What laparoscopic skills are necessary for Certificate of Completion of Training? A prospective nationwide cross-sectional survey of Obstetrics & Gynaecology and General Surgery trainees and consultants in the UK.

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Keywords: Laparoscopy; obstetrics; gynaecology; surgical training, general surgery, laparoscopic proficiency, Completion of training, consultant trainers, trainees

Abstract

Objectives: To explore the views of Obstetrics & Gynaecology (O&G) and General Surgery (GS) trainees and consultants on the laparoscopic skills considered necessary to achieve the Certificate of Completion of Training (CCT) and identify any mismatch between consultants and trainees in their expectations of these skills.

Design: A prospective nationwide cross-sectional study in the UK.

Setting: A national survey distributed through Health Education, England and national training bodies such as the Royal College of Obstetricians & Gynaecologist (RCOG), British society for gynaecological endoscopy (BSGE) and the Association of Surgeons of Great Britain and Ireland (ASGBI).

Participants: O&G and GS consultants and specialty trainees in O&G and GS. Specialty trainees below ST3 level and consultants performing open surgery or minor laparoscopic surgery only were excluded.

Interventions: Trainees completed a 27-item questionnaire on their training characteristics, rated their confidence and perceived importance of 10 laparoscopic skills required for CCT using a 5-point Likert scale. Consultants answered a 36-item questionnaire on their demographic details, their views on the importance of the same 10 laparoscopic skills, their confidence and the standard of laparoscopic skills they observed amongst trainees approaching CCT.

Results: 345 participants responded to the questionnaire: 117 O&G trainees, 95 O&G consultants, 57 GS trainees & 76 GS consultants. O&G trainees and consultants expected similar laparoscopic skills required for CCT for all ten skills ($P > 0.050$), whilst GS consultants had higher expectations of GS trainees for suturing ($P=0.003$), use of endovascular devices ($P=0.020$) and staplers ($P=0.020$). Consultants in both specialties observed that trainees were performing significantly below the expected standards; $P < 0.010$ (O&G) and $P<0.001$ (GS) for all 10 listed skills. O&G trainees reported lower confidence than GS trainees for all 10 laparoscopic skills ($P<0.001$).

Conclusions: This nationwide study showed that UK O&G trainees and consultants both agree on the skills required for CCT, but GS consultants had higher expectations than their trainees. Trainees in GS were more confident in their surgical skills than those in O&G. However, consultants in both specialities believed that trainees were not achieving the requisite laparoscopic skills required for CCT.

Strengths & Limitations

- Largest nationwide survey of UK trainees and consultants in O&G and GS specialties
- A prospective cross sectional study design to gain insight into UK surgical training programs
- Randomly distributed to minimise selection and attribution bias
- Population captured was heterogenous and therefore limits generalisability
- De novo study design limited power calculation thus pragmatic dissemination

Competing interests: None

Introduction

Laparoscopic surgery is increasingly practiced in Obstetrics & Gynaecology (O&G) and General Surgery (GS) as a result of advances in instrumentation and evidence supporting more rapid recovery compared to traditional laparotomic approaches [1]. Proficiency in laparoscopic surgery therefore forms a key aspect of curricula in both O&G and GS and is required for the certificate of completion of training (CCT).

However, studies have identified that O&G trainees lack confidence in key surgical procedures [2, 3]. Moreover, consultants have raised concerns about O&G trainees' surgical ability and readiness to work independently [4]. Postgraduate training in O&G lasts seven years comprising of two years of basic, three years of intermediate, and two years of advanced training [5]. The Royal College of Obstetricians & Gynaecologists (RCOG) conducts an annual survey amongst all the trainees on its register and the 2023 survey showed that only 64% of O&G trainees were able to complete their training requirements for the year. Furthermore, approximately a quarter of final year O&G trainees reported inadequate opportunities in performing gynaecological emergency procedures [6].

This lack of experience may therefore have an adverse impact on patient outcomes [7].

