

## Original Article

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# A longitudinal, multimodal palliative care curriculum for obstetrics and gynecology residents

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**Abstract**

**Objectives.** To incorporate a longitudinal palliative care curriculum into obstetrics and gynecology (Ob-Gyn) residency that could become standardized to ensure competencies in providing end of life (EOL) care.

**Methods.** This was a prospective cohort study conducted among 23 Ob-Gyn residents at a tertiary training hospital from 2021 to 2022. A curriculum intervention was provided via lecture and simulation. An inpatient palliative care rotation was also created for the intern class. Scores for knowledge and confidence were compared pre- and post-curriculum. Performance on patient simulations was compared for interns who had the inpatient palliative rotation versus those that had not in a crossover fashion. Number of palliative care consults was also compared before and during the curriculum. A pooled, weighted rank-based test was used for analysis of the data with a  $p$ -value  $< 0.05$  considered significant.

**Results.** One hundred percent of the 23 eligible participants participated in this study. A statistically significant increase in scores on all quizzes ( $p$ -values 0.047,  $< 0.001$ , and  $< 0.001$ ) and confidence surveys (composite score  $p$ -value  $< 0.001$ ) was seen after curriculum completion. No statistically significant difference was able to be identified in standardized patient simulation performance. Palliative care consultation increased by 55%.

**Significance of results.** EOL care is a critical component of any physician's practice including obstetrician gynecologists. However, prior studies demonstrate a lack of standardized training. Our study demonstrates that a multimodal palliative care curriculum is an effective method to train Ob-Gyn residents and improve palliative care involvement in patient care.

**Introduction**

Palliative care is a crucial aspect of any physician's practice, yet it is a topic that is inconsistently taught. It addresses essential components of patient care such as symptom management, social and emotional support, advance care planning, and effective communication. Encounters involving end of life (EOL) care can cause significant emotional distress for both patient and physician, especially when the physician lacks training in these areas and is not equipped to engage in these conversations. While accreditation standards by the Liaison Committee on Medical Education require all medical schools to provide EOL care education and palliative care concepts are tested on current United States Medical Licensing Examinations, education is not standardized (Head et al. 2016). Missed opportunities for training during undergraduate medical education translate into resident physicians who continue to feel underprepared to facilitate these discussions and provide comprehensive EOL care.

Entities overseeing undergraduate and postgraduate medical education, including the Association of American Medical Colleges and the Accreditation Council for Graduate Medical Education continue to reinforce the need for physicians who are competent in EOL

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topics (Exploring the ACGME Core Competencies 2016; Head *et al.* 2016). Nevertheless, a survey of 175 residents from 18 various specialties showed that 54.3% of residents reported that they received little to no training on EOL care during their medical school education. Moreover, most residents (88.1%) receive little to no training on EOL care in residency although 50.6% of these residents reported that these conversations come up frequently (Schmit *et al.* 2016).

Currently, there are no described palliative care curricula for obstetrics and gynecology (Ob-Gyn) residents. There are studies on curricula in other specialties; however, training methods are highly variable with most involving infrequent lecture (Fischer *et al.* 2003; Shaw *et al.* 2010). One review of surgical specialties from 24 different institutions showed varied curricula with a high reliance on lecture and discussion-based teaching. Effective communication is the bedrock of EOL care. Best practices for communication have been developed and require intensive teaching and hands-on practice. However, less than 40% of these curricula demonstrated practice through simulation and only 1 institution reported real patient exposure (Kapadia *et al.* 2021).

Palliative care services are frequently needed in the treatment of gynecological cancer patients and gynecological oncology fellows also report a lack of training on these topics. One survey of Gynecological Oncology fellows showed that 89% felt that palliative care was integral to their training, but only 11% reported having any previous training on the topic (Lesnock *et al.* 2013).

