

Perceptions Regarding Pediatric and Adolescent Gynecology Training among Obstetrics and Gynecology Residents in Hawai'i

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Abstract

A pediatric and adolescent gynecology curriculum was implemented for obstetrics/gynecology residents at a single institution in Hawai'i. The primary objective of this study was to evaluate the effectiveness of this pediatric and adolescent gynecology (PAG) formal curriculum in improving knowledge. Twelve residents at the University of Hawai'i completed the curriculum during their second year of training. Of these, 6 residents completed an examination assessing knowledge both before and immediately after the curriculum. Five of these residents completed the examination 1-2 years after completing the curriculum. Average pre-rotation examination scores were 57%, which increased significantly immediately after the curriculum to 87% (P=.003) and remained significantly higher after 1-2 years with average scores of 71% (P=.025). A secondary objective was to assess resident comfort and confidence levels in the subject. All residents who completed the curriculum completed surveys assessing comfort in their pediatric and adolescent gynecology training and both perceived confidence and competence in this area. Despite completing the curriculum, 7 of 12 (58%) did not feel comfortable evaluating pediatric gynecology patients, and 5 of 12 (42%) did not feel prepared nor competent to care for pediatric and adolescent patients. A formal pediatric and adolescent gynecology curriculum increased examination performance, which suggests knowledge retention. However, despite curriculum completion, residents still desired more training in the subject area. Residency programs should consider innovative ways to incorporate inpatient and outpatient educational experiences, periodic testing, and feedback longitudinally throughout residency training to improve long-term retention, confidence, and competence in providing gynecologic care in the pediatric and adolescent gynecology population.

Keywords

pediatric adolescent gynecology, residency training, curriculum, resident education

Abbreviations and Acronyms

ANOVA = analysis of variance

ASRM = American Society for Reproductive Medicine

CREOG = Council on Resident Education in Obstetrics and Gynecology

NASPAG = North American Society for Pediatric and Adolescent Gynecology

OB/GYN = obstetrics and gynecology

PAG = pediatric adolescent gynecology

Introduction

Obstetric and gynecologic providers are often called upon to care for female children and adolescents. Pediatric and adolescent gynecology (PAG) is an essential and required aspect of obstetrics and gynecology (OB/GYN) residency training.¹ In the United States, the proportion of adolescents who are sexually active increases rapidly with age, with over 50% of females sexually active by age 18.² These adolescents and young adults aged 15–24

years also account for approximately half of newly diagnosed sexually transmitted infections.^{3,4} Furthermore, adolescents aged 10–14 years represent 8% of the total world population.^{5,6} This statistic has resulted in more focused attention on this specialty, as demonstrated by some recent publications describing successful PAG teaching methods.^{7,8} In addition, many obstetrics and gynecology program directors have expressed interest in expanding the PAG training in their programs.⁹

There is considerable variation in PAG exposure in OB/GYN residency programs across the country, with a limited number of programs having PAG expertise.¹ In a survey of OB/GYN residency program directors, only 38% of programs had exposure to PAG specialists.⁹ A cross-sectional study aimed to estimate the prevalence of PAG formal training in the United States. OB/GYN residency programs found that 63% (n=65) have no formal dedicated PAG clinic, 83% (n=87) have no outpatient PAG rotation, and 58% (n=57) had less than 4 hours of didactics dedicated to PAG.¹⁰ Furthermore, another study surveyed 2 large OB/GYN residency programs in Michigan and revealed that most residents in both academic and community programs reported no PAG rotations or clinics and limited didactic sessions.¹¹ This limited exposure may be responsible for the lack of basic PAG knowledge, as demonstrated by poor scores on knowledge-based questions. However, residents have overwhelmingly expressed a desire for more PAG training.