Regarding training, GS lasts eight years and includes two years of core surgical and six years of higher specialty training [8]. The Joint Committee for Surgical Training (JCST) oversees the quality of training for all surgical programs including general surgery. JCST's sixth trainee survey for 2021-2022 reported that all surgical specialties saw a drop in achieving targets for time in operating theatre, with higher specialty GS trainees achieving approximately 56% and core GS trainees achieving only 48% of the expected theatre time [9]. Evaluation of GS logbook records have shown that elective case records for the specialty as a whole have halved (~4000 in October 2019 to ~2000 in August 2021) and the corresponding emergency work has also dropped from 1700 to 1000 cases over the same time interval [10]. These reductions in operative volume and breadth of exposure in both O&G and GS elicit concerns as the quality of surgical training and the quality of care are inextricably linked [11-14].

Despite an increase in training structure post Calman reforms, trainees face both reduced working hours and shortened training programs [3]. As a result, those completing specialist training tend to exhibit a more limited range of experience and skills than the previous generations of trainees [4, 15].

Previous studies suggest that trainees feel unprepared for CCT [16, 17]. However, the significance of these perceptions is unknown as it is not clear what standards are required to practice as an independent consultant. In this nationwide survey, we asked trainees about their laparoscopic skills and asked consultants which skills they regarded as more important from a predefined list of laparoscopic skills.

The objective of the study was to explore the views of O&G and GS trainees and consultants on the laparoscopic skills considered necessary to achieve CCT and identify any mismatch between trainees and consultants in their expectations of these skills.

Methods

A prospective cross-sectional study was conducted and reported according to the checklist for reporting of surveys studies (CROSS) [18]. The study was approved by the O&G and GS heads of schools from Health Education England, North-West. Ethical approval for this study was granted by Faculty of Health and Medicine of Lancaster University Research Ethics Committee (FHMREC20033) and the study was prospectively registered at ClinicalTrials.gov Registry (NCT05116332). The survey included O&G specialty trainees from 3rd year of training to the 7th year of training (ST3-ST7) and O&G consultants doing regular intermediate to advanced level operative laparoscopic surgery. Consultants doing obstetric work only or open gynaecological surgery only or minor laparoscopic work were excluded. The survey also included GS speciality trainees from the 3rd year to 8th year of training (ST3-ST8) and GS consultants with specialism in any area involving laparoscopic work such as colorectal, upper gastrointestinal surgery and hepatobiliary surgery. Consultants doing open surgery only were excluded.

The laparoscopic skills we considered integral to attaining proficiency in laparoscopic surgery were based on skills extrapolated from the O&G and GS curricula [5, 8] and a validated survey [19]. The ten laparoscopic skills included in this survey were: the ability to gain laparoscopic access, recognise anatomy, manipulate tissue, dissect tissue planes, achieve haemostasis with diathermy, use advanced energy devices, haemostatic agents and endovascular devices, suture laparoscopically and apply staplers.

We developed two separate surveys; a 27-items one for trainees and 36-items one for consultants (Supplemental material S1 and S2, respectively). Trainees were asked their views on the importance of 10 listed surgical skills for the award of CCT and how confident they felt in these skills. Consultant trainers were also asked their views on the importance of these same 10 surgical skills for the award of CCT, their own confidence in these skills and asked about trainees possession of these skills. Consultants were asked to base their answers on trainees approaching CCT and those who were doing training modules involving laparoscopic surgery. This was to ensure that consultants provided subjective assessment of trainees who were approaching the end of training in an area relevant to laparoscopic surgery. Additional demographic data were also collected; in the trainee survey these data included gender, type of training, stage of specialty training and employing deanery. In the consultant survey, background data included gender, year and place of CCT acquisition, the proportion of surgery performed laparoscopically and their employing NHS Trust.

The surveys were piloted on trainees and consultants like the survey target population to refine the design, approve the face validity of the content and improve the clarity of the questions. The pilot surveys were sent digitally through Survey Monkey® (SurveyMonkey Europe UC, Ireland) to O&G specialty trainees and consultants identified through the Health Education England, North-West (HEENW) and to GS trainees and consultants at East Lancashire Hospitals NHS Trust.

The two surveys were disseminated using Survey Monkey® to improve accessibility, ease of completion, and to ensure anonymity. The survey could be accessed through a QR code. The O&G trainees and consultants digital survey was distributed to all eligible O&G trainees and consultants through the RCOG, Head of Postgraduate Schools, Health Education England, North-West (HEENW) and the British Society for Gynaecological Endoscopy (BSGE). HEENW sent email invites with survey links to all trainees on their register whilst RCOG promoted the survey on their website and BSGE advertised the survey in their newsletter.

