

## **Assessing the state of polypectomy practice: are we ready for the new colonoscopy training pathway?**

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### **ABSTRACT**

**Objective:** The 2023 Joint Advisory Group on Gastrointestinal Endoscopy (JAG) consensus statements on colonoscopy training and certification in the UK recommend that trainees should be competent in SMSA Level 2 polypectomy; familiar with classification systems for describing polyps; and able to handle common intraprocedural complications. Anecdotal concerns expressed by established colonoscopists regarding their own competence in relation to these new requirements prompted an assessment of the competence and confidence of the existing colonoscopy workforce.

**Method:** An anonymous online survey was used to ascertain self-reported competence and confidence in polypectomy among colonoscopists from all professional groups: both medically qualified endoscopists (MEs) (from a medical or surgical background), and clinical endoscopists (CEs), who are nurses or allied health professionals trained to perform independent colonoscopy. Respondents were predominantly from Northwest England. The survey ran between May and August 2023. Attempts were made to identify barriers preventing more advanced practice.

**Results:** 120 independent colonoscopists responded (55% medical, 45% clinical). 21% of respondents were confident tackling lesions at SMSA Level 4. However, 20% do not remove non-pedunculated lesions >9mm. The majority of these were CEs. Of those involved in training or supervision, 11% restricted their polypectomy practice to Level 1. Overall, 21% expressed only 'slight' or 'no confidence' in teaching the SMSA scoring system. CEs involved in training were at least as confident as MEs in teaching aspects of polyp assessment. Lack of support in the event of a complication was of significantly more concern to CEs than MEs ( $p < 0.001$ ).

**Conclusion:** The new curriculum presents a technical challenge for only a small minority of established colonoscopists, but we have identified lack of confidence in teaching about optical diagnosis and the SMSA scoring system. Endoscopy Training Academies may have a role in educating training supervisors in their region rather than focussing solely on trainees.

### **What is already known on this topic**

In 2023, Joint Advisory Group on Gastrointestinal Endoscopy released consensus statements relating to colonoscopy training and certification in the UK, which included a requirement that trainees should achieve competence in SMSA Level 2 polypectomy.

Concerns were raised from experienced colonoscopists, including clinical endoscopists, about their level of competence and confidence to practice and teach polypectomy at the certification standards.

### **What this study adds**

This study maps a representative sample of independent colonoscopists who perform polypectomy.

Most colonoscopists feel confident to perform polypectomy at Level 2+. However, a minority of established practitioners are performing below the expected trainee certification levels.

There is a lack of confidence across all backgrounds in teaching optical diagnosis and the SMSA scoring system.

### **How this study might affect research, practice or policy**

Regional Endoscopy Training Academies should address and coordinate training for established endoscopists and trainers, as well as trainees. Alongside formal courses, suggested solutions include online resources and improved simulation training for assessment skills and advanced polypectomy.

## INTRODUCTION

Basic polypectomy is a fundamental component of colonoscopy skill. Removing pre-malignant polyps, safely and completely, reduces the subsequent risk of colorectal cancer[1].

Demand for colonoscopy in the UK is increasing[2] and will grow faster as bowel screening is offered to younger people and uses a lower faecal haemoglobin threshold[3]. Workforce expansion is necessary but available capacity should also be used efficiently. This requires as many polyps as clinically appropriate to be removed at the index colonoscopy, reducing repeat procedures[4].

Clinical endoscopists are significant contributors to endoscopy provision in the United Kingdom. The title 'clinical endoscopist' (CE) describes registered healthcare professionals who are trained to perform endoscopy but lack a medical qualification. The majority are nurses, with some from Allied Health Professions, such as radiographers, dietitians, operating department practitioners *etc.* CEs are fully trained, JAG certified, and subject to the same quality assurance as MEs. Although constituting only 12% of the UK endoscopy workforce, CEs perform 23% of all procedures[5]. Increasing CE numbers is a potential solution to deal with workforce shortfall[6] and their participation in the Bowel Cancer Screening Programme (BCSP) is essential[7]. Only 4.5% of procedures performed by CEs involve a trainee[5] so they are an underused training resource.

In 2023, the Joint Advisory Group on Gastrointestinal Endoscopy (JAG) published consensus statements on colonoscopy training and certification in the UK[8]. These included requirements that trainees should achieve competence in Level 2 polypectomy (SMSA scoring system)[9] and be familiar with classification systems for describing polyps.

