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Current Status of Gynecologic Surgical Training among Obstetrics and Gynecology Residents in Cameroon: A National Cross-Sectional Survey

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Abstract

Background: Gynecologic surgery remains a core competency for obstetrician-gynecologists, yet its training is poorly evaluated in low-resource settings such as Cameroon. **Objective**: To assess perceptions of gynecologic surgical training among obstetrics and gynecology residents and attending physicians in Cameroon, and identify gaps to inform competency-based curriculum reform. **Methods**: Cross-sectional observational study reported per STROBE. Conducted October 2011-January 2012 within SOGOC (Society of Gynecology and Obstetrics of Cameroon). Populations: G1 residents at FMSB Yaoundé I (58 invited), G2 faculty attending physicians (12 invited), G3 non-faculty civil-servant attendings (denominator unknown), G4 private consultants (denominator unknown). Structured anonymous questionnaire adapted from Rathat *et al.* 2008 and Nizard 2002. Domains: 1) organization of training, 2) satisfaction, 3) factors influencing quality, 4) educational resources, 5) assessment. Pretested on 5 residents + 2 consultants not in final sample; Cronbach α 0.78 for satisfaction domain, mean completion 6.2 min. Distribution by email (dedicated address), then in-person. Analysis: Excel 2003, SAS 9.2, descriptive n/N (%, 95% CI Wilson), Fisher exact test comparing residents (G1) vs all attendings (G2 + G3 + G4) due to small expected counts < 5, $p < 0.05$. **Results**: 47 respondents: G1 32/58 (55.2%), G2 5/12 (41.7%), G3 9, G4 1; overall known denominator response 37/70 (52.9%). 91.0% (29/32; 95%CI 75.3 - 98.1) residents intended weekly surgical activity. Satisfaction: residents currently 31.3%

(10/32; 95% CI 16.1 - 50.0) vs attendings recalling own residency 80.0% (12/15; 95% CI 51.9 - 95.7), p = 0.003, Fisher exact. Factors perceived to most often influence quality: attending experience 57.4% (27/47), mentorship culture 53.2% (25/47), operative workload 48.9% (23/47). Based on respondents' reported perceptions: never received formal theoretical surgical courses 62.2% (28/45); residents 65.6% (21/32) vs attendings 40.0% (4/10), p = 0.042; no access to computer-based resources 73.0% (27/37); residents 75.0% (24/32) vs attendings 60.0% (3/5), p = 0.037; library never accessed 57.4% (27/47), p = 0.014 overall distribution. Practical training (n = 37 respondents to this section): no pelvic trainer sessions 89.2% (33/37), no dissection laboratory 97.3% (36/37), no animal model training 86.5% (32/37). No theoretical assessment 64.4% (29/45), no weighted practical assessment 85.1% (40/47). 97.9% (46/47) desired objective assessment. **Conclusions**: This historical baseline survey indicates residents in Cameroon report substantially lower satisfaction than attending physicians and limited perceived access to structured theory, simulation, and objective assessment. Although data are from 2011-2012, persistent resource constraints suggest continued relevance, as confirmed by an informal curriculum review 2023-2024 showing limited simulation infrastructure. Low-cost pelvic trainers, mandatory logbooks, and OSATS-based competency assessment aligned with CBME/EPAs and FIGO/ACOG/ESGO 2021-2024 recommendations are needed. Findings should be interpreted cautiously given the small sample and limited generalizability beyond Yaoundé.

Keywords

Gynecologic Surgery, Resident Training, Cameroon, Simulation, OSATS, Competency-Based Medical Education, EPAs, STROBE

1. Introduction

Medical education in Cameroon has expanded with more medical schools and residency positions. Subspecialty training was introduced in 2010 in several disciplines, but obstetrics and gynecology remains broad where surgical competency is essential. At FMSB University of Yaoundé I, residents achieve competence in cesarean sections but remain limited in benign and emergency gynecologic surgery. Training is provided by faculty and non-faculty attendings (civil servants and private). Despite the introduction of logbooks, surgical training is poorly evaluated. This is concerning because >90% of residents intend to maintain surgical activity and the OR remains the primary training site. Every OBGYN should manage surgical emergencies from adnexal torsion to hemostatic hysterectomy. The current situation at FMSB does not appear to meet standards. Knowledge gap: no national data in Cameroon, unlike French national surveys. This is the first baseline data from low-resource sub-Saharan Africa, informing competency-based reforms. Recent literature 2020-2025 emphasizes simulation, OSATS, CBME and

EPAs as transformative [1]-[8], scarcely implemented in Cameroon. Therefore, the general objective was to assess the current state of gynecologic surgical training among OBGYN residents in Cameroon from the perspective of residents and attendings. Specific objectives were to identify elements influencing adequate training, evaluate theoretical and practical resources, determine assessment methods, identify shortcomings, and propose solutions [9]-[12].