Moreover, there is a lack of emphasis on perinatal palliative care, palliative care provided for pregnancies affected by life-limiting fetal conditions, extreme prematurity, or complex illness (Lefkowitz and Solomon 2016). Studies demonstrate that patients choosing to continue pregnancies with life-limiting conditions of the fetus have negative experiences with their health care providers, citing lack of communication and insensitivity (Berg *et al.* 2013). Conversely, clinicians largely identify a need for improved teaching in basic bereavement skills. Ob-Gyns should be able to provide basic perinatal palliative care and coordinate care amongst a multidisciplinary team. The American College of Obstetrics and Gynecology continues to support perinatal palliative (Lefkowitz and Solomon 2016). Yet, Ob-Gyns are subpar in the utilization of perinatal palliative care. One study demonstrated that among 1,144 women referred to a tertiary care center, 332 women were diagnosed prenatally with a potentially life-limiting fetal diagnosis. However, only 11% were referred to perinatal palliative care (Marc-Aurele *et al.* 2018). In another study reviewing physicians' referral patterns, more than 3 times as many Ob-Gyns missed the opportunity to consult perinatal palliative care services when compared to neonatologists (Tosello *et al.* 2017).

The primary objective of this study is to evaluate how to best incorporate a longitudinal, comprehensive palliative care curriculum into Ob-Gyn residency training. We hypothesized that if resident physicians are taught palliative care skills longitudinally through the use of didactic lecture, standardized patient simulation, and clinical exposure, then their performance on knowledge-based tests, confidence in providing EOL care, and scores on objective clinical patient simulations will significantly increase in comparison to baseline.

## Methods

We conducted a prospective cohort study of Ob-Gyn residents at Inova Fairfax Hospital (IFH), a large tertiary community based

teaching hospital serving the District of Columbia metropolitan area from July 2021 to July 2022. Our resident physician cohort included all postgraduate year (PGY) levels from 1 to 4. There are 6 residents per PGY.

Ob-Gyn residents at IFH have protected didactic time once a week. This includes weekly didactic lectures with 1 dedicated simulation session per month. Prior to this intervention, no curricula had been established for palliative care education.

Informed consent was obtained prior to each test or survey. Resident participants were given a personal identification number, which allowed for de-identification and tests/surveys were scored in a blinded fashion. This study was reviewed and approved by the Inova Institutional Review Board.

## Educational intervention

Four novel learning modules were incorporated into weekly didactics. The 12<sup>th</sup> Edition of the Core Curriculum in Obstetrics and Gynecology Educational Objectives from the Council on Resident Education in Obstetrics and Gynecology (Educational Objectives Core Curriculum in Ob-Gyn 2020) was used to identify key learning objectives related to EOL care. These points were then expanded to create a comprehensive set of learning objectives (Table 1), used for creation of didactic materials.

Prior to any interventions, a baseline confidence survey was collected from each resident to evaluate level of comfort with palliative care skills. Survey questions were created by the study authors. Throughout the year, 3 lectures were given on Palliative Care in Gynecology, Perinatal Palliative Care, and Social/Emotional Support and Secondary Provider Trauma by experts in these respective fields. Study participants took knowledge-based tests before and after each lecture. Tests were created based on current literature and with the assistance of clinical experts in each field.

The final module of the year was a standardized patient simulation. Standardized patients were used to simulate a patient encounter in 3 different clinical cases (use of SPIKES (Setting, Perception, Invitation, Knowledge, Empathy, Summarize) (Buckman 1992) communication tool in a case of periviable premature rupture of membranes (PROM); delivery planning of a Trisomy 18 infant; and discussing goals of care (GOC), code status, and advance directives in an advanced ovarian cancer patient. All PGY1 residents participated in each simulated case with groups of PGY2–4's and senior Ob-Gyn attending physicians observing and providing feedback. A standardized grading rubric was created for each patient encounter using an adaptation of a previously validated performance assessment rubric (Marko *et al.* 2015) and with the assistance of a senior Ob-Gyn physician and Director of Advanced Medical Simulation. Senior Ob-Gyn attending physicians led verbal feedback and calculated a numerical score using the standardized rubric.

