list-style-type: none"> <li>• Simulating all activities/skills before patient care is difficult due to the nature of residency program scheduling</li> </ul>
<b>Theme: Ideal simulation curriculum structure</b>		
<ul style="list-style-type: none"> <li>• Desire for a standardized curriculum</li> </ul>	<ul style="list-style-type: none"> <li>• Realistic simulation activities</li> <li>• Accessible simulation sessions, access to guidance</li> </ul>	<ul style="list-style-type: none"> <li>• Multimodal learning</li> <li>• Graduated resident responsibility</li> <li>• Resident-driven learning</li> </ul>
<b>Theme: Barriers to education</b>		
<ul style="list-style-type: none"> <li>• Time</li> </ul>	<ul style="list-style-type: none"> <li>• Not asking for help</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple training sites</li> <li>• Trust between faculty and residents</li> <li>• Financial costs and resources</li> <li>• Lack of knowledge about resources and how to access resources</li> </ul>
<b>Theme: Factors that shape participants' perspectives</b>		
<ul style="list-style-type: none"> <li>• Previous experiences</li> <li>• Perceived expectations of others</li> </ul>		<ul style="list-style-type: none"> <li>• Interactions with residents</li> <li>• Negative emotions</li> </ul>
<b>Theme: Using simulation to improve resident education</b>		
		<ul style="list-style-type: none"> <li>• Simulation can be used to improve education</li> </ul>

postgraduate years 1-3) and 6 of 53 faculty (11%; 3 generalists, 3 subspecialists) (Tables 1 and 2).

Six main themes emerged from the focus groups: (1) important simulation topics and content, (2) optimal timing of simulation activities, (3) ideal simulation curriculum structure, (4) barriers to education, (5) factors that shape participants' perspectives, and (6) using simulation to improve resident education (Table 3).

### Important Simulation Topics and Content

Residents and faculty agreed that simulation topics should focus on the low- and high-frequency skills expected of OB-GYN residents, as well as fundamental skills and knowledge, procedural steps, the consenting process, and clinical decision-making.

When asked in focus groups which simulation session topics would be useful, residents and faculty cited examples of low- and high-frequency skills, including third- and fourth-degree perineal laceration repairs, operative vaginal deliveries, laparoscopy, and cystoscopy.

On surveys, residents and faculty were asked which simulation activities would be most useful; responses were grouped into categories. The most common categories reported by residents were OB skills (50%, n = 6), laparoscopic skills (50%, n = 6), and

perineal laceration repairs (25%, n = 3). The most common categories reported by faculty were emergency skills (63%, n = 10), laparoscopic skills (56%, n = 9), and OB skills (38%, n = 7).

On the survey, a wide range of simulation activities were reported as "absolutely necessary" by more than 50% of residents. The activities they most frequently deemed absolutely necessary by residents were: (1) operative vaginal delivery, (2) third- and fourth-degree perineal laceration repair, and (3) shoulder dystocia (Figure).

In addition to low- and high-frequency skills, fundamental skills and knowledge were highlighted as important simulation topics by both faculty and residents in focus groups: "Having someone teach you how to turn all the [colposcope] knobs and how to focus, that would be really helpful." –Resident

Furthermore, residents and faculty agreed that obtaining informed consent from patients should be part of standard simulation education:

"I think something that could be useful [for] simulations is ... things to definitely say during your consent process. It can be useful for interns and second years who haven't really consented people for certain things and ... don't know what to talk about." –Resident

Residents and faculty also agreed that clinical decision-making should be emphasized in simulations:

*“Why you would pick what type of entry in each different situation I think could be part of... a second year SIM [simulation]. People still ask me, what do you want to do? I’m like ‘OptiView’ because that’s what the last attending wanted to do. I don’t really know why I’m thinking one versus the other.” –Resident*

Not all simulation topics were emphasized by both groups. In the faculty focus group, participants highlighted the importance of simulating emergency and high-acuity scenarios and skills: *“Cesarean hysterectomy simulations –some people graduate never having done one and then when it’s you, it’s... a pickle.” –Faculty member*

Similarly, on the survey, 63% of faculty reported emergency-type activities as useful to simulate, including hemorrhage, hypertension, and “emergency scenarios.”

In contrast, residents highlighted “difficult conversations” as important to simulate: *“...learning end-of-life discussions, like getting more comfortable with that. When I was on oncology, I had that quite a bit and I had no idea what to do.” –Resident*

### Optimal Timing of Simulation Activities

Residents and faculty agreed that simulation activities should be tailored to post-graduate year level. They also agreed that high-risk and low-frequency skills should be simulated more often and that residents should generally simulate skills before performing them on patients.

