

How Are We Training Obstetrics And Gynecology Residents Around The World? A Systematic Review

Dünya Çapında Kadın Hastalıkları Ve Doğum Asistanlarını Nasıl Eğitiyoruz? Sistematiik Bir Derleme

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Abstract

Objective: Globalization and increased workforce mobility have led to a rise in the number of international medical professionals. While healthcare needs vary across societies, core competencies for specialist doctors within their respective fields may exhibit similarities. This systematic review examined global variations of residency training in obstetrics and gynecology (OBGYN) to inform strategies for enhancing training and improving patient outcomes.

Methods: We searched the PubMed, Scopus, Web of Science, and Education Resources Information Center databases up to July 3, 2024, using the keywords postgraduate education, postgraduate medical education, residency and gynecology and obstetrics, gynecology, or obstetrics.

Results and Discussion: Out of 3850 studies, four articles were selected based on selection criteria. The included studies were carried out in the UK, Zambia, Ghana, and Botswana. The duration of OBGYN residency programs varied across these countries, with durations of 4 years (Botswana), 5 years (Ghana), 7 years (UK), and 8 years (Zambia). While the length and structure of training in obstetrics and gynecology varies from country to country, the common goal is to train physicians who can perform their work safely and independently. Trainees in residency programs with fewer working hours may struggle to develop the comprehensive clinical skills required of modern physicians. Alternative training settings like workshops, short courses, and eLearning modules are being implemented to address this. Despite the inclusion of rotations in most programs, there is a lack of documentation regarding their implementation.

Furthermore, a common weakness across curricula is the absence of detailed information on assessment methods. Although the United Kingdom provides descriptions of various assessment methods, specific passing criteria, including the number of retakes allowed, are not outlined. The competence and the capacity of the trainee have a great influence on the success of a training, which underlines the importance of selecting suitable candidates. Furthermore, the expertise and demeanor of the trainers are undeniably crucial for residency training, but information on these aspects was missing in the analyzed articles. Factors such as the health system, the scope and reach of screening programs, religion, and technical development play a significant role in shaping curriculum requirements. OBGYN training should be adapted to the specific needs of each country.

Özet

Amaç: Küreselleşme ve artan işgücü hareketliliği, uluslararası tıp uzmanlarının sayısında artışa yol açmıştır. Sağlık hizmetleri ihtiyaçları toplumlar arasında farklılık gösterse de ilgili alanlardaki uzman doktorların temel yeterlilikleri benzerlikler gösterebilir. Bu sistematik inceleme, obstetrik ve jinekoloji (OBGYN) eğitimini iyileştirmeye ve hasta sonuçlarını geliştirmeye yönelik stratejilere rehberlik etmek için OBGYN asistanlık eğitimindeki küresel çeşitlilikleri araştırmıştır.

Yöntemler: 3 Temmuz 2024'e kadar PubMed, Scopus, Web of Science ve Education Resources Information Center (ERIC) veri tabanlarını, lisansüstü eğitim, lisansüstü tıp eğitimi, ihtisas ve jinekoloji ve obstetrik, jinekoloji veya obstetrik anahtar kelimelerini kullanarak aradık.

Sonuçlar ve Tartışma: 3850 çalışma arasından, belirli seçim kriterleri uygulanarak dört makale seçildi. Bu sistematik incelemeye dahil edilen çalışmalar İngiltere, Zambiya, Gana ve Botsvana'da gerçekleştirildi. OBGYN uzmanlık eğitimlerinin süresi bu ülkeler arasında değişmekte olup, 4 yıl (Botsvana), 5 yıl (Gana), 7 yıl (İngiltere) ve 8 yıl (Zambiya) olarak belirlenmiştir. Obstetrik ve jinekolojideki eğitimin uzunluğu ve yapısı ülkeden ülkeye değişse de ortak amaç, işlerini güvenli ve bağımsız bir şekilde yapabilen hekimler yetiştirmektir. Mevcut asistanlık programlarındaki

