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**Article:**

Sartain, S. [orcid.org/0000-0001-6910-1596](https://orcid.org/0000-0001-6910-1596), Wong, C., Murray, E. et al. (10 more authors) (2024) Gastroenterology trainee experience, confidence and satisfaction in nutrition training: a cross-sectional survey in the UK. *Frontline Gastroenterology*. ISSN 2041-4137

<https://doi.org/10.1136/flgastro-2023-102563>

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This article has been accepted for publication in FG following peer review.

The definitive copyedited, typeset version is available online at [10.1136/flgastro-2023-102563](https://doi.org/10.1136/flgastro-2023-102563)

## **Gastroenterology Trainee Experience, Confidence and Satisfaction in Nutrition Training: a cross-sectional survey in the United Kingdom**

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**Abstract**

**Introduction:** Nutrition is an essential part of Gastroenterology Specialist Training. There is limited evidence of trainee experience in this area. The shorter training programme introduced in 2022 may lead to reduced exposure to this subspecialty. We aimed to explore and describe current nutrition training experiences, confidence, and satisfaction to inform future improvements.

**Methods:** Gastroenterology trainees were invited to participate in an online survey from 20<sup>th</sup> May to 18<sup>th</sup> July 2022. The questionnaire consisted of 27 questions with a range of free-text and Likert scale responses.

**Results:** 86 responses were received. 39.5% had undertaken an Advanced Training Programme or core placement in nutrition. 52.9% of these felt “fairly confident” or “very confident” in managing intestinal failure v 5.8% of those who had not completed a nutrition placement. Obesity and eating disorders management received the lowest ratings. Nutrition training was described as “fairly important” or “very important” by 98.8% and 47.0% included nutrition as part of their preferred future practice. 53.1% of ST6/7 trainees were “fairly confident” or “very confident” their training offered adequate experience in nutrition. Participants reported barriers including a lack of education and training opportunities, and limited early rotations offering nutrition training.

**Conclusion:** Gastroenterology trainees believe nutrition training to be important. Nutrition placements increase trainee confidence, knowledge and experiences overall, but there is variability in this. Improved structuring of placements, increased educational opportunities and exposure to this subspecialty at an earlier stage are required to ensure competency in nutrition is reliably achieved during Gastroenterology training.

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

Currently, there is limited knowledge about the experiences of nutrition training amongst Gastroenterology trainees in the United Kingdom. The duration of Gastroenterology training has recently been reduced leading to concerns there will not be adequate time to focus on this part of the curriculum.

**What this study adds?**

Almost all participants believed that Nutrition training was “fairly” or “very” important and 47% were considering this subspecialty in their future career either as a specialist interest or as part of a general Gastroenterology role. This study showed that nutrition training placements improved trainees experience, knowledge and understanding in nutrition but there was variation in this. Participants perceived barriers to nutrition training including a lack of specialist rotations and limited exposure during the early stages of specialist training.

**How might it impact on clinical practice in the foreseeable future?**

Increased educational opportunities in nutrition training and exposure to specialist units are required for effective training in this subspecialty. Structured training placements should be devised to deliver this important part of the gastroenterology curriculum.

## Introduction

Nutrition plays a major role in health and disease, making it an essential part of good medical care. It is a core component of Gastroenterology Higher Specialty Training (HST) and a growing subspecialty. There is increasing use of home parenteral nutrition (HPN)(1) and continuing development in the field of intestinal transplantation. Currently, all Gastroenterology specialty trainees in the United Kingdom are expected to undertake a 3-to-6-month period of nutrition-focused training. A small number of 12-month Advanced Training Placements (ATPs) are offered at specialist centres in England for those wishing to gain subspecialist experience. Challenges in nutrition training and the need for improvement have been recognised over time(2). The 2019 Royal College of Physicians (RCP) survey highlighted disparity in Gastroenterology trainees' experiences in nutrition compared to other subspecialty areas. Of final year trainees (ST7), 71% thought their training programme effectively equipped them for independent practice in nutrition compared to 94% for inflammatory bowel disease (IBD). Overall, there was diminished confidence in and poorer access to nutrition training compared to hepatology and IBD(3). In the most recent British Society of Gastroenterology (BSG) Trainees survey 19% of all trainees reported no exposure to nutrition training(4).