With the knowledge that there is still a lack of PAG training, the North American Society for Pediatric and Adolescent Gynecology (NASPAG) published the “Long Curriculum” (a comprehensive program in PAG for resident education),^{12,13} a 2 week “Short Curriculum” with specific learning objectives in 2014,^{1,13} and just recently released the “Short Curriculum 2.0.”¹⁴ One study revealed significant deficiencies in residents’ self-reported knowledge of core PAG topics, which improved after utilizing the “Short Curriculum.”¹⁵ A follow-up study evaluating the effectiveness of the “Short Curriculum” for 3 residency subspecialties demonstrated that the curriculum improved knowledge in OB/GYN, family medicine, and pediatric residents.¹⁶ The American College of Obstetrics and Gynecology also recognize the importance of PAG and have added PAG objectives into the Council on Resident Education in Obstetrics and Gynecology (CREOG) Educational Objectives.¹⁷

The University of Hawai'i OB/GYN residency program has a formal PAG curriculum in the second year. This curriculum involves assigned reading materials, didactic lectures, clinic

experience, and completion of American Society for Reproductive Medicine (ASRM) learning modules. The curriculum developed was based on the NASPAG short curriculum and CREOG Educational Objectives. Each second-year resident completes the PAG curriculum during their two-month rotation through the adolescent obstetrics and gynecology clinic. The clinic's patient population primarily comprises of adolescent patients seeking obstetric or gynecologic care. This study aimed to evaluate the effectiveness of the current PAG curriculum at the University of Hawai'i. The study examines two measures of PAG curriculum effectiveness: (1) knowledge retention and (2) comfort, confidence, and perceived competence in caring for pediatric and adolescent gynecologic patients.

Methods

This study comprised of a retrospective cohort in the University of Hawai'i Obstetrics and Gynecology Residency Program. University of Hawai'i Institutional Review Board approval was obtained. Twelve residents completed the PAG curriculum during their second year of residency. Of these residents, 6 residents completed an examination to test knowledge of various aspects of PAG before the start of their formal PAG curriculum and immediately after curriculum completion. Five of these 6 residents were retested 2 years later to assess long-term retention. The knowledge examination was untimed, closed book, and consisted of various question design types, including multiple choice, short answer, true/false, and fill in the blank. Questions were based on cases found in the Gynecology and Reproductive Endocrinology Infertility versions of the Personal Review of Learning in Obstetrics and Gynecology, known as PROLOG,^{18,19} in addition to the rotation learning objectives and suggested rotation reading material. Obstetrics and gynecology residency programs require 4 years of training. At the University of Hawai'i, the PAG curriculum is completed during the second year. Thus, only third- and fourth-year residents had completed the PAG curriculum at the time of the study. The third- and fourth-year classes each consisted of 6 residents. The fourth-year residents completed the examination again approximately 2 years after they had completed the curriculum. This examination administration model was chosen based on the literature on long-term retention,²⁰ suggesting that providing frequent quizzes,²¹⁻²³ pretesting,²⁴ and feedback improves long-term retention.

Examination scores were obtained through a search of computerized program records by the principal investigator. To assess resident comfort, confidence, and perceived competence in caring for PAG patients after curriculum completion, a survey was administered to the third- and fourth-year residents who

had completed the PAG curriculum. Data were collected anonymously. Responses were rated on a Likert scale of 1 to 5 with "strongly agree" assigned a value of 5 and "strongly disagree" with a value of 1. Surveys included demographic information and opinions regarding their confidence, comfort, and perceived competence in evaluating and caring for PAG patients. Although not validated, the survey instrument was pretested to assure clarity. All results were recorded on a password-protected Excel spreadsheet. All subjects were de-identified, and a key with codes that linked the subjects to their individualized scores was kept in a separate password-protected Word document to which only the principal investigator had access. Only de-identified data was used for statistical analysis. Survey results were evaluated using descriptive statistics. Exam scores were evaluated via paired t-test and analysis of variance (ANOVA) statistics. Paired t-test analysis was performed on the pre-rotation and immediate post-rotation scores, using GraphPad's QuickCals (www.graphpad.com). Examination scores were also analyzed using ANOVA statistical analysis, using the Social Science Statistical online calculator (www.socscistatistics.com).