Specifically, residents and faculty agreed that first-year residents would benefit from simulation of basic skills (eg, amniotomy, cervical ripening balloon placement, cesarean delivery), whereas more complex procedures and scenarios would be more appropriate for upper-level residents:

*“Having the specific [postgraduate year] schools is a really good idea. Because, for some of us, you do a D&E SIM [dilation and evacuation simulation] at the beginning of your intern year and you’re not going to remember that by the time you’re actually doing it... I think it needs to be more specific to your year.”*

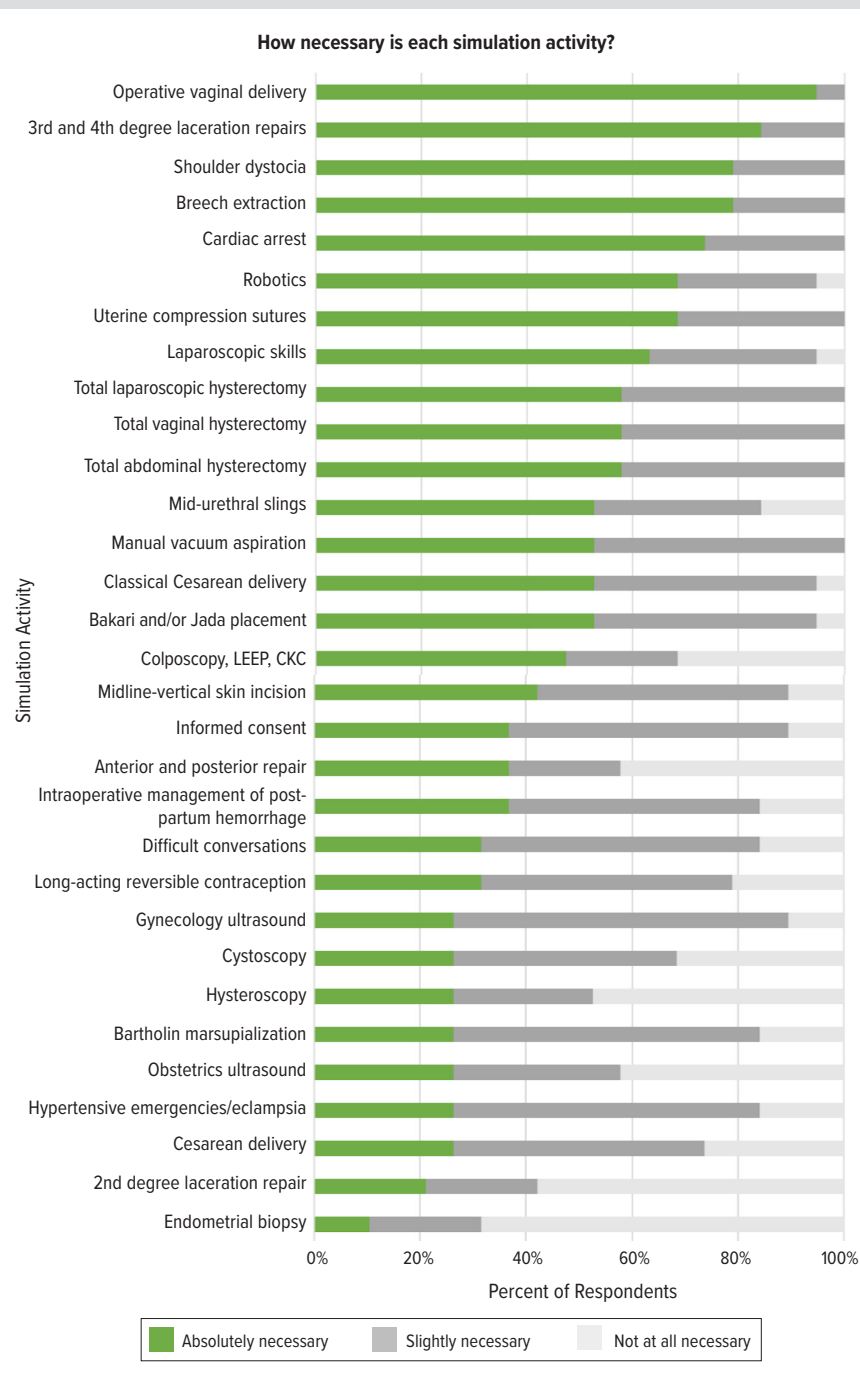
Both residents and faculty stated that low-frequency and high-

acuity skills were more important to simulate repeatedly: *“For emergency (skills), it doesn’t matter where you are in your career, you just have to keep simulating so you can keep your skills.” –Faculty member*