The intern class additionally spent 1 week with the inpatient palliative care service. The patient simulations described above were administered at a time when half of the PGY1 residents (PGY1<sub>a</sub>) had received the inpatient palliative care exposure while the other half (PGY1<sub>b</sub>) had not. The PGY1s were randomly assigned to either group. Over the final 3 months of the academic year, the remaining PGY1<sub>b</sub> residents completed the inpatient palliative care experience. All PGY1s then repeated the simulations, and their performance was rescored using the same standardized score sheet and evaluators. At the end of the academic year, all residents completed a post-curriculum confidence survey (Figure 1). Finally,

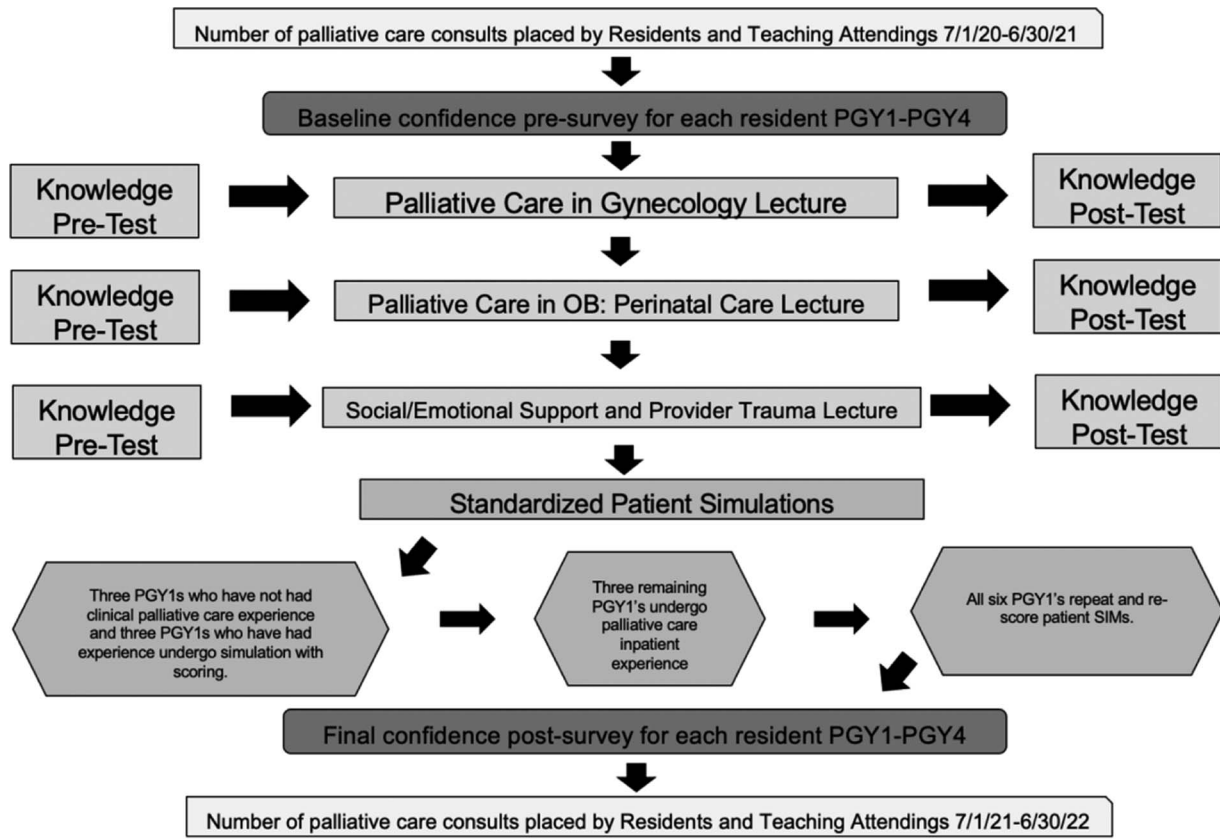


Figure 1. Intervention flowsheet.

