

## Supplementary material

## ENDO-SAQ SURVEY

## DEMOGRAPHIC DATA

1. Endoscopy service – Please choose your region (MANDATORY)
  - a. East Midlands
  - b. East of England
  - c. Greater London
  - d. North East
  - e. North West
  - f. Northern Ireland
  - g. Republic of Ireland
  - h. Scotland
  - i. South East
  - j. South West
  - k. Wales
  - l. West Midlands
  - m. Yorkshire and the Humber
  
2. What sector is your endoscopy service in? (MANDATORY)
  - a. NHS/public sector
  - b. Independent/private sector
  
3. Does your endoscopy unit undertake Bowel Cancer Screening? (MANDATORY)
  - a. Yes
  - b. No
  
4. Is your endoscopy unit JAG accredited? (MANDATORY)
  - a. Yes
  - b. No
  
5. Role (choose one)
  - a. Administrator/non-clinical manager
  - b. Decontamination Technician
  - c. Endoscopist – Associate specialist
  - d. Endoscopist – Clinical endoscopist (including nurse endoscopist)
  - e. Endoscopist – Consultant
  - f. Endoscopist – Medical Trainee
  - g. Endoscopist – Surgical trainee
  - h. Endoscopy Nurse
  - i. Healthcare Assistant
  - j. Porter
  - k. Screening Practitioner
  - l. Other – please state
  
6. Gender
  - a. M
  - b. F
  - c. Non-binary/third gender
  - d. Prefer not to say

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7. Age range
  - a. 16-24
  - b. 25 – 34
  - c. 35 – 44
  - d. 45 – 54
  - e. 55 – 64
  - f. 65 and older
  
8. Time in this role
  - a. < 6 months
  - b. 6 to 11 months
  - c. 1 to 2 years
  - d. 3 to 4 years
  - e. 5 to 10 years
  - f. 11 to 20 years
  - g. 21 years or more

**QUESTIONS**

Please answer the following items with respect to your specific endoscopy unit.

Option 1-5

1 = Strongly disagree

2 = Slightly disagree

3 = Neutral

4 = Slightly agree

5 = Strongly agree

	Question Item	Rating (1-5)
TEAMWORK	1. In this endoscopy unit, it is difficult to speak up if I perceive a problem with patient care.	
	2. Disagreements in this endoscopy unit are addressed appropriately (i.e., not who is right, but what is best for the patient).	
	3. I have the support I need from other colleagues to care for patients.	
	4. It is easy for staff here to ask questions when there is something that they do not understand.	
	5. The endoscopy staff members here work together as a well-coordinated team.	
SAFETY	6. I would feel safe being treated here as a patient.	
	7. Patient safety issues are handled appropriately in this endoscopy unit.	

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	8. I know how and where to direct questions regarding patient safety in this endoscopy unit.	
	9. I receive appropriate feedback about my performance.	
	10. In this endoscopy unit, it is difficult to discuss errors openly.	
	11. I am encouraged by my colleagues to report any patient safety concerns I may have.	
	12. The culture in this endoscopy unit encourages learning from the errors of others.	
	13. My suggestions about patient safety would be discussed and acted upon if I expressed them to senior staff	
JOB SATISFACTION	14. I like my job.	
	15. Working here is like being part of a large team	
	16. This is a good place to work.	
	17. I am proud to work in this endoscopy unit.	
	18. Morale in this endoscopy unit is high.	
STRESS RECOGNITION	19. If my workload becomes excessive, my performance is impaired.	
	20. I am less effective at work when fatigued.	
	21. I am more likely to make errors in tense or hostile situations.	
	22. Fatigue impairs my performance during emergency/high-demand situations	
MANAGEMENT	23. Endoscopy unit management supports my daily efforts	
	24. Endoscopy unit management doesn't knowingly compromise patient safety	
	25. Endoscopy unit management is doing a good job	
	26. Colleagues in difficulty are dealt with constructively by our endoscopy unit	
	27. I get adequate, timely info about events that might affect my work, from endoscopy unit management	
WORKING CONDITIONS	28. The levels of staffing in this endoscopy unit are sufficient to handle the number of patients.	
	29. This endoscopy unit does a good job of training new staff.	
	30. All the necessary information for cases is routinely available to me.	
	31. All trainees/students in my discipline (e.g. endoscopy, nursing, admin) are adequately supervised.	
	32. I experience good working relationships with nurses in this endoscopy unit.	
	33. I experience good working relationships with endoscopists in this endoscopy unit.	
	34. I experience good working relationships with other staff in this endoscopy unit.	
	35. Communication breakdowns that lead to delays in delivery of care are common.	

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## CVI CALCULATIONS

QUESTION NUMBER	RELEVANCE		CLARITY	
	I-CVI	S-CVI	I-CVI	S-CVI
1	1	0.97	0.6	0.92
2	1		1	
3	1		1	
4	1		0.8	
5	1		0.8	
6	1		1	
7	1		1	
8	1		0.8	
9	1		1	
10	1		1	
11	1		1	
12	1		1	
13	1		1	
14	1		1	
15	1		1	
16	0.6		0.6	
17	1		1	
18	1		1	
19	1		1	
20	1		1	
21	1		1	
22	1		1	
23	1		1	
24	0.8		0.8	
25	1		1	
26	1		1	
27	0.8		0.4	
28	0.8		0.8	
29	1		1	
30	1		0.8	
31	0.8		0.8	
32	1		1	
33	1		1	
34	1		1	
35	1		1	
36	1		1	

Table 1. Content validity indices – item CVI (I-CVI) and scale CVI (S-CVI) of the preliminary version of Endo-SAQ.