Both groups remarked on the importance of repeating simulations to maintain basic skills and procedures:

*“The fourth years need to practice hysteroscopy... because that’s your bread and butter, so there needs to be a way for even those*

Figure. Resident Survey Responses



Abbreviations: LEEP, loop electrosurgical excision procedure; CKC, cold knife conization.

seniors to circle back and get some of those basics.” –Faculty member

“Even the laparoscopy course, it’s great that we have it. But it’s a couple of random days in August and then we like forget everything. I feel like repetition of these skills is what might make the biggest difference.” –Resident

Lastly, both groups agreed that skills should typically be simulated prior to performing them on a patient. One resident noted how uncomfortable it was to place internal fetal monitors for the first time in a real clinical situation: “I was just getting called to rooms and the nurse was like, would you like to... place this? And I had never done that before, so I just said, sure, here we go.” –Resident

Faculty reported a desire for residents to simulate laparoscopic entry as interns, prior to performing the skill on patients:

“Have, like, simulation for c-section [cesarean delivery] or laparoscopic entry ... early in the process, because you’re going to need those skills.” –Faculty member

“I see a lot of residents trying to learn or practice on real cases and it should really be the time to be fine tuning.” –Faculty member

However, when discussing implementing simulation training prior to patient care, faculty commented on the potential consequences for residents’ clinical volume: “I guess ... the counter argument to that is, like you have to be careful not to delay their access to clinical care so much.” – Faculty member

### **Ideal Simulation Curriculum Structure**

Residents and faculty expressed a desire for a standardized simulation curriculum, with each group highlighting different preferences and suggestions: “I think having like a systematic thing for each year would probably be the best. Because like right now, it’s based on the education chief and what they think is important.” –Resident

When asked about their ideal curriculum structure, residents emphasized realistic simulations that are accessible and convenient. They also noted the importance of appropriate guidance and instruction during simulations:

“They need to be scheduled during work hours.” –Resident

“We have our [laparoscopic] trainers, but it’s hard to problem solve when you don’t know anything about laparoscopy without any guidance.” –Resident

In contrast, faculty highlighted multimodal learning and graduated resident responsibility as important elements of a simulation curriculum:

“Right now, I really get the sense a lot of them think that their time in the OR [operating room] is worthless if they’re not actively doing the procedure... There needs to be this recognition that they can learn things just from watching.” –Faculty member

“I would probably never let an intern do a primary entry... You’re going to do a bunch of side ports and watch and get a

feel for... the trocar going through the tissue before [you] do one that’s blind... Coming up with a more organized way to do that would be super helpful because then everybody’s having the same experience.” –Faculty member

Faculty also emphasized resident-driven learning as an important structural component: “[Residents] who have more self-awareness, it’s great because they can tell you... ‘I need to get better at suturing’... Then you know to save time for that during the case.” –Faculty member

### **Barriers to Education**

Both residents and faculty identified inadequate time as the primary barrier to education. Faculty noted additional barriers, including multiple resident training sites, variable levels of trust between faculty and residents, limited resources (especially financial), and lack of faculty knowledge about educational resources available to residents and how to access them. Residents reported reluctance to ask for help as an additional barrier. Faculty also commented that training at multiple sites can decrease their trust in residents:

“And I think one of our biggest personal barriers has been that we don’t see people for 6 months. We have no idea what they’ve done, what they’ve learned, if they’ve operated, what their experience has been.” – Faculty member

### **Factors That Shape Participant Perspectives**

Another theme that emerged was factors shaping faculty and resident perspectives on education. Both groups reported that their perspectives are influenced by prior experiences and perceived expectations of others. Faculty specifically described how experiences working with residents in the OR—and resulting negative emotions—shape their desire for simulation: “I think just simple laparoscopic entry [should be simulated] for the interns. That’s like probably the scariest moment... letting them do their first few entries.” – Faculty member

Faculty also reflected on their own experiences as trainees and how these shape their perspectives as educators: “I remember learning more when I was assisting because I wasn’t... stressed out [that] I was gonna [sic] cut the wrong thing... I was just like watching so I learned a lot.” – Faculty member