2. Methods

2.1. Design

Descriptive cross-sectional survey.

2.2. Setting and Period

SOGOC members, October 2011-January 2012.

2.3. Participants and Sampling

Target populations defined a priori: G1 residents at FMSB Yaoundé I (N = 58 known), G2 faculty attendings (N = 12 known), G3 non-faculty civil-servant attendings involved in training (denominator unknown estimated ~30), G4 private non-teaching consultants (denominator unknown).

2.4. Inclusion

SOGOC member.

2.5. Exclusion

Non-member.

Sampling exhaustive for G1/G2, convenience for G3/G4. Participant flow: invited 58 + 12 + unknown; responded 32, 5, 9, 1. Response rate known denominators 37/70 = 52.9%; residents alone 55.2%. No formal sample size calculation as exploratory, aimed for maximum participation.

2.6. Questionnaire Development and Validation

Developed from validated French surveys adapted. Domains: Demographics, training organization (number of rotations, external rotations, sectorization), satisfaction (binary), factors influencing quality (Like: never/sometimes/most often/always), educational resources (frequency), assessment.

Content validity reviewed by 3 senior OBGYN educators.

2.7. Pretest

Residents+2 consultants not in the final sample for clarity and duration mean 6.2 min. Internal consistency Cronbach alpha of 0.78 for satisfaction/quality items. No test-retest. Questionnaire attached as Supplementary File 1. Missing data: item-specific denominators reported (e.g., 33/37 indicates 10 missing).

2.8. Data Collection

Email via a dedicated address, then in-person by investigators to increase participation. Anonymous, no incentive, no sponsorship.

2.9. Statistical Analysis

Excel 2003 entry, SAS 9.2. Descriptive: n (%), with 95% CI Wilson. Comparison: Fisher exact test chosen due to small expected counts < 5; groups combined as residents (G1) vs attendings (G2 + G3 + G4) for main comparisons to increase power. Exact p-values reported. No adjustment for multiple comparisons (exploratory, noted as limitation). No multivariable analysis feasible due to n = 47.

2.10. Ethical Considerations

Ethical approval University of Buea ref: 2023/0158/UB/AcA/TTSD/TSS/AA and FMSB Administrative Authorization SOGOC/2011/12. Voluntary, informed consent, anonymous. No patient data.

2.11. Management of Bias

Response bias acknowledged; email vs in-person may influence. Self-report bias. Selection bias due to unknown denominators for G3/G4 [1] [2].

3. Results

3.1. Participant Characteristics

Total 47 responses. G1 32/58 (55.2%), G2 5/12 (41.7%), G3 9, G4 1 (Table 1).

Table 1. Participant characteristics and participation.

Group	n	Denominator	Participation	95% CI	Notes
G1	32	58	55.2%	41.5 - 68.3	
G2	5	12	41.7%	15.2 - 72.3	
G3	9	Unknown	Unknown	N/A	Limitation
G4	1	Unknown	Unknown	N/A	Limitation
Overall known	37	70	**52.9%**	40.6 - 64.9	

The majority of the participants were Residents (G1) representing 55.2% (95% CI 41.5 - 68.3).

3.2. Organization of Surgical Training

Only two surgical rotations (visceral surgery and urology) plus gynecology are mandatory for DES at FMSB. 84.4% (27/32) residents considered 2 - 3 rotations sufficient vs 93.3% (14/15) attendings reported having completed > 2 rotations during their own training. Resident-attending relationship: good 42.6% (20/47), pleasant 14.9% (7/47), stressful/confusing 27.7% (13/47), missing 14.9% (7/47) (Table 2).

Table 2. Organization of surgical training.