HST underwent major changes in 2022 with the implementation of a new curriculum in response to The Shape of Training Report(5,6). Gastroenterology HST was reduced from five to four years, with a move to "themed training" in hepatology or luminal gastroenterology after the second year. It is envisaged that approximately 80% of trainees will enter the luminal stream and during this period they will gain additional experience in the management of IBD and Nutrition. ATPs will likely now be carried out after completion of training or as out-of-programme experience.

Additionally, there has been a move away from the increasingly bureaucratic 'tick box' curriculum to a shorter list of generic and specialty capabilities(7). Gastroenterology remains a key area for NHS workforce considerations. The recent British Society of Gastroenterology (BSG) workforce report revealed large numbers of unfilled consultant posts across the UK, highlighting the need for an effective training programme(8). The new, shorter

programme gives rise to concerns of further reduction in nutrition training. Only 10% of respondents to the 2022 BSG trainees survey felt they could achieve certificate of completion of training (CCT) within a 4 year programme and 31% were not confident they would attain the required expertise in their subspecialist interest(4). Anecdotally, there is anecdotally significant variation in trainee exposure to nutrition but a lack of published data on trainee experiences in this area. There is a need to investigate this disparity in experience to prevent further disparities in training under the new curriculum and identify opportunities for improvement.

### **Aims**

This nationwide study aimed to explore Gastroenterology trainees' experience, confidence and satisfaction with current nutrition training. We also explored perceived barriers with training to inform improvements in the curriculum.

### **Methods**

This cross-sectional study of Gastroenterology trainees in the UK was developed by members of the British Association of Enteral and Parenteral Nutrition (BAPEN) Medical trainee committee (see supplemental material for survey questions).

### ***Survey design***

An online questionnaire was developed which consisted of 5 main sections and 26 questions with a range of binomial, categorical, 5-point Likert scale responses and free-text responses to provide both qualitative and quantitative data. There were mandatory questions for respondent demographics, nutrition training placement experience and also for knowledge, experience and confidence in core nutrition curriculum competencies. Please see Specialty Training Curriculum for Gastroenterology 2010(9) and 2022(7) for further information regarding competencies. The other sections related to education (attendance at courses or other learning resources), endoscopic skills (experience with tube placement, management with tube-related complications), and attitudes towards training and available opportunities (perceived importance of nutrition training, awareness of advanced

training programmes, barriers to training and suggestions for future improvement) were non-mandatory. The questionnaire was designed through an iterative process, considered complete when there was saturation of changes, extensively tested within the trainee committee for content validity and then approved by all members for dissemination. The survey was supported by BAPEN Medical committee and the BSG trainees committee.

### ***Ethical approval and Informed Consent***

Ethical approval was not required according to the NHS Health Research Authority guidance(10) as this did not involve use of patient-level data.

### ***Survey distribution***

The survey was disseminated via an online platform SurveyMonkey(11) to Gastroenterology registrars, non-training grades and consultants within 3 years of completing training across the United Kingdom, using mailing lists from individual training deaneries, the BSG and personal networks between 20<sup>th</sup> May and 18<sup>th</sup> July 2022. The survey link was also shared on social media through the BAPEN trainees' Committee Twitter account.

### ***Data analysis***

Data cleaning, qualitative and quantitative analysis were conducted by the authors. Responses were anonymised, summarized using descriptive statistics (as numbers and percentages) and free-text answers were categorised into broad themes to facilitate interpretation. Participants were divided into those that had completed a core nutrition placement or ATP, together referred to as nutrition placements (NP) in the reporting of the results, and those who had not done so.

## **Results**

The survey was completed by 86 participants from a range of training grades and nutrition training experience, the characteristics of which are shown in table 1. There were participants from almost all deaneries in the United Kingdom (see Table 2).

**Table 1: Characteristics of survey participants according to completion of nutrition placement (NP)**

Characteristic	NP	no NP
	n = 34	n = 52
<b>Gender</b>		
Male	18 (52.9%)	23 (44.2%)
<b>Level of training</b>		
ST3	2 (5.9%)	12 (23.1%)
ST4	3 (8.8%)	15 (28.9%)
ST5	2 (5.9%)	13 (25.0%)
ST6	12 (35.3%)	7 (13.5%)
ST7	10 (29.4%)	3 (5.8%)
Non-training registrar or fellow	2 (5.9%)	2 (3.9%)
Consultant (within 3 years post CCT)	3 (8.8%)	0 (0.0%)
<b>Nutrition placement type</b>		
Advanced training placement	7 (20.6%)	NA
Core nutrition placement	27 (79.4%)	NA
<b>Nutrition placement duration</b>		
3 months	13 (38.2%)	NA
6 months	9 (26.5%)	NA
> 6 months	12 (35.3%)	NA
<b>Nutrition placement location</b>		
Hospital without a nutrition support team	1 (2.9%)	NA
Hospital with a nutrition support team	5 (14.7%)	NA