Finally, faculty described their perception of resident expectations of simulation training:

“There’s that process [of stepwise learning] ... So, coming up with a more organized way to do that would be super helpful because then everybody’s having the same experience. And I think that’s [the residents’] biggest concern is this idea that their experience is not going to be equitable depending on who’s on vacation, on what worked, and all those things.” –Faculty member

### **Using Simulation to Improve Resident Education**

Faculty noted multiple ways simulation can improve resident education, including (1) allowing residents to practice skills prior to

performing on patients, (2) assessing residents' competency and providing feedback, (3) maintaining a supportive culture while ensuring accountability, and (4) establishing clear expectations:

*"So, it would be amazing if there were... this curriculum you have to complete and you have to know all of this and there's like an assessment of competency for this knowing." –Faculty member*

*"I think SIM is an opportunity to help us shift the culture... It's like if you're coming to a breech delivery, you should know... how to do it. And so, there's a curriculum that they have to...review ahead of time. Then I'm having a resident show up prepared even if they haven't done one before, they can at least walk me through it." –Faculty member*

## DISCUSSION

In this mixed-methods study, we analyzed OB-GYN resident and faculty perspectives on simulation training in residency and identified major themes important for simulation curriculum development. Across themes, residents and faculty expressed both convergent and divergent perspectives. By examining these priorities and perspectives in detail, this study demonstrates the need for shared expectations, which could help align both toward the common goal of improving training and overcoming educational barriers. This study also identifies the unique needs of each stakeholder group and highlights ways simulation education can meet those needs.

Important convergent perspectives emerged regarding simulation curriculum content and structure. Both groups expressed a desire for a standardized simulation curriculum to help overcome the inherent challenges of residency training. Currently, no comprehensive, standardized curriculum exists for OB-GYN residency programs. Although resources for individual simulation activities are available, including the CREOG surgical curriculum,<sup>10</sup> many academic programs have implemented their own curricula. However, each program must rely on its own educational and financial resources to develop and implement such a program. This study provides insight into what faculty and residents desire in a simulation curriculum. Drawing from these convergent perspectives, a standardized curriculum should include fundamental skills and procedures (both rare and common) as well as clinical reasoning and communication skills (Table 3). Robust literature supports the utility and safety of simulation training in surgical fields, reinforcing the need and feasibility of widespread implementation of simulation curricula within residency training.

Another predominant idea shared by residents and faculty was that simulation can be used to develop not only surgical and procedural skills but also skills related to communication, such as informed consent and "difficult conversations." This builds on existing literature demonstrating that OB-GYN residents desire more training in communication skills and informed consent

and have responded positively to simulation-based communication training.<sup>12-14</sup>

By comparing resident and faculty perspectives across themes, this study demonstrates that trainer and trainee expectations for education are not always aligned. This dissonance can lead to decreased trust and negative emotions. Previous research has demonstrated the importance of trust between medical trainers and trainees in postgraduate medical education. Shared expectations have been highlighted as essential for building this trust. Furthermore, mutual trust between educators and learners has been identified as critical for an effective learning environment and patient safety.<sup>15,16</sup>

This study supports and informs the development of a comprehensive standardized OB-GYN simulation curriculum. Increasing communication between faculty and residents during curriculum development can foster shared educational expectations, bolster trust, and create a higher-quality training environment.

## Limitations

This study is limited by a small sample size and a single site. Because the surveys and focus groups were optional, participation bias is possible. Participation bias among residents was mitigated by holding the resident focus group during protected education time; similar mitigation strategies for the faculty were not feasible. Additional research is needed to obtain perspectives from faculty and residents at other OB-GYN training sites and determine whether these themes are consistent across programs. Next steps would be development, implementation, and evaluation of a standardized OB-GYN simulation curriculum.

## CONCLUSIONS

This study elucidates resident and faculty perspectives on simulation training. Both groups endorsed key ideas, including the desire for a structured and standardized curriculum, the utility of simulation for developing job-specific communication skills, and the importance of simulating skills and procedures before performing them on patients. Currently, simulation curriculum standards do not exist. This study demonstrates that OB-GYN residents and faculty desire more comprehensive and systematic simulation training, which could be achieved through a standardized curriculum. It also highlights differing expectations between residents and faculty, particularly regarding ideal curriculum structure and barriers to education. These findings underscore the importance of communication between residents and faculty to create shared expectations in an effective training curriculum that addresses the unique needs and barriers of both trainees and trainers.

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