The GS trainees and consultants digital survey was disseminated via Survey Monkey to GS trainees and consultants via the Association of Surgeons of Great Britain and Ireland, Emergency General Surgery symposium and Blackburn Research Innovations Development Group in General Surgery (BRIDGES) conference. These organisations advertised the survey on their website and promotional materials.

The online platform allowed voluntary participation and confidentiality whilst preventing multiple participation of participants by identifying participant's uniform resource locator (URL). The survey was initially planned to run over six months. However, due to low initial response rates it was extended to 19 months. In addition to the digital surveys accessible via a QR code, paper copies were also printed so participants could choose their preferred and most convenient method of participation. These paper data were entered by a different study investigator to minimise bias. All data collection took place between August 2021 - February 2023.

Statistical analysis

Demographic data comparisons between specialties were conducted using Chi-squared tests. Ordinal data were analysed using Mann-Whitney U tests for comparisons between different specialty groups and levels and Sign tests for comparisons between the Consultants' perceived skill level and observed skill level. The Holm-Bonferroni correction was applied for multiple comparisons and the corrected values are reported.
Finally, to examine any association between the Consultant's expectation scores for each skill and their confidence in those skills, Kendall's tau (τ) correlation coefficient was calculated and interpreted as weak if <0.10, moderate 0.10 to 0.30, medium if 0.31 to 0.50 and strong if >0.50 [20]

Data was analysed using Jamovi statistical analysis software Version 2.3.18.0 (The Jamovi project, https://www.jamovi.org). Data are presented in raw scores and as percentages. Statistical significance was set at $P < 0.05$.

Results

Demographics of participants

A total of 365 trainees and consultants participated in this survey. Twenty participants did not respond to all questions, precluding use of their data for the questions they did answer. Data were therefore analysed for 345 participants of which 212 (61%) were practising O&G

and 133 (39%) GS. The final sample consisted of 174 (50%) trainees (117 O&G and 57 GS trainees) and 171 (50%) consultants (95 O&G and 76 GS consultants). There was a significantly higher proportion of female trainees in O&G; 89 (76%), compared to GS; 32 (56%), $\chi^2(1)$ 8.48=P=0.014. There was also a higher proportion of female consultants in O&G 45 (47%) compared with GS 13 (17%), $\chi^2(1)$ 17.3= P<0.001. The characteristics of trainees and consultants are detailed in Table 1 and Table 2 respectively.

Table 1: Baseline characteristics of trainees in obstetrics and gynaecology and general surgery participating in the survey.

	O&G n=117 (%)	**GS n=57 (%)**	**P-value**
Sex			
Male	28 (24%)	24 (42%)	**0.014**
Female	89 (76%)	32 (56%)	
Prefer not to say	-	1 (2%)	
Speciality Training			
Yes	116 (99%)	55 (96%)	0.207
No	1 (1%)	2 (4%)	
Stage of training*			
Juniors	64 (55%)	31 (54%)	0.970
Seniors	53 (45%)	26 (46%)	

Stage of training defined as Junior if ST3-5 and Senior if ST6-7 (O&G) and Junior if ST3-5 and Senior if ST6-8 (GS)
O&G= Obstetrics & Gynaecology; GS = general surgery

Table 2: Baseline characteristics of obstetrics and gynaecology and general surgery consultants participating in the survey. Data are presented as raw numbers and percentages of the respective group's sample.

	O&G n=95 (%)	**GS n=76 (%)**	**P-value**
Sex			
Males	50 (53%)	62 (83%)	**0.002**
Females	45 (47%)	13 (17%)	
Training in the UK			
Yes	89 (94%)	63 (83%)	**0.030**
No	6 (6%)	13 (17%)	
Amount of surgery done laparoscopically			
0-25%	25 (26%)	6 (8%)	0.156
25-50%	23 (24%)	24 (32%)	
50-75%	22 (23%)	28 (37%)	

75-100%	25 (26%)	18 (23%)	
Length of experience post qualification as a consultant			
5 years	19 (20%)	14 (19%)	
10 years	32 (34%)	15 (20%)	0.072
15 years	20 (21%)	15 (20%)	
>20 years	24 (25%)	30 (41%)	

Consultants estimated proportion of procedures conducted laparoscopically compared to overall numbers of (laparoscopic and open) procedures
O&G= Obstetrics & Gynaecology; GS = general surgery; UK = United Kingdom
P values in bold denote significant values

Expectations of laparoscopic skills required for working independently as a consultant

O&G trainees and consultants did not differ significantly in their expectations for proficiency in any of the laparoscopic skills required for CCT, (Table 3). GS consultants had significantly higher expectations of their trainees in the use of endovascular devices U= 1742, P<0.05, suturing U= 1489, p<0.01 and stapling devices U=1678, P<0.05 (Table 4).