azaltılmış çalışma saatleri, asistanların modern hekimlerden beklenen genişletilmiş klinik beceriler yelpazesinde ustalaşma yeteneklerini engelleyebilir. Bu sorunu çözmek için, atölyeler, kısa kurslar ve e-öğrenme modülleri gibi alternatif eğitim ortamları uygulanmaktadır. Çoğu programda rotasyonlar sunulsa da bunların bunların uygulanmasına ilişkin dokümantasyon eksikliği vardır. Ayrıca, müfredatlardaki ortak bir zayıflık, değerlendirme yöntemleri hakkında ayrıntılı bilginin olmamasıdır. Birleşik Krallık çeşitli değerlendirme yöntemlerini detaylarıyla açıklamış olsa da bu yöntemleri uygulamada izin verilen tekrar sayısı gibi belirli geçme kriterleri belirtilmemiştir. Eğitim alan kişinin yeterliliği ve kapasitesi bir eğitimin başarısı üzerinde büyük bir etkiye sahiptir ve uygun adayların seçilmesinin önemini yadsınamaz. Ayrıca, eğitmenlerin bilgi ve birikimi ile tutumları, tıpta uzmanlık eğitimi için tartışmasız bir şekilde önemlidir, ancak bunlara ilişkin bilgiler analiz edilen makalelerde eksikti. Sağlık sistemi, tarama programlarının kapsamı ve erişimi, din ve teknik gelişim gibi faktörler, müfredat gerekliliklerinin şekillenmesinde önemli bir rol oynamaktadır. Kadın hastalıkları ve doğum uzmanlık eğitimi, her ülkenin özel ihtiyaçlarına uyarlanmalıdır.

Introduction

An educational program is a document in which the objectives, content, learning-teaching activities, and evaluation studies related to the subject field are written (1). There are significant differences in obstetrics and gynecology training programs worldwide. While the length and structure of obstetrics and gynecology training may differ across countries, the shared aim is to develop physicians capable of safe, independent practice. A study comparing North American and European surgical trainees, who undergo different working hours and training durations, found no significant differences in technical skills or cognitive knowledge at the start of their careers (2). This suggests that despite variations in training length, the quality of the product may be comparable. However, research indicates that patient outcomes, particularly major complications, can be influenced by the quality of training (3). Therefore, investing in high-quality residency training is essential for improving patient safety and care.

The postgraduate medical education system has

remained largely unchanged in the last century despite significant advancements in healthcare (4,5). Training hours have decreased substantially, while the volume of essential knowledge and clinical skills has expanded dramatically (5). The shift toward minimally invasive surgery has limited exposure to open abdominal cases, and the complexity of laparoscopic and robotic procedures for benign disease often exceeds the surgical experience available to residents. Obstetric patients are now older and heavier, with increased comorbidities, making their antepartum and intrapartum care more complex. Additionally, advancements in genetic knowledge have significantly complicated prenatal counseling. Globalization and manpower mobility have increased significantly in the last 10 years. Doctors can travel to many parts of the world outside their country for work. While healthcare needs vary across societies, the core competencies required for specialist doctors within their respective fields may exhibit similarities. This systematic review was conducted to investigate obstetrics and gynecology (OBGYN) curricula worldwide and identify variations to inform strategies for enhancing training and improving patient outcomes.

Methods

This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) 2020 Statement to identify, select, appraise, and synthesize included studies (6).

Search strategy

PubMed, Scopus, Web of Science, and Education Resources Information Center (ERIC) databases were systematically searched up to July 3, 2024, for studies reporting postgraduate education in obstetrics and gynecology. We used Boolean connectors/operators to get more precise and relevant results in searches. No date restrictions were applied. The MeSH terms and additional keywords used for each database were: ("Postgraduate education" OR "Postgraduate medical education" OR "residency") AND ("gynecology and obstetrics" OR "gynecology" OR "obstetrics"). Figure 1 provides a visual representation of the screening process.