Hospital setting up HPN	8 (23.5%)	NA
Hospital setting up HPN , with intestinal failure surgery (+/- transplant)	13 (38.2%)	NA

**Table 2: Number of responses from each training deanery**

Deanery	No. of responses
England	65
East of England	10
West Midlands	9
Kent, Surrey and Sussex	8
Wessex	6
North East England	5
London - North West	5
London – North Central & East	4
Peninsula	4
North West England	3
Thames Valley	3
Yorkshire and Humber	3
East Midlands	2
Severn	2
London - South	1
Scotland	12
Scotland – South-East	6
Scotland - East	3
Scotland - North	2
Scotland - West	1
Northern Ireland	4
Wales	5

### ***Nutrition placements***

There were 39.5% (34/86) who had undertaken their core nutrition placement or an ATP in nutrition at the time of the survey. Two-thirds, 67.7% (23/34), were at hospitals providing home parenteral nutrition set-up and often included other specialist services such as intestinal failure surgery. Placements were 3-6 months duration, or longer. There were 5 participants who had undertaken a core nutrition placement of over 6 months duration. All

the respondents who had completed a nutrition placement had attended Nutrition Support Team ward rounds and nutrition multi-disciplinary team meetings.

### ***Curriculum items***

The responses to Likert scale questions regarding experience, knowledge and understanding and confidence in the eleven curriculum competencies can be seen in Figure 1. These figures show responses from participants who had completed a nutrition training placement (n=34) compared to those that had not (n=52).

Experience for all survey participants was greatest for nutrition screening and assessment, refeeding syndrome, high output stoma and enteral nutrition, with over 40.0% rating these as “very often” or “always” experienced. The lowest levels of experience were reported in obesity and intestinal failure, as 51.2% and 36.0% of participants respectively rated these as “never” or “rarely” experienced. Respondents who had completed their nutrition placement showed higher levels of experience of the core competencies compared to those yet to complete their placement (see Figure 1). With the exception of obesity management and eating disorders, all other competencies were experienced “always” or “very often” by over half of respondents who had completed a nutrition placement. Almost half (44.1%) reported experience in obesity as “never” or “rarely” after nutrition placement, compared to 55.8% beforehand. For eating disorders, these ratings were given by 17.7% of participants after nutrition placement compared to 32.7% before.

Self-rated knowledge and understanding of these same eleven competencies was also ascertained. Overall, the highest ratings were for refeeding syndrome and initiating enteral feeding, as 73.3% and 51.2% responded their knowledge and understanding was “good” or “excellent” respectively. The poorest ratings were for obesity and intestinal failure management, with 47.7% and 36.1% respectively using “very poor” or “poor” to describe their knowledge and understanding. Knowledge and understanding of the competencies improved substantially (see Figure 1) in those who had undertaken nutrition placements. Almost three-quarters of participants who had undertaken a nutrition placement responded “good” or “excellent” for knowledge and understanding of the competencies, except obesity, eating disorders and parenteral nutrition, which were lower. This exceeded the

responses in those who had not undertaken a nutrition placement who replied “good” or “excellent” in under a third of responses, except in refeeding syndrome which received higher ratings.

Confidence of all participants combined was lowest in managing eating disorders, obesity, intestinal failure, where over half reported being “not at all” or “slightly” confident in these areas. Confidence was also higher in those who had completed a nutrition placement in management of all the curriculum competencies (see Figure 1). 53.0% of those who had completed a nutrition placement felt “fairly confident” or “very confident” in managing intestinal failure, compared to 5.8% who had not. There remained poor confidence in dealing with obesity and eating disorders after nutrition placement. 61.5% of participants who had not undertaken a nutrition placement described their confidence as “not at all” or “slightly” for managing obesity compared to 47.6% of those that had. This figure was 63.5% v 35.3% for eating disorders.

Overall obesity received the lowest ratings for experience, knowledge and confidence. Other curriculum competencies which received poorer ratings were eating disorders, intestinal failure and parenteral nutrition, including in some participants who had undertaken their nutrition placement.