Table 3: Perception of laparoscopic skills required for completion of training (CCT) amongst obstetrics & gynaecology trainees and consultants. Data are presented as median (IQR).

	O&G trainees n=117 median♣ (IQR)	**O&G consultants** n=95 Median ♣ (IQR)	**P-value**
Laparoscopic surgical skill			
Ability to obtain laparoscopic access	1 (0.0)	1 (0.0)	0.132
Ability to recognising anatomy	1 (1.0)	1 (0.0)	0.375
Ability to manipulate tissue	1 (0.0)	1 (0.0)	0.431
Ability to dissect tissue	1 (1.0)	1 (1.0)	0.559
Ability to control bleeding using diathermy	1 (1.0)	1 (1.0)	0.834
Ability to control bleeding using endovascular devices	2 (2.0)	2 (2.0)	0.489
Ability to control bleeding using haemostatic devices	2 (1.0)	2 (1.0)	0.910
Ability to control bleeding using advanced energy devices	1 (1.0)	1 (1.0)	0.070
Ability to control bleeding using suturing	2 (2.0)	2 (2.0)	0.070
Ability to control bleeding using staplers	3 (2.0)	3 (2.0)	0.393

♣ Likert scale: 1= strongly agree, 2= agree, 3= neither agree nor disagree, 4= disagree and 5= strongly disagree.
IQR = interquartile range, O&G = obstetrics & gynaecology

Table 4: Perception of the skills required for completion of training (CCT) amongst general surgical trainees and consultants. Data are presented as median (IQR).

Laparoscopic surgical skills	**GS trainees** n=57 median♣ (IQR)	**GS consultants** N=76 median♣ (IQR)	**P-value**
Ability to obtain laparoscopic access	1 (0.0)	1 (0.0)	0.679
Ability to recognising anatomy	1 (0.0)	1 (0.0)	0.679
Ability to manipulate tissue	1 (0.0)	1 (0.0)	0.938
Ability to dissect tissue	1 (0.0)	1 (0.0)	0.474
Ability to control bleeding using diathermy	1 (0.0)	1 (0.25)	0.379
Ability to control bleeding using endovascular devices	1 (0.0)	1 (1.0)	**<0.05**
Ability to control bleeding using haemostatic devices	1 (1.0)	1 (1.0)	0.720
Ability to control bleeding using advanced energy devices	1 (0.0)	1 (1.0)	0.071
Ability to control bleeding using suturing	2 (1.0)	2 (1.0)	**<0.01**
Ability to control bleeding using staplers	1 (1.0)	1 (1.0)	**<0.05**

♣ Likert scale: 1= strongly agree, 2= agree, 3= neither agree nor disagree, 4= disagree and 5= strongly disagree.
GS = general surgery; IQR = interquartile range
P values in bold denote significant values

Consultant views on the expected compared to the observed level of laparoscopic skills in trainees

Consultants in both O&G and GS reported that the laparoscopic skills demonstrated by trainees approaching CCT were significantly below the expected competency level across all listed laparoscopic skills (Table 5). With regards to access, 60% of O&G consultants and 78% of GS consultants agreed or strongly agreed that respective trainees were achieving proficiency in laparoscopic access. Among O&G consultants, 54% agreed or strongly agreed that trainees should be proficient in using endovascular devices, 33% for staplers, and 69% for suturing. In contrast, among GS consultants, 95% expected proficiency in endovascular device use, 92% for staplers, and 63% for suturing.

Table 5: Proportion of O&G and GS consultants who reported a drop in the laparoscopic skills they observed compared with the standards they expected amongst respective trainees.