Screening and selection of studies

Documents identified through initial keyword searches were downloaded as BibTeX files and subsequently imported into Mendeley 2.99.0 (Elsevier Ltd.) for reference management. Mendeley's automatic duplication tracker was used to eliminate duplicate articles initially. The remaining documents were then aligned by name and manually checked for any additional duplicates. The final list of articles from the initial screening phase was exported from Mendeley to an Excel spreadsheet. Both authors (ŞO and İİB) independently reviewed each article's abstract. Article titles, publication types, years, journals, and author names were extracted from each abstract. This information was entered into individual Excel sheets labeled "Initial Screening Results (ISR)" by ŞO and İİB and used for the initial elimination process.

Any studies focusing on curriculum, rotations, and success measurement in obstetrics and gynecology postgraduate education were included. Studies that were not published in English, Turkish, or German, studies that just gave partial information about the curriculum, studies focused on graduate education or any other postgraduate education than obstetrics and gynecology, and finally, studies focused on fellowship education were excluded. Both investigators independently reviewed each other's ISR sheet. Any discrepancies regarding article selection were resolved through discussion. The documents selected for detailed evaluation were compiled into a "Detailed Screening (DS) list," including authors, country, publication year, residency duration, rotation information, methods/models used in education, and success measurements.

Results

Initial database searches identified 3850 potential studies. After reviewing titles and abstracts, 132 were selected for full-text evaluation. Following a thorough review of the full text, four studies were deemed eligible for inclusion (Figure 1). The included studies were conducted in the UK, Zambia, Ghana, and Botswana. The duration of an OBGYN residency was 4 years in Botswana (7) and Zambia (8), 5 years in Ghana (9), and 7 years in the UK (10). Table 1 provides detailed information about the included articles, and the assessment of the quality of the studies is presented in Table 2 (11)

Table 1: Articles included in the final analysis.

Article	Country	Duration of the residency	Rotation information	Methods/Models used in education	Measurements/Certification examination	Institution for curriculum development
Luckett R, Nassali M, et al.; 2021	Botswana	4 years	General Obstetrics 15 Months General Gynecology 12 Months General surgery 3 Months Intensive Care 1 Month Radiology 1 Month High-risk Obstetrics 4 Months Gynecologic Oncology 4 Months Fertility Medicine & Gynecologic Endocrinology 1 Month Urogynecology 1 Month Research/Elective 2 Months	Self-directed, complemented by two hours per week of synchronous faculty-facilitated discussions or resident presentations, monthly journal clubs, patient management sessions, research supervision sessions, and maternal and perinatal morbidity and mortality conferences	No information	University of Botswana
Hicks MML, Chanda K, et al.; 2022	Zambia	4 years	36 months exclusively on obstetrics and gynecology clinical services, 12 months of off-service rotations (Ultrasound rotation, intensive care unit rotation, neonatal intensive care unit rotation, emergency room rotation, family planning rotation, research requirement and formal instruction on scientific research)	No information	Completion of a research project before graduation No information regarding assessment	Higher Education Authority undertaken at the Department of Obstetrics and Gynecology, University of Zambia
Jones O and Reid W; 2010	England	7 years of core training: 1. and 2. Year: Basic Training; 3-5 years: Intermediate Training; 6. and 7. year: Advanced training	(1) Module 1: Basic Clinical Skills. (2) Module 2: Teaching, Appraisal and Assessment. (3) Module 3: Information Technology, Clinical Governance and Research. (4) Module 4: Ethics and Legal Issues. (5) Module 5: Core Surgical Skills. (6) Module 6: Postoperative Care. (7) Module 7: Surgical Procedures. (8) Module 8: Antenatal Care. (9) Module 9: Maternal Medicine. (10) Module 10: Management of Labor. (11) Module 11: Management of Delivery. (12) Module 12: Postpartum Problems (the Puerperium). (13) Module 13: Gynecological Problems. (14) Module 14: Subfertility. (15) Module 15: Women's Sexual and Reproductive Health. (16) Module 16: Early Pregnancy Care. (17) Module 17: Gynecological Oncology. (18) Module 18: Urogynecology and Pelvic Floor Problems. (19) Module 19: Professional Development.	Competency-based and aligned with the four domains of the General Medical Council (GMC), Good Medical Practice (GMP), and a generic competency framework.	Five-point scale: Observer-Assistant-Directly supervised-Indirectly supervised-Independent Portfolio including logbooks, appraisals, workplace-based Assessments, and multi-source feedback MRCOG Part 1 and Part 2	Royal College of Obstetricians and Gynecologists
Klufio CA, Kwawakume EY et al.; 2003	Ghana	5 years	1st Year: Rotations in basic sciences and obstetrics/gynecology; 2nd Year: Rotations in general surgery, urology, neonatology, and anesthesiology 3rd Year: Obstetrics/Gynecology 4th Year: Three months in a hospital management course in the United States or the United Kingdom; 6 months in rural Ghana 5th Year: Senior obstetrics/gynecology training	Video-based scenarios Case-based discussions Simulations	1st year: basic sciences FWACS Examination 3rd year: Part I: FWACS examination at the end of the year 5th year: Part II: FWACS examination at the end of the year	Collaboration between the American College of Obstetricians and Gynecologists (ACOG), the Royal College of Obstetricians and Gynecologists (RCOG), the Department for International Development of Britain, the Carnegie Corporation of New York, two Ghanaian medical schools, and the government of Ghana