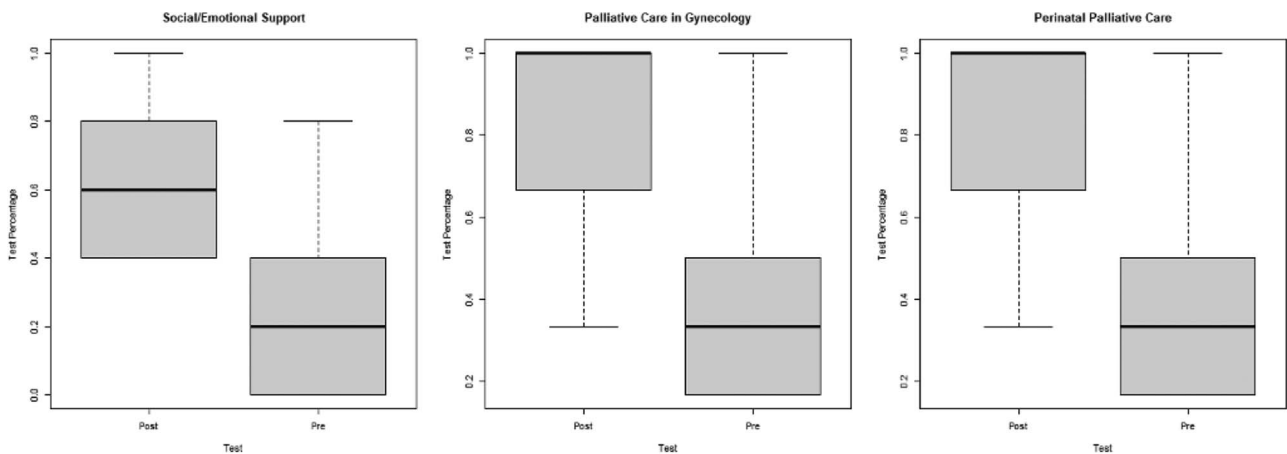


Figure 2. Knowledge based quiz box plots.

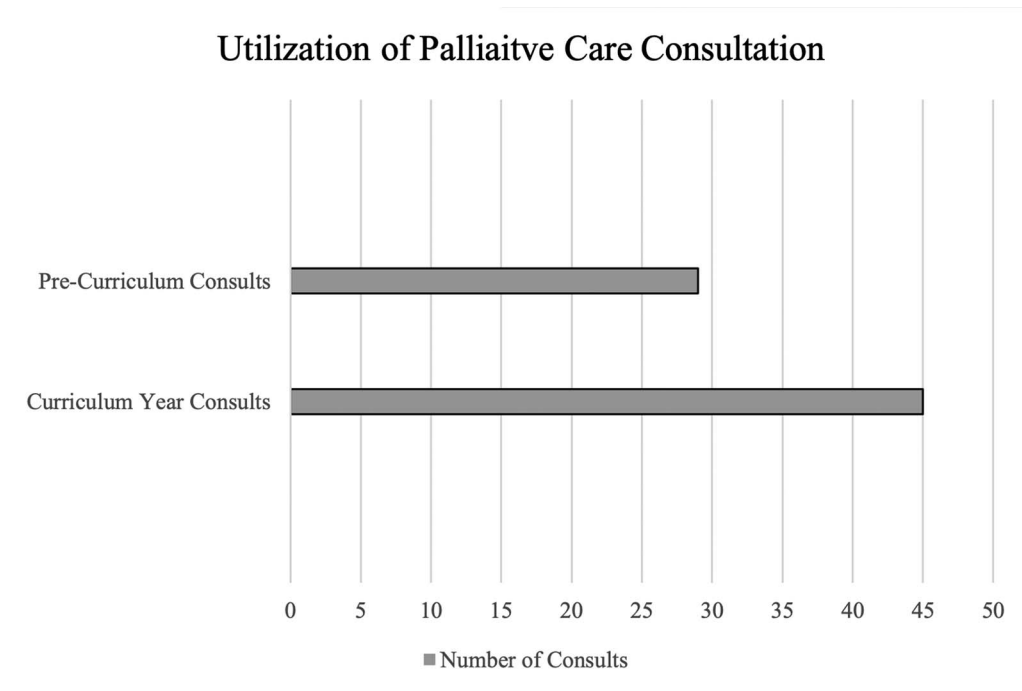
the number of palliative care consults ordered by the resident Ob-Gyn service (residents and core supervising teaching attendings) was compared in the year preceding the curriculum and the year of the curriculum. The PGY1 class was given the opportunity to submit formal anonymous feedback on the palliative care rotation.