Following publication of the consensus statements, anxiety was expressed among existing colonoscopists that the polypectomy level required for certification was above their own competence. This would create difficulty if they were required to supervise trainees. Such concerns prompted us to explore the competency level within the existing colonoscopy workforce in relation to polypectomy.

The aims of the study were to: 1) describe the scope of polypectomy practice within a representative group of UK colonoscopists, including all specialities and professional backgrounds, 2) estimate the proportion who feel confident to teach the polyp-related competences required by the new curriculum, and 3) explore potential differences between colonoscopists from medical and non-medical backgrounds.

## **METHOD**

A 36-question on-line survey was created using Jisc Online Surveys, a survey tool for education and research, with closed Likert scale and ranking questions covering demographics, colonoscopy and polypectomy practice, and training. Face and content validity were established using feedback from local CEs and consultant gastroenterologists from the North West Endoscopy Academy (NWEA). The survey was refined based on this feedback.

Our goal was to reach as many practising colonoscopists as possible in the NWEA catchment area via purposeful sampling, comprising Cheshire and Merseyside, Greater Manchester, and Lancashire and South Cumbria. A comprehensive list of all north-west colonoscopists was not available so we relied on distribution through local teams.

The survey ran for 15 weeks from 9<sup>th</sup> May to 18<sup>th</sup> August 2023 (Appendix 1).

Statistical analysis for descriptive statistics and cross-tabulation was performed using IBM SPSS Version 29 software. Differences between groups were explored using the two-proportion Z-test and a Mann-Whitney U test was performed to compare 5-point Likert scale responses.

## **RESULTS**

### **Demographics and Colonoscopy Practice**

121 complete survey submissions were received. One respondent was not performing polypectomy independently and was excluded from further analysis.

Demographic details and lifetime colonoscopy experience of participants is shown in Table 1.

### **Polypectomy Practice**

Complexity of polypectomy can be stratified according to the SMSA score. Although participants were not asked specifically to describe their SMSA level, this could be derived from questions about the type of polyps they were happy to remove.

26 respondents (22 MEs and 4 CEs) felt confident to tackle lesions with SMSA score >12 (implying Level 4 competence). ME Level 4 polypectomy practitioners comprised 4 surgeons and 18 gastroenterologists, accounting for 40% of the gastroenterologists responding (Figure 1).

24 respondents (20%) would not remove flat or sessile lesions larger than 9mm. 11 of these had >5 years' experience in lower GI endoscopy with lifetime numbers >1000.

51 (42.5%) of those surveyed had never removed a non-pedunculated polyp larger than 20mm.

Among the 24 who limited their practice to <10mm for flat or sessile lesions, 7 had tackled pedunculated polyps  $\geq$ 20mm and a further 6 would remove pedunculated polyps between 15-20mm if access was good.

### **Colonoscopy Trainers**

88% of MEs were involved in training or supervising trainees, compared to 63% of CEs.

Trainers were asked to rank their confidence in teaching various aspects of polyp assessment on a five-point scale. Confidence in teaching Paris classification was high (85% reporting at least moderate confidence) (Figure 2).

21% expressed only 'slight confidence' or 'no confidence' in teaching the SMSA scoring system. Lack of confidence was shared equally by MEs and CEs. For the respondents as a whole, 16% reported being unaware of the SMSA scoring system, or having no confidence in using it.

Overall, 22% expressed a significant lack of confidence in teaching optical diagnosis. CEs involved in training expressed more overall confidence in optical diagnosis than MEs but this did not reach statistical significance (NS,  $p=0.254$ ).

When asked to select all the optical diagnosis systems they used (from a list provided), 80% of respondents chose the Kudo classification, 24% the NBI International Colorectal Endoscopic (NICE) classification, and 15% the JNET classification. 10% did not use any optical diagnosis system.

Of the 22 surgeons who responded to our survey, only 8 (36.3%) felt at least moderately confident using a system for optical diagnosis.

### **Factors that might affect polypectomy practice**

Most respondents felt confident using clips to close a polypectomy defect prophylactically (74% and 83% at least moderately confident for CEs and MEs respectively (NS,  $p=0.31$ )). But only 54% of CEs reported moderate or high confidence in dealing with an intraprocedural bleed, compared to 83% of MEs ( $p=0.001$ ). This difference remained significant when only those practitioners with >1000 lifetime procedures were considered ( $p=0.03$ ).