Table 2: Assessment of the quality of the studies (1: yes, 0: not clear, -1: no)

Article	Is there congruity between the stated philosophical perspective and the research methodology?	Is there congruity between the research methodology and the Research question or objectives?	Is there congruity between the research methodology and the representation and the methods used to collect data?	Is there congruity between the research methodology and the representation and analysis of data?	Is there congruity between the research methodology and the interpretation of results?	Is the research ethical according to current criteria or for recent studies, and is there evidence of ethical approval by an appropriate body?	Do the conclusions drawn in the research report flow from the analysis, or interpretation, or the data?	Total Score
Luckett R, Nassali M, et al.; 2021	1	1	1	1	1	1	1	7
Hicks MML, Chanda K, et al.; 2022	1	1	1	1	1	0	1	6
Jones O and Reid W; 2010	1	1	1	1	1	1	1	7
Klufio CA, Kwawakume EY et al.; 2003	1	1	1	1	1	0	1	6

In Botswana, the University of Botswana developed a comprehensive postgraduate obstetrics and gynecology curriculum. The program included clinical rotations in general obstetrics (15 months), general gynecology (12 months), general surgery (3 months), intensive care (1 month), radiology (1 month), high-risk obstetrics (4 months), gynecologic oncology (4 months), fertility medicine & gynecologic endocrinology (1 month), urogynecology (1 month), and research/elective (2 months). Didactic education consisted of self-directed learning, complemented by faculty-facilitated discussions, journal clubs, patient management sessions, research supervision, and conferences on maternal and perinatal morbidity and mortality. However, information regarding the assessment of residency training success was not provided.

In Zambia, the Higher Education Authority at the University of Zambia's Department of Obstetrics and Gynecology developed a comprehensive postgraduate obstetrics and gynecology curriculum. The program included 36 months of exclusive clinical rotations in obstetrics and gynecology, along with 12 months of off-service rotations in ultrasound, intensive care units, neonatal intensive care units, emergency medicine, family planning, research, and formal scientific research instruction. A mandatory research project was required before graduation. A list of procedural and surgical skills, with recommended minimum requirements, is provided to trainees. A comparison of basic minimum standards between the Zambian and US programs revealed several differences. The Zambian program had higher standards for vaginal deliveries (210 vs 200), C-section deliveries (400 vs 145), abdominal hysterectomies (35 vs 15), cancer cases (65 vs 25), and the number of abortions (55 vs 20). Conversely, the US program had higher standards for vaginal hysterectomies, obstetrical ultrasounds, and cystoscopies. Notably, the Zambian program has yet to establish minimum standards for laparoscopic, hysteroscopic, incontinence, and pelvic floor surgical procedures. Furthermore, information regarding the assessment of residency training success was not provided.