Item	Residents G1	Attendings G2-4	Total	95% CI
Surgical rotations sufficient (2 - 3)	27/32 (84.4%)		27/32 (84.4%)	67.2 - 94.7
Completed > 2 rotations		14/15 (93.3%)	14/15 (93.3%)	68.1 - 99.8
Relationship: Goof			20/47 (42.6%)	
Pleasant			7/47 (14.9%)	
Stressful/confusing			13/47 (27.7%)	
Missing			7/47 (14.9%)	
Intends external rotation	23/32 (71.9%)		23/32 (71.9%)	53.3 - 86.3
Perceives external emproves - Residents	17/32 (53.1%)		17/32 (53.1%)	51.9 - 95.7
Perceives external emproves - Attending		12/15 (80.0%)	12/15 (80.0%)	
Support sectorization			28/47 (59.6%)	44.3 - 73.6
Oppose			16/47 (34.0%)	
Undecided			3/47 (6.4%)	

84% of Residents think 2 - 3 rotations are sufficient, 93.3% attendings completed more than 2 rotations, 71.9% intend external rotation, 80.0% attendings think external rotation improves skills vs 53.1% residents and 59.6% support sectorization.

External Rotations: Among residents without external placement, 71.9% (23/32) intended external rotation, and 53.1% (17/32) perceived it would improve skills. Attendings 80.0% (12/15) agreed external placements improve skills (Table 2).

Sectorization: 59.6% (28/47) supported sectorization, 6.4% (3/47) undecided, 34.0% (16/47) opposed (Table 2).

Satisfaction: 31.3% (10/32; 95%CI 16.1 - 50.0) residents satisfied with current surgical training vs 80.0% (12/15; 95%CI 51.9 - 95.7) attendings satisfied when recalling their own residency training, p = 0.003 (Figure 1).

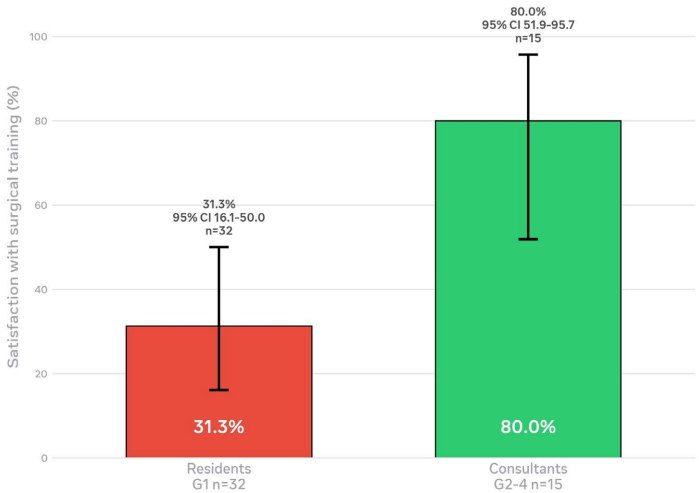

Figure 1. Satisfaction with 95% confidence intervals. Perceived educational resources and assessment: comparison residents (G1) vs attending physicians (G2 + G3 + G4). Satisfaction with surgical training during residency. Residents currently in training reported significantly lower satisfaction (10/32, 31.3%) compared with attending physicians recalling satisfaction during their own residency (12/15, 80.0%), Fisher exact test p = 0.003. Data are based on self-reported perceptions. Error bars represent 95% confidence intervals (Wilson).

3.3. Factors Influencing Quality

Based on respondent perceptions (n = 47): attending experience -most often 57.4% (27/47), mentorship culture- most often 53.2% (25/47), operative workload- most often 48.9% (23/47). Resident seniority-more often 46.8% (22/47) vs consultant seniority- most often 57.4% (27/47). High number of residents: most often negative only 12.8% (6/47).

Educational Resources (Table 3)

Theoretical: Anatomical knowledge from preclinical years satisfied 10.6% (5/47), partially satisfied 53.2% (25/47). Only 6.3% (2/32) of residents were fully satisfied.

Reported never receiving theoretical surgical courses: 62.2% (28/45); 21/32 residents (65.6%) vs 4/10 faculty (40.0%), p = 0.042.

Reported no access to computer-based resources: 73.0% (27/37); 24/32 residents (75.0%) vs 3/5 faculty (60.0%), p = 0.037.

Table 3. Access to training resources and educational tools. (a) Residents (G1, n = 32) vs teaching consultants (G2, n = 5) vs total (n = 37)—Fisher exact test, 95% CI wilson; (b) Detailed breakdown of simulation/training resources of Table 3.