To explore reasons practitioners might limit their polypectomy practice, we posed a scenario featuring an 18mm flat polyp in the ascending colon with good access, and asked what factors would raise concern. In general, CEs expressed more concern than MEs. Potential lack of support from colleagues if a complication occurred was rated much higher by CEs ( $p < 0.001$ ) (Figure 3). Belief that removal of this polyp would not be covered by standard colonoscopy consent scored 3 or more on a 5-point 'concern scale' by 28% of respondents.

Only 23% reported having experienced a significant intraprocedural polypectomy bleed. 20% had experienced a polypectomy-related perforation. MEs were far more likely to report a perforation than CEs (33.3% vs 3.7%). 42.5% of respondents claimed never to have experienced a significant polypectomy related adverse event.

Adverse experiences did not correlate with concerns expressed in response to the scenario.

### **Training**

Half the participants had attended a polypectomy course that included practising polyp removal on a pig-hybrid model. Course attendance was much higher among CEs.

Only 25.8% recalled specific training in the endoscopic non-technical skills (ENTS) required for polypectomy practice. Again, this was much more common among CEs.

## **DISCUSSION**

This survey provides a snapshot of current colonoscopy practice in relation to polypectomy, centred on a representative region in the UK. It demonstrates variable levels of confidence in teaching polyp-related competencies required by the latest JAG curriculum, and highlights differences between MEs and CEs.

### **Colonoscopy Practice**

Based on our sample, CEs are performing almost twice as many colonoscopies as doctors and are contributing significantly to training supervision. This underscores the need for them to be confident in teaching to the level required by the new training curriculum.

Most differences observed between MEs and CEs reflected the fact that doctors in our survey had, on average, greater lifetime experience of colonoscopy. However, some concerns expressed by CEs were not solely related to experience.

## Polypectomy Practice

To establish the complexity of polypectomy undertaken, we asked participants to select the most advanced polyp they would attempt to remove from a list provided. This allowed estimation of their SMSA competence level[9]. In a previous survey of colonoscopists[10], where SMSA polypectomy level was self-assessed, a surprising number of respondents claimed to be operating at Level 4. It was suggested this might reflect a lack of understanding about the definition of Level 4 polypectomy. A quarter of our respondents expressed little or no confidence in using the SMSA system, which appears to support this. However, even using our modified approach, a high proportion of gastroenterologists said they would tackle non-pedunculated lesions >40mm with poor access and half of these worked predominantly in district general hospitals or non-acute centres. Although Level 4 polypectomy can be performed outside specialist centres[11], the potential consequences of over-estimating complex polypectomy skills and maintaining skills without a tertiary referral practice, have been highlighted[12, 13].

At the other extreme, a fifth of colonoscopists in our survey would not tackle non-pedunculated lesions larger than 9mm, almost half of whom had >5 years endoscopy experience. The JAG colonoscopy curriculum requires SMSA level 2 competency as the minimum requirement for competency in colonoscopy[8]. Some lesions <10mm may qualify as Level 2 if flat and right-sided, especially if access is difficult, but the polyp description in our survey was “a small (<10mm) lesion with good access”. Half of those selecting this option to describe the *largest* non-pedunculated lesion they would tackle, were either not aware of the SMSA scoring system or had little confidence using it, so ascertaining their precise SMSA level would have been difficult.

The consequence of an overly conservative polypectomy practice is that patients are more likely to be brought back for repeat procedures. This creates difficulty for trainees who need experience in Level 2 polypectomy.

Operators were generally more willing to remove larger pedunculated polyps. This is appropriate, given the lower complication rate[14] but suggests an education gap related to techniques required for non-pedunculated polyps (lifting, snare positioning, avoidance of deep mural injury). It also creates problems when classifying skill level; endoscopists who restrict themselves to Level 1 for non-pedunculated lesions may be operating at Level 2 for pedunculated polyps.

The BSG/ACPGBI guidelines for the management of large non-pedunculated colorectal polyps (LNPCPs)[15] established important principles, including the requirement to discuss high-risk lesions at a multi-disciplinary meeting (MDM), and for endoscopists involved in removing LNPCPs to have service approval for this work. It is important, however, that complexity criteria are applied appropriately to avoid MDMs becoming overwhelmed. The hypothetical scenario posed in our survey described a right-sided 18mm flat polyp with good access, scoring 9 on SMSA (Level 2). Such lesions are being detected more commonly as awareness of sessile serrated lesions increases[16]. 28% of respondents thought that removal of this polyp might not be covered by standard colonoscopy consent, suggesting that, in their view, it fell within the 'complex' definition.