Results

Twelve residents completed the PAG curriculum during their second year of residency. Of these, 6 residents completed an examination assessing knowledge retention before and immediately after the formal PAG curriculum, and 5 completed the examination 1–2 years after completing the PAG curriculum (Table 1). Overall, mean examination scores increased 30% immediately after the curriculum ($P=.003$) and remained 14% points higher after 1–2 years ($P=.025$), suggesting retention of the material.

A survey was distributed to the same cohort of 12 residents who completed the PAG curriculum as second-year residents to assess confidence, comfort, and perceived competence in evaluating and caring for PAG patients. The survey results are displayed in Table 2. Of the 12 residents, 5 (42%) agreed, and 2 (17%) strongly agreed that they intend to care for pediatric gynecologic patients. Furthermore, 6 (50%) agreed, and 4 (33%) strongly agreed that they intend to care for adolescent gynecologic patients in their future practice. Overall, only 2 residents (17%) who completed the curriculum agreed that they felt confident, and only 2 residents (17%) agreed that they felt prepared and competent to care for pediatric and adolescent patients with gynecologic problems. Of note, only 1 (8%) respondent agreed that they felt comfortable evaluating pediatric patients, while 8 residents (67%) agreed that they felt comfortable evaluating adolescent patients.

Table 1. Examination Performance Results (N=6)			
Resident	Examination Scores (%)		
	Pre-Rotation	Immediate Post-Rotation	>1 Year Post-Rotation
A	63.0	86.7	80.8
B	63.0	92.5	90.0
C	36.7	89.1	59.2
D	42.0	75.8	68.3
E	58.3	82.5	56.7
F	78.3	97.4	ND
Mean	57.0	87.0	71.0
Standard Deviation	15.3	7.6	14.2
ANOVA	P=.003		

Abbreviations: ANOVA, analysis of variance; ND, not determined

Table 2. Resident Confidence and Comfort Level (N=12)					
Statement	Strongly Disagree N (%)	Disagree N (%)	Neither Agree nor Disagree N (%)	Agree N (%)	Strongly Agree N (%)
I feel comfortable evaluating pediatric gynecology patients.	0 (0%)	7 (58%)	4 (33%)	1 (8%)	0 (0%)
I feel comfortable evaluating adolescent gynecology patients.	0 (0%)	1 (8%)	3 (25%)	8 (67%)	0 (0%)
I feel confident in my knowledge on gynecologic problems in the pediatric and adolescent population.	1 (8%)	6 (50%)	3 (25%)	2 (17%)	0 (0%)
I feel prepared and competent taking care of PAG patients.	0 (0%)	5 (42%)	5 (42%)	2 (17%)	0 (0%)
I plan to care for pediatric gynecology patients	1 (8%)	2 (17%)	2 (17%)	5 (42%)	2 (17%)
I plan to care for adolescent gynecology	1 (8%)	0 (0%)	1 (8%)	6 (50%)	4 (33%)

Abbreviation: PAG, pediatric adolescent gynecology

Discussion

This study has demonstrated that a formal PAG curriculum can significantly increase subject-specific exam performance. Having a well-defined PAG program has been shown in other programs to enhance resident education and provide better tools to perform gynecologic evaluations in children and adolescents.²⁵ Residents who reported having a well-defined program had significantly higher scores when asked to identify normal prepubertal genitalia and diagnose common gynecologic disorders. As such, residency programs have sought to utilize and incorporate various teaching methods to foster higher yield learning and retention of the PAG curriculum. These methods include advanced pelvic simulation session,²⁶⁻²⁸ web-based case-based learning,^{8,29} videoconferencing,³⁰ effective feedback strategies,³¹ and the “one minute preceptor model.”³²