The primary outcomes measured were improvement in performance on knowledge-based tests, confidence in providing EOL care, and scores on clinical patient simulations. The secondary outcomes evaluated were utilization of palliative care

consultation by the studied physician group and assessment of the impact of in person clinical experience on performance in patient simulations.

**Data analysis**

Scores for knowledge based pre and post tests were compared for each resident. A 5-point Likert scale with “Strongly Disagree” assigned a value of 1 and “Strongly Agree” assigned a value of 5 was



**Figure 3.** Utilization of palliative care consultation.

**Table 1.** Palliative care curriculum learning objectives

Palliative care curriculum learning objectives	
<p><b>Palliative care in gynecology</b></p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of the Ob-Gyn physician's role as a primary palliative care provider in the setting of obstetrics and gynecology</li> <li>• Identify a change or deterioration in a patient's clinical status which may warrant addressing or reviewing patients' desires, goals of care, and/or code status</li> <li>• Define different code statuses and understand what life-sustaining measures would and would not be provided given each code status</li> <li>• Utilize physical exam findings and clinical assessment to estimate time to death</li> <li>• Assess and manage symptoms such as pain, nausea, shortness of breath, etc. for a patient choosing comfort based care</li> </ul>	<p><b>Palliative care in obstetrics/perinatal palliative care</b></p> <ul style="list-style-type: none"> <li>• Define perinatal palliative care and identify which patients are appropriate candidates for perinatal palliative care services</li> <li>• Demonstrate understanding of the importance of early involvement and consultation of perinatal palliative care services through skills-based assessment</li> <li>• Develop a comprehensive delivery plan for a pregnancy affected by life-limiting illness</li> <li>• Explain validated pain scales to assess neonatal distress in infants undergoing comfort care measures</li> <li>• Summarize basic management of symptoms such as pain, nausea, shortness of breath, etc. in a neonatal patient pursuing comfort care measures</li> </ul>
<p><b>Social/Emotional support and advance care planning</b></p> <ul style="list-style-type: none"> <li>• List resources and support services available to patients or patients with infants who have life-limiting conditions</li> <li>• Describe the roles of palliative care team members such as palliative care therapist, social worker, chaplain, etc. and the services provided by each</li> <li>• Define the components of a bio-psycho-social needs assessment</li> <li>• Define the components of a spiritual needs assessment</li> <li>• Describe memory making and legacy work available to patients</li> <li>• Define goals of care and apply knowledge during goals of care discussions</li> <li>• Define different advance care planning documents and understand the differences between them (i.e. DNR, living will, etc.)</li> <li>• Identify the appropriate decision maker to discuss important health care treatment plans</li> </ul>	<p><b>Communication</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how to deliver bad news, communicate sensitive information, and navigate a patient's emotional response to this information</li> <li>• Engage patients' families and support persons in discussions regarding health care decisions and navigate emotional responses to sensitive information</li> <li>• Identify a patient's values and preferences regarding goals of care through empathetic discussions and communicate this with the health care team</li> <li>• Demonstrate code status discussions with patients and determine a patient's preferred code status.</li> <li>• Model discussions with pregnant patients regarding prognosis and care planning of infants with life-limiting conditions, extreme prematurity/perivability, or complex illness</li> <li>• Choose appropriate terminology for communicating about sensitive topics in regards to EOL/palliative care</li> <li>• Utilize validated tools for communication of sensitive information/bad news (SPIKES, etc)</li> </ul>
<p><b>Secondary provider trauma and resiliency</b></p> <ul style="list-style-type: none"> <li>• Define secondary provider trauma</li> <li>• Apply strategies for acute stress reduction and coping during traumatic events</li> <li>• Utilize validated tools for self-reflection and distress assessment after providing care during a traumatic or EOL event</li> <li>• Describe how to engage team members in an effective debriefing after providing care during a traumatic or EOL event</li> </ul>	