In Ghana, a collaborative effort between the American College of Obstetricians and Gynecologists (ACOG), the Royal College of Obstetricians and Gynecologists (RCOG), the Department for International Development of Britain, the Carnegie

Corporation of New York, two Ghanaian medical schools, and the Ghanaian government resulted in the development of a comprehensive postgraduate obstetrics and gynecology curriculum. The program consisted of five years of training. Year one focused on rotations in basic sciences and obstetrics/gynecology. In the second year, residents rotated through general surgery, urology, neonatology, and anesthesiology. The third year was dedicated to obstetrics/gynecology, and the fourth year included a three-month hospital management course in the United States or the United Kingdom, followed by a six-month rural placement in Ghana. The final year was dedicated to senior obstetrics/gynecology training. Didactic education primarily relied on video-based scenarios, case-based discussions, and simulations. Residents had to complete the Basic Sciences FWACS examination at the end of the first year, the Part I FWACS examination after the third year, and the Part II FWACS examination upon program completion.

In the UK, the RCOG oversees the development of a comprehensive postgraduate obstetrics and gynecology curriculum. The postgraduate obstetrics and gynecology program spanned seven years of core training. The first two years focused on basic training, followed by three to five years of intermediate training. The final two years were dedicated to advanced training, where residents gained specialized skills and expertise in various subspecialties of obstetrics and gynecology. The postgraduate obstetrics and gynecology program consisted of 19 modules covering a wide range of topics, including basic clinical skills, teaching and assessment, information technology, clinical governance, research, ethics, legal issues, core surgical skills, postoperative care, surgical procedures, antenatal care, maternal medicine, management of labor and delivery, postpartum problems, gynecological problems, subfertility, women's sexual and reproductive health, early pregnancy care, gynecologic oncology, urogynecology, and pelvic floor problems. Additionally, the program included a module on professional development. The curriculum is competency-based and aligned with the four domains of the General Medical Council (GMC), Good Medical Practice (GMP), and a generic competency framework. These domains include knowledge, skills, and performance; safety

and quality; communication, partnership, and teamwork; and maintaining trust. A five-point scale (observer-assistant-directly supervised-indirectly supervised-independent) was deemed to be fit for demonstrating the progress of relevant clinical skills. Competencies are assessed and recorded in an electronic logbook using various methods. The handbook outlines the structured assessment program in detail. Assessments include Mini Clinical Examination Exercises, Objective Structured Assessments of Technical Skills, case-based discussions, advanced training skills modules, and other techniques like simulations and drills. In addition to the core training, residents must complete an annual research project, mandatory courses, and online modules. To achieve MRCOG certification, residents must pass both the written and oral examinations at the end of the second and sixth years of training.

Discussion

To the best of our knowledge, this is the first systematic review focused on global postgraduate training in obstetrics and gynecology. Our literature search identified limited studies comprehensively describing postgraduate OBGYN education in developed countries. In these countries, institutions often oversee postgraduate education and publicly outline their standards. Consequently, the existing literature frequently focuses on specific aspects such as abortion or laparoscopy training. As these topics were not our primary research focus, such studies were not included in the final analysis. Some studies compared specific aspects of postgraduate education in developed countries but lacked a comprehensive overview. These studies were excluded from the final analysis due to their limited scope. In contrast, studies originating from developing countries described their postgraduate education firmly and compared it to that in developed countries.