### ***Nutrition training opportunities***

#### ***Nutrition courses***

In total, 29.0% of respondents had attended at least one nutrition course and 47.8% of respondents felt these were not adequately advertised. Participants were asked which topics they would be interested in further training courses or learning materials (see Table 3). Obesity management, intestinal failure and initiating or managing parenteral feeding were the most desired topics.

**Table 3: Topics that participants would be interested in further training opportunities. (Total respondents to this question = 83)**

Topic	Participants interested

Intestinal failure	66 (79.5%)
Initiating or managing parenteral feeding	66 (79.5%)
Obesity management	64 (77.1%)
Eating disorders	57 (68.7%)
Ethical and legal implications of artificial nutrition support	55 (66.3%)
Short bowel syndrome	54 (65.1%)
Managing IV access lines and complications	53 (63.9%)
Initiating or managing enteral feeding	49 (59.0%)
High output stoma	43 (51.8%)
Nutrition screening and assessment	42 (50.6%)
Refeeding syndrome	32 (38.6%)

### ***Advanced Training Placements (ATPs)***

When asked about ATPs in nutrition, 39.8% (33/83) of participants who answered this question were not aware of these prior to completing the survey and 57.3% (47/82) did not believe these were adequately advertised (see Figure 2). Awareness of ATPs was higher in those who had completed a NP than in those who had not, with 44% (22/50) aware compared to 33.3% (11/33) respectively.

### ***Endoscopy***

Most trainees surveyed (88.4%, 76/86) had prior experience with percutaneous endoscopic gastrostomy (PEG), jejunal tube or percutaneous endoscopic gastrostomy-jejunal (PEG-J) tube placement. 61.3% of those with endoscopic experience were “not confident at all” about inserting PEG-J tubes with 10.7% saying they felt fairly or very confident. Results for endoscopic placement of naso-jejunal (NJ) tube or PEG insertion was higher as over 40% were “fairly confident” or “very confident” about insertion. At ST6 and ST7 level half (48.39%, 15/31) of respondents felt “slightly” or “somewhat” confident about PEG insertion. Participants that had completed a NP

were more confident in PEG insertion, 57.6% 19/33 were “very” or “fairly” confident, compared to 32.6% (14/ 43) of those that had not completed a NP. See supplemental material part 2 for further results.

### ***General Satisfaction***

About half (53.1%) of ST6 and ST7 trainees were “fairly confident” or “very confident” that their training programme offered adequate experience in nutrition. Overall, 20.4% (17/83) were “not confident at all” that their training programme offered adequate experience in nutrition.

### ***Future career choices***

Respondents gave a range of future career choices including hepatology and advanced endoscopy. 47.0% (39/83) chose a specialist or generalist role which included nutrition as part of their preferred future practice. Nutrition training was described as “fairly important” or “very important” by 98.8% (82/83) of respondents.

### ***Free text questions***

Participants were asked how nutrition training could be improved with free text for responses. From the 38/86 (44.1%) that responded common themes that emerged were improvement in exposure to specialist nutrition services at early stages of training, increased volume of focused training days at local and national level, and more dedicated nutrition placements with access to training opportunities such as multi-disciplinary (MDT) meetings and endoscopy lists. Barriers to nutrition training were cited as lack of available fellowships or specialist services in certain regions, not having distinct nutrition rotations from general gastroenterology training, limited training opportunities and lack of training in specialist centres. A small number of trainees commented that there was a lack of interest in nutrition outside specialist centres and its importance was often overlooked.

## **Discussion**

This nationwide survey showed nutrition training is important to Gastroenterology trainees and that many are considering this subspecialty in their future career. However, there was wide variability in training. Participants’ confidence, knowledge and experience improved with nutrition placements but certain areas of the curriculum remain poorly understood and experienced, such as obesity management. There was also a lack of experience and

confidence with eating disorders, intestinal failure and parenteral nutrition, likely due to limited exposure in non-tertiary or smaller centres. Qualitative data showed that some nutrition placements were unable to offer an appropriate level of exposure in nutrition training and therefore there is a need to standardise this nationally. The level of satisfaction in nutrition training towards the end of training for respondents to this survey appears lower than the 2019 RCP survey, where 71% of ST7s believed their programme effectively equipped them for independent practice in nutrition.

The BSG 2020 survey of 251 Gastroenterology trainees asked if they had sufficient exposure to nutrition to determine if they would like to train or be a consultant with this interest. 17.7% of ST4 trainees reported sufficient or good exposure compared to 67.7% of ST7 trainees. This indicates limited early experience may disadvantage trainees making career decisions, which are now required nearer the start of HST. Lack of exposure may influence career choices towards other subspecialties.