used to score and compare each resident's confidence pre and post curriculum. Confidence survey items 1 and 2 were excluded as they were demographic and not expected to change with intervention. A score sheet grade was calculated as a numerical score for patient simulations for the PGY1 class. Scores sheets were used to compare PGY1<sub>a</sub> with PGY1<sub>b</sub> residents. Performance of the PGY1s overall before and after the inpatient palliative care experience was also compared. The number of palliative care consultations ordered by this physician group was determined via the Epic Electronic Medical Record. Each palliative care consult placed by 1 of these physicians during each specified time window was logged.

A weighted rank-based test was used for statistical analysis of the data with a  $p$ -value of  $<0.05$  considered significant. The  $p$ -values are pooled from Wilcoxon signed-rank (for paired data) and Wilcoxon–Mann–Whitney (for unpaired data) procedures. The weighted method is selected over unweighted to account for the greater percentage of complete pairs than incomplete pairs. All analyses are completed in R version 4.1.2 (A Language and Environment for Statistical Computing 2021) using the IncomPair package (Habtaghi and Zhang 2020).

## Results

Of the 24 Ob-Gyn residents at IFH, 23 residents were eligible to participate. One resident was excluded due to their involvement in the creation of the curriculum and educational material. 100% of the 23 eligible participants participated in this study.

### Knowledge based quiz performance

Response rates for pre and posttests for the Palliative Care in Gynecology lecture and the Perinatal Palliative Care lecture were 95.7% pretest, 47.8% posttest and 82.6% pretest, 91.3% posttest, respectively. There was a 78.2% response rate for the social/emotional support and secondary provider trauma pretest and a 73.9% response rate for the posttest. There was a statistically significant difference in knowledge demonstrated in each of the 3 areas: palliative care in gynecology (pretest mean 50%, posttest mean 74%,  $p$ -value 0.047, 95% CI  $[-\infty, -0.1]$ ), perinatal palliative care (pretest mean 34%, posttest mean 82%,  $p$ -value  $< 0.001$ , 95% CI  $[-\infty, -0.4]$ ), and social/emotional support and secondary provider trauma (pretest mean 24%, posttest mean 60%,  $p$ -value  $< 0.001$ , 95% CI  $[-\infty, -0.3]$ ) (Figure 2).

### Confidence surveys

A 95.7% response rate was achieved for the pre-curriculum confidence surveys with a 78.3% response rate post-curriculum. The  $p$ -values comparing pre- and post-training for each question are given in Table 2. Statistically significant increases were seen in all question items. The composite score in the post-curriculum survey is also significantly higher compared to pre-curriculum ( $p$ -value  $< 0.001$ , 95% CI  $[-\infty, -8]$ ).

### Patient simulation performance

There were no statistically significant differences in average scores in the PGY1<sub>a</sub> group versus the PGY1<sub>b</sub> group on the initial simulated patient encounters for any of the 3 simulated clinical scenarios. After all PGY1 residents had completed the inpatient

palliative care rotation and repeated the simulations, there were no statistically significant differences detected in resident performance on the second round of simulations compared to the first (Table 3).

### Utilization of palliative care consultation

A 55% increase in palliative care consultation was demonstrated during the curriculum year (45) in comparison to the pre-curriculum year (29) (Figure 3).

### Inpatient palliative care rotation feedback

Five of the six PGY1 residents (83.3%) submitted an end of rotation evaluation on the inpatient palliative care rotation. All respondents stated that “this rotation should be continued as structured for future classes.” Eighty percent of respondents marked “Strongly Agree” that this rotation was valuable to my training with the remaining 20% marking “Agree.” PGY1s most frequently cited instruction in pain management, exposure to GOC discussions, and directly working with palliative care physicians as the most valuable aspects of the rotation.