(a)

Resource	Frequency	Residents G1 n = 32 n (%)	95% CI	Teaching Consultants G2 n = 5 n (%)	95% CI	Total n = 37 n (%)	95% CI	p-value / Significance
Laparoscopic pelvic trainers	Never	28 (87.5%)	71.0 - 96.5	5 (100%)	47.8 - 100	33 (89.2%)	74.6 - 97.0	**p = 0.544 NS**
	Semester	4 (12.5%)	3.5 - 29.0	0 (0%)	0 - 52.2	4 (10.8%)	3.0 - 25.4	
Anatomy lab dissection	Never	31 (96.9%)	83.8 - 99.9	5 (100%)	47.8 - 100	36 (97.3%)	85.8 - 99.9	**p = 0.689 NS**
	Semesters	1 (3.1%)	0.1 - 16.2	0 (0%)	0 - 52.2	1 (2.7%)	0.1 - 14.2	
Animal model training	Never	28 (87.5%)	71.0 - 96.5	4 (80%)	28.4 - 99.5	32 (86.5%)	71.2 - 95.5	**p = 0.070 NS trend**
	Semester	3 (9.4%)	2.0 - 25.0	0 (0%)	—	3 (8.1%)	1.7 - 21.9	
	Month	1 (3.1%)	0.1 - 16.2	0 (0%)	—	1 (2.7%)	0.1 - 14.2	
	Week	0 (0%)	—	1 (20%)	0.5 - 71.6	1 (2.7%)	0.1 - 14.2	
Computer-based resources	Never	24 (75.0%)	56.6 - 88.5	3 (60%)	14.7 - 94.7	27 (73.0%)	55.9 - 86.2	**p = 0.037 * Significant**
	Semester	6 (18.8%)	7.2 - 36.4	0 (0%)	—	6 (16.2%)	6.2 - 32.0	
	Months	0 (0%)	—	1 (20%)	0.5 - 71.6	1 (2.7%)	0.1 - 14.2	
	Week	2 (6.3%)	0.8 - 20.8	1 (20%)	0.5 - 71.6	3 (8.1%)	1.7 - 21.9	
Library surgical references	Never	21 (65.6%)	46.8 - 81.4	0 (0%)	0 - 52.2	21 (56.8%)	39.5 - 72.9	**p = 0.014 * Significant**
	Semester	5 (15.6%)	5.3 - 32.8	1 (20%)	0.5 - 71.6	6 (16.2%)	6.2 - 32.0	
	Months	3 (9.4%)	2.0 - 25.0	1 (20%)	0.5 - 71.6	4 (10.8%)	3.0 - 25.4	
	Week	3 (9.4%)	2.0 - 25.0	3 (60%)	14.7 - 94.7	6 (16.2%)	6.2 - 32.0	
Surgical theory courses	Never	21 (65.6%)	46.8 - 81.4	2 (40%)	5.3 - 85.3	23 (62.2%)	44.8 - 77.5	**p = 0.042 * Significant**
	Semester	7 (21.9%)	9.3 - 40.0	1 (20%)	0.5 - 71.6	8 (21.6%)	9.8 - 38.2	
	Months	3 (9.4%)	2.0 - 25.0	0 (0%)	—	3 (8.1%)	1.7 - 21.9	
	Week	1 (3.1%)	0.1 - 16.2	2 (40%)	5.3 - 85.3	3 (8.1%)	1.7 - 21.9	

Continued

(b)

Training/Resource	Residents (n = 32)	Teaching (n = 5)	Total (n = 37)	Fisher's p-value	Significance
Laparoscopic pelvic trainers	28/32 (87.5%, 95% CI 71.0 - 96.5)	5/5 (100%, 95% CI 47.8 - 100)	33/37 (89.2%, 95% CI 74.6 - 97.0)	0.544	NS
Anatomy lab dissection	31/32 (96.9%, 95% CI 83.8 - 99.9)	5/5 (100%)	36/37 (97.3%, 95% CI 85.8 - 99.9)	0.689	NS
Animal model	28/32 (87.5%, 95% CI 71.0 - 96.5)	4/5 (80%, 95% CI 28.4 - 99.5)	32/37 (86.5%, 95% CI 71.2 - 95.5)	0.070	NS trend
Computer-based resources	24/32 (75.0%, 95% CI 56.6 - 88.5)	3/5 (60%, 95% CI 14.7 - 94.7)	27/37 (73.0%, 95% CI 55.9 - 86.2)	**0.037**	**Significant**
Library surgical references	21/32 (65.6%, 95% CI 46.8 - 81.4)	0/5 (0%, 95% CI 0 - 52.2)	21/37 (56.8%, 95% CI 39.5 - 72.9)	**0.014**	**Significant**
Surgical theory courses	21/32 (65.6%, 95% CI 46.8 - 81.4)	2/5 (40%, 95% CI 5.3 - 85.3)	23/37 (62.2%, 95% CI 44.8 - 77.5)	**0.042**	**Significant**