We recognise that there may be possible limitations with this study. There was a relatively small number of participants (83 trainees) compared to the 660 Gastroenterology trainees in the UK, giving a response rate of 12.6%. The timing of this survey was shortly after the Covid-19 pandemic which meant many face-to-face training events had been cancelled, potentially affecting responses to questions about nutrition training courses. There may have been a tendency for trainees who are interested in nutrition to complete this survey creating a biased response. 19.5% of respondents to the BSG 2020 trainees survey indicated that they would be interested in nutrition as a subspecialist interest which was less than our survey. This may suggest more participants in our survey were considering nutrition as a future career choice, so may already have a higher level of knowledge and experience in this area. The true exposure for all trainees to nutrition may be even lower than reported in our survey. In the BSG trainees 2022 survey 19.0% of trainees reported no exposure and 43.5% reported some exposure to nutrition(4), which may support this.

In contrast, the main strength is that this is the only published study from the United Kingdom, to our knowledge, that directly explored trainee experience and captured perspectives across a range of training grades from different centres. We identified patterns and gaps in trainee knowledge, and potential areas for systematic

improvement with training. These results demonstrate a need for better structured placements and improved educational opportunities in nutrition to effectively train Gastroenterologists in this subspecialty.

The increased pressures of the new curriculum means that now more than ever, focused rotations in settings with specialist input and other methods of delivering training are required. These would ensure that all trainees obtain the necessary level of competence to deliver effective patient care in nutrition. Training developments could include endoscopic tube placement JAG-accredited courses, national training days or increased online resources. Trainees' experience in nutrition should begin at an earlier stage of training to inform career decisions and optimise available opportunities. Curriculum learning objectives should be clearly defined and competency based, with designated centres accredited to deliver these. Training regions should strive to enhance subspecialty training by including regular, good quality educational activities in addition to clinical experience. We propose a road map for how Nutrition training could be incorporated in the Gastroenterology 2022 curriculum, see Figure 3. The core nutrition training stage should be widely available, including in district general hospitals, and the further training block for luminal trainees undertaken in a more specialist setting. There is also a need to create accredited nutrition fellowships with clear training objectives, outcomes and career pathways. Collaborative efforts should aim to provide guidance and information about available subspecialty posts.

Targeted interventions, through trainers and educational boards, should aim to improve the delivery, availability and promotion of early nutrition training opportunities for all Gastroenterology trainees. This would enhance experience, ensure competencies are reliably achieved and career aspirations are met during higher specialist training in this subspecialty.

## **Funding**

The research costs of this survey were not funded.

## **Ethics Approval**

As this survey was without patient involvement formal ethical review was not required

### **Acknowledgements**

Many thanks to the British Society of Gastroenterology Trainees section for sharing the results of their recent trainees' surveys.

### **Conflicts of Interest**

There are no declarations of conflicts of interest by any of the authors.

### **Author contributions:**

Stephanie Sartain: conception, survey design, data analysis and visualisation, co-wrote manuscript, revised the manuscript and gave final approval of the version that was submitted.

Charlotte Wong: survey design, interpretation of results, co-wrote manuscript, revised the manuscript and gave final approval of the version that was submitted.

Emma Murray: survey design and creation of survey, data interpretation and data presentation; critically appraised the manuscript and gave final approval of the version that was submitted.

Amy Woods: contributed to the data interpretation and writing of the manuscript; critically appraised the manuscript and gave final approval of the version that was submitted.

Daniel Ashmore contributed to the data interpretation, critically appraised the manuscript and gave final approval of the version that was submitted.

Suneil Raju: advice on survey dissemination, sharing of BSG trainees survey results, drafting of manuscript, critically appraised the manuscript and gave final approval of the version that was submitted.

Emma Routledge: contributed to data formatting and data interpretation, critically appraised the manuscript and gave final approval of the version that was submitted.



Eilidh McGowan: contributed to the writing of the manuscript, critically appraised the manuscript and gave final approval of the version that was submitted.

David Lieberman, Flora Kokwaro, Lovesch Dhall: contributed to the intellectual content of the survey and data interpretation, critically appraised the manuscript and gave final approval of the version that was submitted.

Emily Clarke and Trevor Smith: critically appraised the manuscript and gave final approval of the final version that was submitted.

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