The knowledge and clinical skills needed for OBGYN practice have grown considerably over time. From noninvasive prenatal testing to full exome sequencing, detecting thickened nuchal folds to inserting long-acting reversible contraception, and assessing latent systems errors to leading healthcare teams, these critical areas must be mastered within increasingly shorter training cycles. This rapid expansion of the field

risks producing generalists who lack the depth of knowledge necessary to provide optimal patient care, echoing the adage of knowing less and less about more and more. This systematic review of OBGYN curricula reveals significant global variation in residency training length. Programs typically last four years in the USA (12), Botswana (7), Zambia (8), and Türkiye (13), five years in Ghana (9), Canada (14), and Germany (15), six years in the Netherlands (16), and seven years in the UK (10). Additionally, there are regional variations in work-hour regulations. For example, the US imposes an 80-hour weekly limit, while European regulations typically limit work hours to 48 per week (5). The European Network of Trainees in Obstetrics and Gynecology (ENTOG) recommends a minimum training duration of five years for OBGYN to promote harmonization across Europe (17). With reduced working hours, the current residency programs might fall short of providing adequate time to master the broader range of clinical skills. To address the vast knowledge base required of modern physicians, alternative training settings like workshops, short courses, and eLearning modules are being implemented (18). This raises the question of whether all OBGYN specialists need a comprehensive understanding of all aspects or if it would be more effective to specialize after acquiring core knowledge. The Dutch example provides a compelling example: a six-year curriculum that combines learning basic, advanced, and subspecialty skills coupled with rotations through various hospital types, including general hospitals, university clinics, and specialized centers (16).

While rotations are offered in most programs, their implementation was not documented. A common weakness across curricula is the lack of detailed information regarding assessment methods. While the United Kingdom provides specific descriptions of various assessment methods, none outline exact passing criteria, including the number of retakes permitted. Clinical competence can be assessed using a variety of methods aligned with Miller's pyramid, which outlines four levels of assessment (19). The lower cognitive levels of "knows" and "knows how" can be evaluated through traditional high-stakes written and oral examinations. However, it's important to note that knowledge alone does not guarantee competence and is just one component of a comprehensive

assessment. The higher levels of Miller's pyramid, "shows how" and "does," require our primary focus. Assessment methods at these levels include Objective Structured Assessments of Technical Skills, Objective Structured Clinical Examinations, standardized patients, and simulations. The highest level encompasses workplace-based assessments like Mini-Clinical Evaluation Exercises, case-based discussions, direct observation of procedural skills, portfolios, logbooks, 360-degree feedback, and peer evaluation. While simulations may assess lower-level skills, they can be valuable tools for workplace-based assessment, which can be challenging to implement in the daily clinical setting. Assessing trainee competence can be integrated at multiple stages of education, starting from the selection process and continuing through the administration of various exams throughout the curriculum.

Despite the importance of global standardization, OBGYN training should be tailored to each country's unique requirements, as exemplified by the six-month rural internship in Ghana. During this assignment, the resident lives and works in a rural district hospital, contributing to the community and gaining valuable experience in rural healthcare. A supervisor visits monthly to assess the resident's progress and to assist with gynecological procedures that the resident may not be fully proficient in (9). The comparison of Zambia and the US reveals how the health system, scope and reach of screening programs, religion, and technical development influence curriculum requirements (8). While laparoscopic procedures were not included in the Zambian curriculum, the mandated number of abortions and cancer procedures was notably higher. Another example is Turkey's compulsory service obligation for physicians, where doctors often work alone in rural areas and must be proficient in a wide range of procedures, such as Cesarean sections and emergency hysterectomies. This contrasts with Germany, where specialists in gynecology and obstetrics may not need such comprehensive skills, like performing emergency hysterectomies, as they are allowed to work exclusively in outpatient settings (20,21).

The trainee significantly influences the success of postgraduate training, highlighting the importance of selecting suitable candidates. Besides, the quality and presentation of educators are undeniably

crucial to residency training, but the analyzed articles lacked information on these aspects. To improve the quality of educators, we recommend implementing continuous professional development programs, mentoring initiatives, and feedback systems. Furthermore, we recommend monitoring their effectiveness through regular evaluations of teaching assistants and peer reviews.