Although various PAG curriculums have been shown to be effective, there are some discrepant results. One residency program developed a PAG curriculum, including outpatient

clinic experience, lectures, online modules, and simulation. After implementation, it improved resident comfort level when managing PAG patients but no significant improvement in knowledge.³³ Training is imperative for clinicians to enhance the quality of care for children and adolescents with gynecologic problems. Still, the lack of training in this field is not unique to the United States. In a survey of 27 European countries that are members of the European Board and College of Obstetrics and Gynecology, only half included PAG in their national curriculum, and of those, only 55% provided PAG training.³⁴ Another study centered on evaluating an advanced pelvic simulation session demonstrated that simulation improved residents’ knowledge, technical skills, and comfort level in the pediatric examination.²⁶ A subsequent study utilizing an advanced pelvic simulation curriculum confirmed those findings, with significant increases in objective structured clinical examination scores.²⁷ This current study demonstrated a significant increase in PAG written examination scores after PAG curriculum completion, which was maintained for almost 2 years. These differences in knowledge retention may result from the variability in the

curriculum design at various programs and the variability in clinical experiences available at each training site.

It is not uncommon that obstetrics and gynecology residents are less comfortable caring for pediatric and adolescent gynecologic patients than adult patients. This finding has been demonstrated by studies in the past, in which residents either indicated that their residency training in PAG was insufficient³⁵ or felt uncomfortable and inadequately prepared to provide routine gynecologic care to adolescents.^{36,37} One study showed that despite access to formal training in PAG, many physicians still experienced difficulties assessing pre-pubertal female anatomy and stressed the need for a library of images depicting normal anatomy and common gynecologic conditions to be included as an educational tool.⁸ Focus groups centered on resident perceptions of their adolescent reproductive health training revealed that they believed didactic lectures alone were insufficient and diverse inpatient and outpatient clinical experiences were needed.³⁸ This current study found that despite completing an effective dedicated curriculum associated with sustained improved examination performance, residents still expressed subjective concerns regarding their confidence, comfort, and perceived competence in evaluating and caring for this particular patient population. This discomfort was noted primarily in the pediatric population. This discrepancy in comfort between pediatric and adolescent cases despite apparent adequate knowledge may be secondary to differences in actual real-time clinical exposure. University of Hawai'i residents have a large adolescent gynecology patient volume relative to their pediatric gynecology patient volume. This statistic may be unique to the specific patient population at the University of Hawai'i. Therefore, despite a structured, well-designed PAG curriculum, residency programs should self-evaluate their own situation, their available resources, identify any potential gaps in training, and consider innovative ways to structure their PAG curriculum to meet their unique needs. Training may be accomplished by utilizing various educational tools, incorporating varying clinical experiences, and providing feedback to their residents.

The strength of our study is that data was collected among the same pool of residents who underwent a similar curriculum over the evaluation period. This analysis demonstrates that resident scores improved significantly without the mean of the group being pulled up by 1 or 2 residents doing exceptionally better.

This study is not without limitations. This study was performed using a retrospective cohort at a single institution with a small sample size and short duration, so our findings of sustained improved subject exam performance after a formal PAG curriculum may not apply to other residency programs. Each program is encouraged to perform a detailed self-evaluation to determine its own needs and potential gaps to best structure a curriculum suited to address its specific needs. Additionally, this retrospective study cannot assess the true effect of this PAG curriculum on long-term exam performance. There are likely

other rotations where residents are exposed to PAG-related clinical experiences and training throughout their four years of training. Thus, it is unlikely that the PAG curriculum is the sole influencer of resident exam performance. Finally, although sustained improvements in written exam performance suggest long-term knowledge retention, it is only one tool and may not accurately reflect actual knowledge in the subject area. Future studies should assess the true impact of a PAG curriculum on the long-term retention of knowledge in this subject area.

Residency programs should consider innovative ways to incorporate PAG educational experiences (including inpatient and outpatient), periodic testing, and feedback longitudinally throughout residency training to improve long-term retention, confidence, and competence in caring for this population. Since each training program is unique, they should self-evaluate their program and design a curriculum that best fits their overall curriculum and resource limitations.

Conflict of Interest

There is no conflict of interests or disclosures for any of the authors.

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