The JAG consensus statements require colonoscopists to be able to define the difficulty level of polypectomy using the SMSA scoring system, document polyp morphology, and use at least one validated optical diagnosis system[8]. While confidence in using the Paris classification was high, about a third of those involved in training or supervision would struggle to classify a polyp based on its surface appearance or rate the difficulty of removing it using the SMSA system.

The Kudo classification[17] was by far the most popular system for optical diagnosis. Accuracy of this system is poor without magnification chromoendoscopy, particularly for lesions <5mm[18]. This has implications for 'Resect and Discard' strategies, where correct optical diagnosis of small lesions is important[19]. The NBI International Colorectal Endoscopic (NICE) system[20] was introduced more than 10 years ago to overcome these limitations. It is well validated and requires neither dye spray nor magnification. Disappointingly, according to our survey, it has failed to gain widespread use.

Lack of confidence in removing larger polyps is not surprising: in an international survey of endoscopy trainees, only 32.8% said they had been taught specific skills to deal with polyps >10mm[21], although the UK situation has improved following introduction of formalised polypectomy assessment[22]. Half of our respondents had attended the JAG Basic Skills in Polypectomy Course, but this focusses primarily on Level 1 skills. Only a quarter recalled specific training in the ENTS relevant to polypectomy practice.

## **Limitations**

The major limitation of our study is the low number of responses. Because the survey was on-line, and relied on third parties for dissemination, we were unable to calculate a response rate. Nor is it possible to estimate the proportion of independent colonoscopists in northwest England our sample represents. It is possible that the choice to participate introduced bias: MEs with enthusiasm for polypectomy may

have been more likely to respond, whereas concerns about the new curriculum may have encouraged participation from more anxious CEs. We focussed on one region of the UK but there is no reason to believe that polypectomy practice in the northwest is significantly different from other regions.

SMSA skill level was based on self-reported polypectomy competence. Concerns expressed in response to our hypothetical scenario suggest that many endoscopists lack confidence in their technical skill. Confidence is recognised to develop later than competence. It is possible that some endoscopists, especially those at an early stage of their career, may have underestimated their true competency levels.

### **Conclusions and Recommendations**

The majority of independent colonoscopists, regardless of professional background, perform polypectomy at Level 2 or greater, thus meeting the technical competence requirements of the new curriculum. As expected, CEs were generally more conservative in their polypectomy practice, but their confidence in teaching aspects of polyp assessment was at least as high as MEs. Nonetheless, we have identified a minority of established practitioners who are performing below the level expected of a trainee at certification, and there is a lack of confidence across all backgrounds in teaching optical diagnosis and the SMSA scoring system.

The JAG-approved Basic Skills Polypectomy course covers all aspects of polyp assessment, and specific ENTS courses have also been devised[23], but these are available only to trainees. Our survey supports calls for training schemes directed at practising colonoscopists[24]. Polyp assessment skills are readily teachable[25, 26]. Formal courses are not always necessary; self-directed learning using on-line resources appears equally effective[27]. But overcoming concerns about technical and safety aspects of polypectomy requires supervised practise (mentorship) or specific skills improvement courses. Simulation training is an attractive possibility[28] but existing models lack fidelity for advanced polypectomy. A comprehensive curriculum for training in EMR is available [29].

Endoscopy training in the UK has been devolved to Regional Endoscopy Training Academies. While their main focus is trainees, they should also address the competence of trainers in their region. Academies are perhaps best placed to develop and coordinate the training we suggest. If the next generation of trainees is to achieve competence, it is vital that supervisors have confidence in their own skills.

## **Contributors**

MR and PO'T designed the study. MR coordinated ethics approvals. MR, SH, and PO'T designed and disseminated the survey. MR and PO'T collected and analysed the data and wrote the first draft. MR is the guarantor. MR, PO'T, SH, ED, and GS were involved in critical reviews of the manuscript. All authors approved the final version of the manuscript.

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## **Competing Interests**

None declared.

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## **Ethics Statement**

This study involves human participants and was approved by Liverpool John Moores University UREC ref: 22/NAH/045. Participants gave informed consent to participate in the study before taking part.