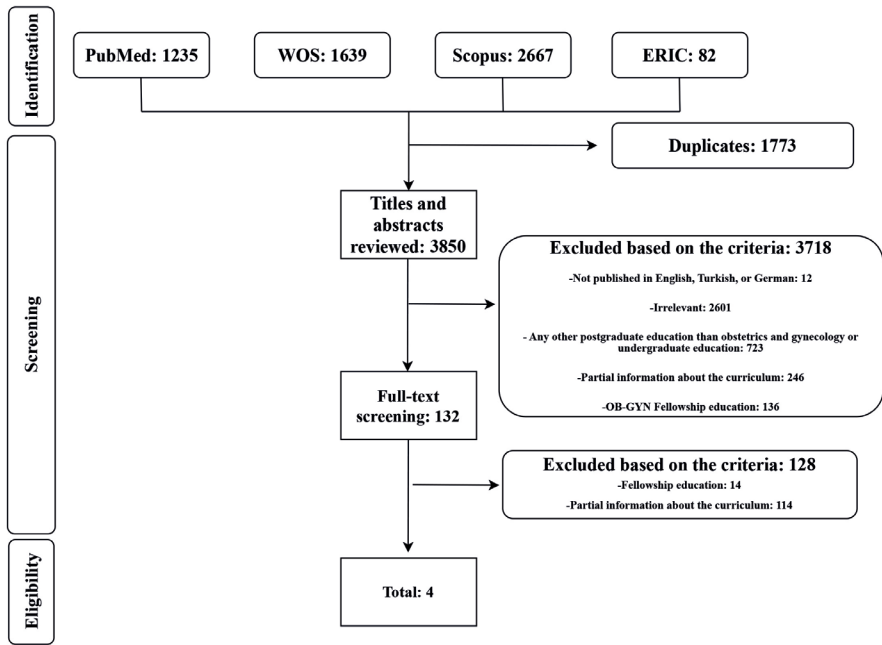
A potential limitation of this systematic review is the unavoidable bias introduced by our decision to include only studies published in English, Turkish, and German. This language restriction may have led to the exclusion of relevant research and perspectives published in other languages, potentially impacting the comprehensiveness of our findings. Therefore, the generalizability of our conclusions to the full spectrum of global gynecological training practice should be interpreted with caution. Future research should prioritize the inclusion of a broader range of languages to ensure a more representative and comprehensive understanding of this critical area.

The overarching objective is to develop competent physicians capable of autonomous practice, and some questions need to be answered. For example, how many deliveries should be considered sufficient for trainees aspiring to specialize in reproductive endocrinology or urogynecology? Should rural practitioners receive extended training to address information overload and clinical shortfalls? While abandoning a system that has served us well for many years is challenging, the rapidly evolving world necessitates change.

While the duration of training and working hours are relevant factors, the structure of the curriculum and assessment methods – starting from resident selection and continuing throughout and at the end of training– are more critical. Moreover, curricula should be adapted to each country's specific needs, suggesting that a one-size-fits-all approach is unsuitable. Critically, the performance of educators should also be subject to evaluation. Furthermore, to meet the growing needs of obstetrics and gynecology over the next decades, we must identify and recruit the most qualified physicians and provide them with comprehensive postgraduate training and lifelong medical education.

Author contributions

Both authors contributed to the study's conception



and design, screening and selection of the studies, and data extractions. The first draft of the manuscript was written by ŞÖ, and both authors read and approved the final manuscript.

Research ethics

Not applicable.

Conflict of Interest

The authors have no conflict of interest.

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Data Availability Statement

The data supporting this systematic review are derived from previously published studies, which are cited and referenced within this manuscript. All relevant data used in this review are available in the public domain through the respective articles and databases.

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