Laparoscopic surgical skills*	O&G Consultants	GS Consultants

	n=90 % consultants reporting a drop between expected and observed skills	P value	n=73 % consultants reporting a drop between expected and observed skills	P-value
Ability to obtain laparoscopic access	97	**<0.001**	93	**<0.001**
Ability to recognising anatomy	91	**<0.001**	97	**<0.001**
Ability to manipulate tissue	95	**<0.001**	94	**<0.001**
Ability to dissect tissue	83	**<0.001**	94	**<0.001**
Ability to control bleeding using diathermy	78	**<0.001**	83	**<0.001**
Ability to control bleeding using endovascular devices	79	**<0.001**	91	**<0.001**
Ability to control bleeding using haemostatic devices	83	**<0.001**	97	**<0.001**
Ability to control bleeding using advanced energy devices	93	**<0.001**	100	**<0.001**
Ability to control bleeding using suturing	71	**<0.01**	85	**<0.001**
Ability to control bleeding using staplers	81	**<0.001**	88	**<0.001**

O&G= Obstetrics & Gynaecology; GS = general surgery
P values in bold denote significant values

Trainee views on their confidence in laparoscopic surgery

O&G trainees reported significantly lower confidence than GS trainees across all ten listed laparoscopic skills (Table 6). Only 40% of O&G trainees expressed confidence (agreeing or strongly agreeing) in obtaining access, compared to 91% of GS trainees, U=1219, P<0.001. When analysed by training grade, confidence among O&G trainees significantly increased with seniority, from 22% in ST3-5 grades to 63% in ST6-7; U=1231, P<0.05. In contrast, confidence levels among GS trainees remained high across all training grades, with 90% of ST3-5 and 96% of ST6-8 trainees reporting confidence, showing no significant difference U=312, P>0.05.

Table 6: Perceived confidence of trainees in O&G and GS in laparoscopic surgery

Laparoscopic surgical skills	**O&G trainees** n=117	**GS trainees** n=57 median♣ (IQR)	**P-value**

	median♣ (IQR)		
Ability to obtain laparoscopic access	3 (1.0)	1.5 (1.0)	**<0.001**
Ability to recognising anatomy	3 (1.0)	2 (1.0)	**<0.001**
Ability to manipulate tissue	3 (1.0)	2 (1.0)	**<0.001**
Ability to dissect tissue	4 (1.0)	3 (1.0)	**<0.001**
Ability to control bleeding using diathermy	3 (1.0)	3 (1.0)	**<0.001**
Ability to control bleeding using endovascular devices	5 (1.0)	3 (1.0)	**<0.001**
Ability to control bleeding using haemostatic devices	4 (2.0)	3 (0.0)	**<0.001**
Ability to control bleeding using advanced energy devices	3 (2.0)	3 (1.0)	**<0.001**
Ability to control bleeding using suturing	5 (1.0)	3 (1.0)	**<0.001**
Ability to control bleeding using staplers	5 (1.0)	3 (1.25)	**<0.001**

♣ Likert scale: 1= strongly agree, 2= agree, 3= neither agree nor disagree, 4= disagree and 5= strongly disagree.
O&G= Obstetrics & Gynaecology; GS = general surgery; IQR = interquartile range
P values in bold denote significant values

Consultant's self reported confidence in the listed skills and its association with their expectations.

Finally, there were significant associations between the Consultant's own confidence and their expectations of trainees in respect of some of the listed laparoscopic skills. However, this pattern was mixed and where significant, the strength of those association was not strong. (Table 7).

Table 7: Associations between Consultant's own confidence and expected scores for all the skills examined.

Laparoscopic surgical skills	**O&G consultants N=** 87 (Kendall's τ)	**GS consultants N= 73** (Kendall's τ)
Ability to obtain laparoscopic access	0.020	-0.086
Ability to recognising anatomy	**0.348**	0.135
Ability to manipulate tissue	**0.342**	0.183
Ability to dissect tissue	**0.311**	0.020
Ability to control bleeding using diathermy	**0.306**	**0.284**
Ability to control bleeding using endovascular devices	**0.470**	**0.283**

Ability to control bleeding using haemostatic devices	**0.498**	**0.393**
Ability to control bleeding using advanced energy devices	**0.350**	**0.309**
Ability to control bleeding using suturing	**0.282**	**0.461**
Ability to control bleeding using staplers	**0.404**	**0.410**

O&G= Obstetrics & Gynaecology; GS = general surgery; τ = Kendall's tau correlation coefficient
P values in bold denote significant values

Discussion

Our survey found that trainees agreed with the importance of laparoscopic skills required to attain proficiency in surgical training curricula and completing their Certificate of Completion of Training (CCT). However, our survey has shown that specialist trainees lack confidence and perceive their training in both O&G and GS as inadequate to allow them to meet the expected standards by the end of their training. This contention is echoed by consultant in both specialties who reported that the laparoscopic skills of the trainees at the point of CCT were significantly below their expectations across all key laparoscopic competencies. Thus, these concerns from both trainees and trainers raise serious concerns regarding the adequacy of current surgical training and the extent to which the CCT reliably reflects surgical proficiency for all trainees.