One resident commented that “this rotation was crucial for developing ... emotional quotient [and] the ability to discuss the most delicate topics. [The ability to] observe difficult conversations and ... ask questions created a safe space to learn and reflect.” Another reported that “this was one of the most important rotations! [I] learned a lot and started applying the learnings in different rotation[s] ... I was able to change my perspective on when to consult palliative [care] and the importance of having palliative care in plans.”

## Discussion

Our study demonstrates that a longitudinal, multimodal approach to teaching palliative care skills is effective in increasing knowledge and confidence in Ob-Gyn residents. A statistically significant increase in scores on all quizzes and survey questions was seen post-curriculum. No statistically significant difference was identified in standardized patient simulation performance between residents who had clinical exposure to inpatient palliative care versus those who did not. Increased referrals to palliative care services were placed by residents and supervising physicians during the curricular intervention year.

To our knowledge, our study is the first to implement a long-term palliative care curriculum for Ob-Gyn residents. Across specialties, most palliative care education involves infrequent lecture with little emphasis on simulation or clinical experience (Fischer et al. 2003; Kapadia et al. 2021; Shaw et al. 2010). Our study was the first to incorporate a unique, multimodal curriculum that involved a longitudinal series of lectures as well as focused patient simulation and clinical experience.

The literature demonstrates that Ob-Gyns underutilize perinatal palliative care services and miss opportunities to connect patients with this critical component of care (Marc-Aurele et al. 2018; Tosello et al. 2017). Our study suggests that formalized training can lead to changes in clinical practice and possibly help to close this gap in care. Increased confidence and knowledge post-intervention can likely be explained by the lack of palliative care education in prior PGYs and/or undergraduate medical education. We believe the dramatic increase in palliative care consultation during the curriculum year is due to several factors.

**Table 2.** Confidence survey responses

Question	Avg. score pre-curriculum	Avg. score post-curriculum	P-value	95% CI
Q1: My current PGY level is:	–	–	–	–
Q2: The training I received during my medical school education has prepared me to deliver bad news, communicate sensitive information, and navigate a patient's emotional response to this information	–	–	–	–
Q3: I am able to identify when a patient's clinical status is deteriorating	3.95	4.11	0.002	(–∞, 0)
Q4: When a patient's clinical status is deteriorating, I am able to facilitate discussion with the patient, patient's family, and care team regarding goals of care	3.32	3.83	0.005	(–∞, 0)
Q5: I know the difference between the varying advance care planning documents (living will, durable DNR, POLST, etc.)	2.73	3.61	<0.001	(–∞, –0.5)
Q6: I feel comfortable discussing code status and advance care planning documents with patients	3.18	4.11	<0.001	(–∞, –0.5)
Q7: I am able to identify the appropriate decision maker to discuss health care decisions when a patient is incapacitated	3.18	3.78	0.002	(–∞, –0.5)
Q8: I feel prepared to engage pregnant patients in discussions regarding prognosis and care planning of infants with life-limiting conditions, extreme prematurity/periviability, or complex illness	2.68	3.72	<0.001	(–∞, –0.5)
Q9: I am able to use physical exam findings and clinical data to estimate a patient's time to death	2.32	3.17	0.004	(–∞, –0.5)
Q10: I know how to manage symptoms (pain, nausea, etc.) in an adult patient opting for comfort based care	3.23	3.72	0.004	(–∞, 0)
Q11: I know how to manage symptoms (pain, nausea, etc.) in a neonatal patient whose parents/caregivers have opted for comfort based care in the setting of life-limiting illness	1.95	2.61	0.004	(–∞, –0.5)
Q12: I am able to create a comprehensive delivery plan for a patient whose infant is affected by a life-limiting condition, extreme prematurity/periviability, or complex illness. I feel that in doing so, I am able to identify patient values and wishes and would be able to identify all necessary team members to involve in the patient's care in developing delivery plans.	2.59	3.5	<0.001	(–∞, –0.5)
Q13: I know what nonphysician palliative care services are available to my patients and what their roles are.	2.91	3.94	<0.001	(–∞, –0.5)
Q14: I know the definition of secondary provider trauma and am able to utilize validated assessment tools to calculate my risk of suffering negative impacts from secondary provider trauma.	2.36	3.94	<0.001	(–∞, –1)
Q15: I am familiar with and able to use validated debriefing models to engage my team members in effective debriefs after traumatic or EOL events.	2.41	3.44	<0.001	(–∞, –0.5)
Total:	36.82	47.50	<0.001	(–∞, –8)