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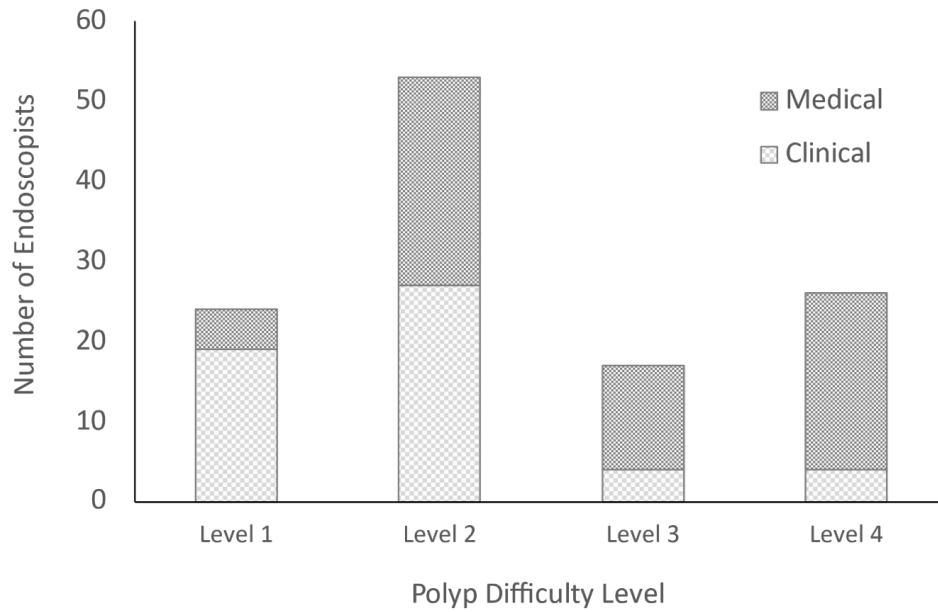


## Tables and Figures

**Table 1**

Participant demographics.

Variable		Medical (%)	Clinical (%)	Total (%)
Gender	Female	13 (19.4)	48 (88.9)	61 (50.4)
	Male	54 (80.6)	6 (11.1)	60 (49.6)
Age (years)	25-34	3 (4.5)	2 (3.7)	5 (4.1)
	35-44	21 (31.3)	16 (29.6)	37 (30.6)
	45-54	28 (41.8)	27 (50)	55 (45.4)
	55-64	13 (19.4)	9 (16.7)	22 (18.2)
	64+	2 (3.0)	0 (0)	2 (1.7)
Years performing independent colonoscopies	0-1 years	3 (4.5)	10 (18.5)	13 (10.8)
	2-4 years	7 (10.6)	19 (35.2)	26 (21.7)
	5-10 years	17 (25.8)	11 (20.3)	28 (23.3)
	11-15 years	14 (21.2)	3 (5.6)	17 (14.2)
	16+ years	25 (37.9)	9 (16.7)	34 (28.3)
	No response	0 (0)	2 (3.7)	2 (1.7)
Lifetime independent colonoscopies	Less than 50	0 (0)	1 (0.8)	1 (0.8)
	51-100	2 (3.0)	1 (1.9)	3 (2.5)
	101-300	1 (1.5)	5 (9.3)	6 (5.0)
	301-500	2 (3.0)	5 (9.3)	7 (5.8)
	501-1000	15 (22.7)	8 (14.8)	23 (19.2)
	1001-5000	32 (48.5)	23 (42.6)	55 (45.8)
	More than 5000	14 (21.2)	9 (16.7)	23 (19.2)
	No response	0 (0)	2 (3.7)	2 (1.7)