Interpretation: There was a substantial lack of exposure to simulation-based training: 89.2% had no exposure to laparoscopic pelvic trainers, 97.3% had no anatomy laboratory exposure, and 86.5% had no animal-model exposure. Statistically significant differences between groups were observed for computer-based resources (p = 0.037), library surgical references (p = 0.014), and surgical theory courses (p = 0.042).

Library access: once per semester 14.9% (7/47), once per month 10.6% (5/47), once per week 14.9% (7/47), never 57.4% (27/47) with 2 missing, difference p = 0.014 (Table 3).

Practical Training (n = 37 respondents): Reported never having pelvic trainer sessions 89.2% (33/37), no dissection lab 97.3% (36/37), no animal model 86.5% (32/37). Note percentages reflect reported access/perceptions, not absolute institutional absence (Table 3).

3.4. Assessment

No theoretical assessment 64.4% (29/45), no weighted practical assessment 85.1% (40/47). Assessment when present subjective attending judgment. 97.9% (46/47) desired objective assessment (Table 3).

4. Discussion

This study provides the first baseline data on gynecologic surgical training in Cameroon, albeit from 2011-2012. Despite historical data, relevance remains because subsequent informal curriculum review 2023-2024 shows limited change in simulation infrastructure at FMSB, consistent with challenges in low-resource settings documented globally.

Low resident satisfaction (31.3%) vs attending recall (80%), perceived lack of structured theory, simulation, and objective assessment. This aligns with French surveys 2002/2008 and recent global data showing COVID-19 exacerbated training gaps (13). The difference in satisfaction likely reflects generational expectations and recall bias among attendings. We distinguish observed result (31.3% vs 80.0%, p = 0.003) from interpretation.

Since 2008, surgical education has shifted to CBME, EPAs, and simulation [7]-[12]. OSATS originally Martin 1997 and adapted Goff 1999-2001 [13]-[16] remains the gold standard; recent reviews 2022-2024 confirm construct validity and a learning curve plateau after ~5 - 8 cases [17]. Simulation improves OSATS scores and reduces complications (RCT, mean diff 1.42, 95% CI 0.91 - 1.92). Low-cost models for postpartum hemorrhage and gynecology-specific box trainers applicable to Cameroon. FIGO, ACOG, and ESGO 2021-2024 recommend mandatory simulation and EPAs [18]-[25]. Our findings 89.2% had no pelvic trainer highlight gap versus standards.

5. Strengths and Limitations

5.1. Strengths

First national survey in Cameroon, inclusion of residents and attendings, STROBE-compliant, pretested questionnaire Cronbach 0.78.

5.2. Limitations

1) Outdated data 2011-2012 acknowledged but baseline value and persistence constraints; 2) Small sample n = 47 especially only 1 private practitioner limiting generalizability beyond FMSB Yaoundé; 3) Unknown denominators for G3/G4 precluding response rate; 4) Self-reported perceptions not operative volumes; 5) No multivariable analysis due to power; multiple comparisons without correction; 6) Numerical inconsistencies corrected to 76% (22/29); 7) Recall bias; 8) Selection bias.

6. Practical Implications

Propose realistic low-cost: 1) Mandatory structured logbook recording assisted/performed; 2) Low-cost pelvic trainers using local materials LABOT; 3) Monthly theory modules and free open-access e-learning FIGO; 4) OSATS implementation bench stations then OR threshold 24/30; 5) Training the Trainers program; 6) Adoption EPAs for hemostatic hysterectomy, ectopic, ovarian torsion.

7. Conclusion

This cross-sectional survey, though historical and limited by a small sample, indicates residents in Cameroon report low satisfaction and limited perceived access to structured theoretical, simulation-based, and objective assessment resources. Strong demand for objective assessment. Innovative low-cost curriculum integrating theory, simulation, supervised OR training, and OSATS/CBME principles is needed and feasible. Findings should be interpreted as baseline, not definitive of current nationwide status.

Ethical Approval

University of Buea, 2023/0158/UB/AcA/TTSD/TSS/AA and SOGOC Authorization No. SOGOC/2011/12.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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