Meaning of the study: Implications for clinical practice, training and policy makers.

Widespread concerns regarding all aspects of training have been raised by surgical specialties especially core and higher training for general surgery [9, 21, 22]. These have been voiced in General Medical Council (GMC) trainee surveys as well as through the Joint Committee on Surgical Training (JCST) surveys [9, 21]. Barriers to adequate surgical training have been attributed to reduced training hours, lack of continuity between the trainee and the consultant as well as the increasing complexity of surgical cases[23, 24] .

The results of our survey revealed that O&G trainees reported significantly lower confidence in their laparoscopic skills compared to GS trainees. Notably, only 40% of O&G trainees felt confident in gaining laparoscopic access, compared to 91% of GS trainees. However, confidence levels among O&G trainees improved significantly in the later stages of training, suggesting that the initial lack of confidence may stem from limited exposure to laparoscopic surgical opportunities [11]. Interestingly, only 60% of O&G consultants and 78% of GS consultants believed that trainees were achieving proficiency in laparoscopic access. This highlights a persistent gap between the expected and actual levels of competency achieved during training. Given that successful laparoscopic access is crucial for performing minimally invasive surgery and preventing complications such as vascular or bowel injury, addressing this gap is essential for improving surgical training outcomes [25].

Despite the acute nature of O&G, the volume of operative opportunities in gynaecology have decreased over time. This is likely to be multifactorial; the number of trainees have increased [6], while surgical opportunities have declined [24] and gynaecological surgical operations are predominantly consultant led [26]. Additionally, the cases that do proceed to surgery are often complex and may not be suitable for trainee involvement.

Differences in confidence ratings may be influenced by gender [27, 28], limited laparoscopic theatre exposure in O&G [11, 17], earlier surgical training in GS curriculum [8], prior surgical experience [29], participation in relevant surgical courses, and practice with pelvic simulators[4], among others. Additionally, a higher proportion of O&G trainees undertake less-than-full-time training [6], and their curriculum encompasses two broad specialties, in contrast to GS, which may also contribute to the observed lower confidence levels.

Previous research consistently identified clinical exposure as a crucial determinant of confidence in surgical skills [27, 29-31]. Indeed, a recent study by Khan et al. (2023) found that GS trainees attended the operating theatre earlier in their training, significantly more frequently and were more likely to perform procedures as primary operators rather than assistants compared to their O&G counterparts.

Similarly, a national survey conducted in Ireland revealed a decline in trainee confidence in performing major surgical procedures between 2014 and 2021, with limited theatre exposure cited as a contributing factor [2]. This trend has been observed in previous studies as well [3, 17]. While our survey does not establish causality, existing evidence suggests that surgical exposure plays a key role in confidence development. It is therefore plausible that the lower confidence levels reported by O&G trainees is related to reduced operative experience compared to GS trainees.

Our survey found that haemostasis techniques varied by specialty. GS consultants had higher expectations for trainees' proficiency in endovascular devices, such as endo-loops, haemalocks and staplers. In contrast O&G consultants and trainees were aligned in their expectations giving higher importance to suturing than staplers and endovascular devices. (Table 3 & 4). In GS, staplers are preferentially used for liver and bowel resections [32], whereas suturing is the preferred haemostatic technique in O&G for hysterectomies, myomectomies, and ovarian cystectomies [33]. Therefore, we speculate that these variations likely stem from differences in surgical practices rather than disparities in the quality of surgical training.