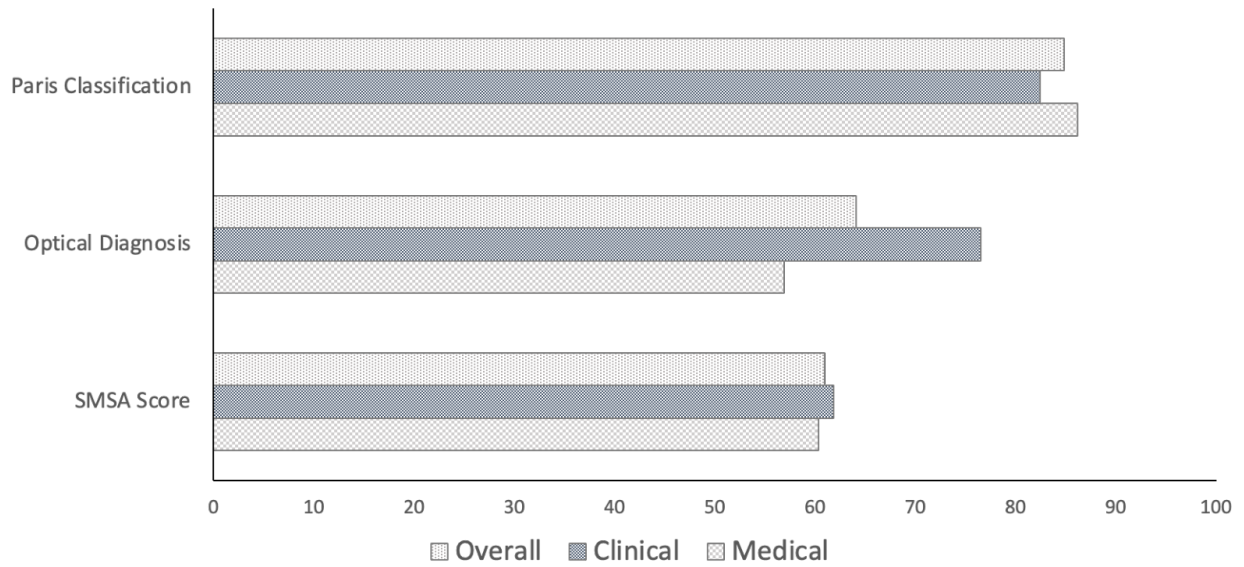


**Figure 1**

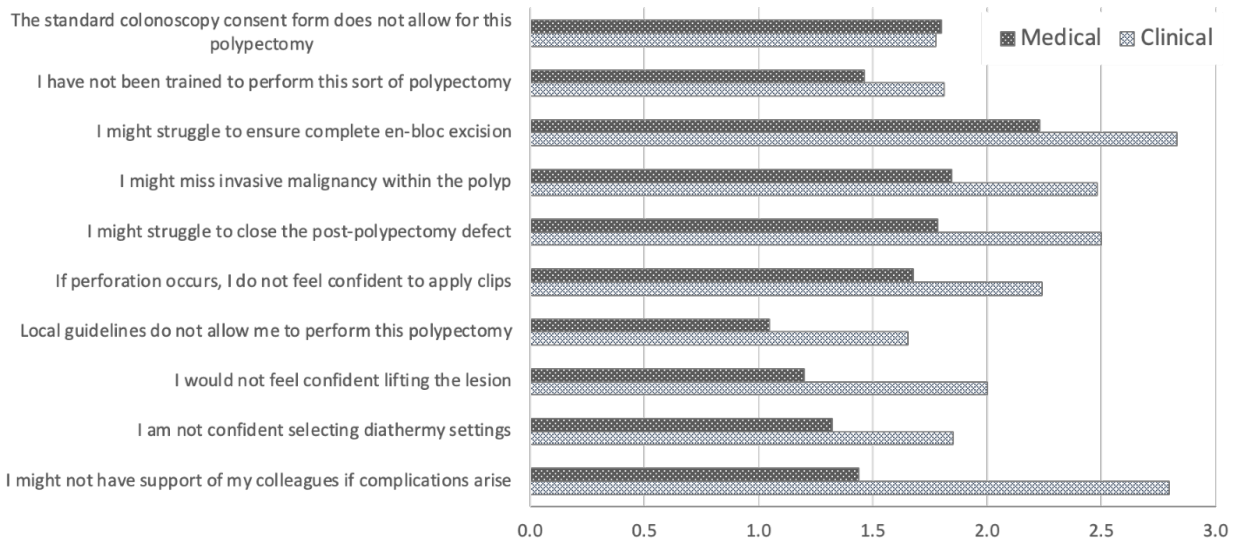
Estimated SMSA Polypectomy Level (based on descriptions of practice for non-pedunculated lesions)

SMSA level: SMSA 1 = 4 –5 points; SMSA 2 = 6– 9 points; SMSA 3 = 10 – 12 points; SMSA 4 = > 12 points.

SMSA, size, morphology, site, access.



**Figure 2**  
 Percentage of trainers reporting at least moderate confidence in teaching polyp assessment systems. SMSA, size, morphology, site, access.



**Figure 3**  
 Average rating of concerns (0 – 5 scale) for endoscopists faced with a polypectomy scenario.