**Table 3.** Standardized patient simulations scores

	Advanced ovarian cancer and GOC #1	Advanced ovarian cancer and GOC #2	Perivable PROM SPIKES #1	Perivable PROM SPIKES #2	Life-limiting illness of fetus and delivery planning #1	Life-limiting illness of fetus and delivery planning #2
PGY1a	30	25	23	29	34	30
PGY1a	30	28	30	29	29	–
PGY1a	27	22	27	31	27	30
PGY1b	27	–	32	–	26	–
PGY1b	28	30	26	26	30	31
PGY1b	28	–	29	–	30	–
<b>Average</b>	28.3	26.3	27.8	28.8	29.3	30.3

PGY1a: Residents that had the inpatient palliative care rotation prior to first round of simulation.

PGY1b: Residents that did not have the inpatient palliative care rotation prior to first round of simulation.

Abbreviations: GOC = goals of care, PROM = premature rupture of membranes.

Resident physicians developed a greater understanding of the benefits of utilizing palliative care for Gynecology patients, and many who were previously entirely unaware of its role in Obstetrics became informed. Residents had a better grasp of the appropriate uses of consultation and were able to share this knowledge with the care team and supervising attendings. Furthermore, the use of standardized patient simulations facilitated by attending Ob-Gyn physicians fostered deeper discussions among Ob-Gyn physicians of varying levels of experience about palliative care consultation and resources in these unique clinical situations. This approach not only provided a psychologically safe space to practice having these difficult conversations, but also raised awareness among faculty physicians in addition to resident learners. The palliative care curriculum will continue to enhance the Ob-Gyn skill set and promote better care for patients in vulnerable states.

The study is limited by the low powered data analysis, especially with the simulation data. Although great care was taken to plan didactic events on days with the least scheduling conflicts, there were still missing data points attributed to unexpected resident absences. As we anticipated that the amount of time in training and overall exposure to clinical practice would potentially impact resident scores on tested measures, we did not offer make-up testing. The impact of missing data points was the largest in the simulation data as this sample size was so small. Although simulation data lacked the statistical power to be able to identify the impact of clinical experience on performance in simulated patient encounters, end of rotation feedback suggests a highly meaningful impact on residents' clinical practice. The response rate for the Palliative Care in Gynecology lecture posttest was also notably low (47.8%). One hour was originally allotted for this lecture. However, at the end of the hour, it was determined that more time would be needed to appropriately cover the learning objectives (see Table 1). Therefore, an additional lecture was scheduled at a later date. The associated posttest was administered after completion of the second lecture after all material had been covered. Didactic attendance was generally lower on this second lecture date and would explain why the pretest response rate is so different from the posttest response rate for this topic. Attempts to neutralize the impact of missing data were taken through careful selection of statistical methods (Dubnicka et al. 2002).

Our study creates a foundation for building a robust curriculum. However, further research is needed. Collaboration with other residency programs would be beneficial and necessary to increase sample size, specifically in the use of standardized patient simulations. Increasing sample size would allow more thorough evaluation of the impact of clinical exposure on performance on patient encounters and increase generalizability of our findings. After demonstrating effective standardization of the palliative care curriculum, efforts can be focused on incorporating the curriculum nationally. Investigating the impact of formal, comprehensive palliative care training in Ob-Gyn on patient satisfaction and quality metrics would also be highly valuable. Current literature cites negative patient-physician relationships in patients choosing to continue pregnancies impacted by life-limiting fetal illness (Berg et al. 2013). We would anticipate that increasing physician competence and confidence in navigating these scenarios would lead to positive impacts on patient experience.

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The authors have no other disclosures or competing interests to declare.

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