The Covid 19 pandemic has negatively impacted the training for most surgical specialties including O&G [34]. In fact, the current state of gynaecology training is regarded, by the RCOG as a serious “educational risk” advocating its placement on the training hospital’s risk register. The RCOG has generated a recovery plan centred around increasing hands on surgical exposure through simulation, dedicated trainers and collaborative working with general surgical specialty as well as the independent sector. Similar solutions to recover training has been proposed by Joint committee for surgical training (JCST) and includes ‘maximising training’ and ‘improved surgical training’ schemes [9, 22]. The latter incorporates good training principles and advocates a 60% rota dedicated to training activity

as well as developing a non-medical workforce to facilitate junior surgeon's access to all available training opportunities.

Strengths and weaknesses

This was a nationwide survey with participants from across the UK from England, Scotland, Wales and Norther Ireland. It included the views of both trainees and consultants in two related surgical disciplines, O&G and GS. We believe that the findings of our survey are important because the laparoscopic surgical skills that consultants considered important for the award of CCT are indicative of skills needed for independent practice as a consultant. Furthermore, the assessment of trainee's skills may pinpoint any shortfalls between expectations and actual achievements.

The main limitation of this study is the response rate and external validity of our findings. We do not know the exact denominator as the survey was disseminated pragmatically, utilising several forums to enhance participation. Representativeness of participants may be further compromised because trainees and consultants with an interest in laparoscopic surgery may have been more likely to participate. However, we included both trainees and consultants from a generalist background as well as those focusing more on laparoscopic work in an attempt to minimise any potential self-selection bias.

We sought to evaluate the perceptions of trainees and consultant in O&G and GS in producing independent consultants upon training completion. We opted to include all ST3+ trainees to capture a broader range of experiences and gain insight into the perceptions of all trainees at different stages in their training. Future research should target O&G trainees at the point of CCT completion, completing surgically oriented gynaecological training. This may allow a similar population for direct comparison with GS trainees. Furthermore, those studies could incorporate a review of trainee's e-portfolios to assess the volume and entrustability levels in various surgical procedures. Additionally, an objective evaluation of laparoscopic skills should be conducted and compared against trainees' self-reported confidence. Such an approach would enhance both the objectivity and generalisability of findings, providing robust evidence to inform future policy changes.

Conclusion and future research

Our study's finding of lower confidence among O&G trainees compared to GS trainees is likely multifactorial. While we can only speculate on the underlying causes in this study, future study could use regression analysis to explore the impact of multiple variables such as gender, prior surgical experience, operative exposure, and pelvic simulator use on confidence ratings.

Future research should target trainees at the point of CCT completion, doing surgically oriented gynaecological training. This may allow a more suitable population for comparison with GS trainees. Future studies could incorporate a more detailed assessment of baseline

characteristics, review of their e-portfolios to assess the number and entrustability levels for various surgical procedures. Additionally, an objective evaluation of laparoscopic skills should be conducted and compared against trainees' self-reported confidence. Such an approach would enhance both the objectivity and generalisability of findings, providing robust evidence to inform future policy changes.

There is an urgent need for the GMC and Royal Colleges to reassess their training programs to ensure that trainees are better equipped to meet their surgical training objectives. Proposed strategies include earlier subspecialisation, the adoption of an apprenticeship model [35] and post-CCT fellowships as a means of preparing trainees for independent practice [19, 36].

Funding statement
This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability statement
Data are available on reasonable request. Data will be shared by the corresponding author on reasonable request and following liaison with the Faculty of Health and Medicine Research Ethics Committee.

Patient and public involvement
It was not appropriate to involve patients in the design of the research, though surgeons in both specialties that the research relates to were involved.

Competing interests
None declared.

Author contribution

DAS and ZNK conceived and developed the research idea. ZNK, DS, DAS, CJG, TJC and EH designed and implemented the study protocol. ZNK, DS, AS, JEL, TJC, EH, KA, TMB, CJG and DAS conducted the study. TMB, CJG and ZNK analysed the data. ZNK, DS, AS, TJC, TMB, CJG and DAS prepared the manuscript. All authors reviewed and approved the final manuscript. ZNK is the guarantor of the work.

Acknowledgements

We would like to thank the Association of Surgeons of Great Britain and Ireland (ASGBI), Royal College of Obstetricians & Gynaecologists (RCOG), British Society for Gynaecological Endoscopy (BSGE) and Health Education England North-West for their support in disseminating this survey. We are also very grateful to Mr Kenneth Ma, Mr Brice Rodriguez Mr Mohamed Aty and Dr Alison Sambrook for valuable input with survey design and dissemination.

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