## Supplementary material

## Comparisons to other studies

Study / Author	Country	Setting	Participants		Mean scores (SD)					
			Type	Number	TW	SC	JS	SR	PM	WC
Endo-SAQ	UK & Ireland	Endoscopy	Endoscopy staff	453	81.9	82.8	80.2	72.8	74.1	77.5
Goras 2017 [1]	Sweden	Surgery	Operating theatre staff	332	71.7	66.2	78.9	62.9	57.9	66.8
Gabrani 2015 [2]	Albania	Generic	Physicians	209	52.3	38.7	39.5	49.7	46.8	42.4
			Nurses	132	45.7	36.8	46.7	40.6	44.8	29.2
Raftopoulos et al 2011 [3]	Cyprus	Maternity	Midwives	106	58.0	55.8	66.2	50.6	52.1	55.0
Relihan et al 2009 [4]	Ireland	Acute medical unit (AMU)	AMU staff	55	75.6	71.0	67.2	74.5	48.9	59.8

Table 2. Comparison of mean domains scores across different versions of the safety attitudes questionnaire (SAQ). TW = teamwork, SC = safety climate, JS = job satisfaction, SR = stress recognition, PM = perceptions of management, WC = working conditions

## References

1. Göras, C., et al., *Interprofessional team assessments of the patient safety climate in Swedish operating rooms: a cross-sectional survey*. *BMJ Open*, 2017. **7**(9): p. e015607.
2. Gabrani, A., et al., *Application of the Safety Attitudes Questionnaire (SAQ) in Albanian hospitals: a cross-sectional study*. *BMJ Open*, 2015. **5**(4): p. e006528.
3. Raftopoulos, V., N. Savva, and M. Papadopoulou, *Safety Culture in the Maternity Units: a census survey using the Safety Attitudes Questionnaire*. *BMC Health Services Research*, 2011. **11**(1): p. 238.
4. Relihan, E., et al., *Measuring and benchmarking safety culture: application of the safety attitudes questionnaire to an acute medical admissions unit*. *Irish Journal of Medical Science*, 2009. **178**(4): p. 433.

## Supplementary material

## PSYCHOMETRICS

Factor loadings, average variance extracted (AVE), Cronbach's Alpha and composite reliability

DOMAIN (factor)	ITEM (variable)	FACTOR LOADING	AVE	CRONBACH'S ALPHA	COMPOSITE RELIABILITY
<b>Teamwork</b>	Q1	0.729	0.599	0.817	0.882
	Q2	0.778			
	Q3	0.813			
	Q4	0.761			
	Q5	0.787			
<b>Safety climate</b>	Q6	0.841	0.631	0.873	0.931
	Q7	0.821			
	Q8	0.833			
	Q9	0.753			
	Q10	0.625			
	Q11	0.773			
	Q12	0.820			
	Q13	0.865			
<b>Job satisfaction</b>	Q14	0.764	0.750	0.886	0.937
	Q15	0.862			
	Q16	0.939			
	Q17	0.915			
	Q18	0.839			
<b>Stress recognition</b>	Q19	0.787	0.694	0.846	0.901
	Q20	0.855			
	Q21	0.868			
	Q22	0.821			
<b>Perception of management</b>	Q23	0.905	0.689	0.874	0.916
	Q24	0.642			
	Q25	0.886			
	Q26	0.869			
	Q27	0.822			
<b>Working conditions</b>	Q28	0.525	0.531	0.809	0.898
	Q29	0.830			
	Q30	0.729			
	Q31	0.786			
	Q32	0.799			
	Q33	0.753			
	Q34	0.823			
	Q35	0.498			

Table 1. Factor loading, average variance extracted (AVE), Cronbach's alpha and composite reliability for each factor (domain).

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## Discriminant validity

Inter-construct correlation was performed as a measure of discriminant validity. The square root of a construct's AVE ( $\sqrt{\text{AVE}}$ ) must be greater than the correlation between the construct and any other construct. This criterion was met for all correlations except the correlation between teamwork and safety climate and working conditions and perception of management (Table 2).

DOMAIN	$\sqrt{\text{AVE}}$	Teamwork	Safety climate	Job satisfaction	Stress recognition	Perception of management	Working conditions
Teamwork	<b>0.774</b>	-					
Safety climate	<b>0.794</b>	0.811**	-				
Job satisfaction	<b>0.866</b>	0.703**	0.720**	-			
Stress recognition	<b>0.833</b>	-0.109*	-0.081	-0.087	-		
Perception of management	<b>0.830</b>	0.711**	0.733**	0.738**	-0.106*	-	
Working conditions	<b>0.729</b>	0.701**	0.697**	0.727**	-0.118*	0.735**	-

Table 2. Correlation coefficients ( $r$ ) of domains by mean ratings per domain.  $\sqrt{\text{AVE}}$  (square root of average variance extracted) is shown in the first column in bold per domain. \* $p < 0.05$ , \*\* $p < 0.01$  (2-tailed).