

Percutaneous endoscopic gastrostomy in Greece: a nationwide assessment of current practice

Stamatina Vogli^a, Apostolis Papaefthymiou^b, Adonis Protopapas^c, Dimitrios Kapetanios^d, Aikaterini Mantaka^e, Filippos Papakonstantinou^f, Artemis Trikola^g, Maria Fragaki^h, Paraskevi Polyzouⁱ, Konstantinos Mimidis^j, Georgios Tziatzios^k, Konstantina Paraskeva^k, Paraskevas Gkolfakis^l

Metaxa Cancer Hospital, Piraeus, Greece; Medical School, University of Thessaly, General University Hospital of Larissa, Larissa, Greece; Aristotle University of Thessaloniki, AHEPA University Hospital, Thessaloniki, Greece; "G. Papanikolaou" General Hospital of Thessaloniki, Thessaloniki, Greece; General Hospital of Chania, Crete, Greece; "Agios Savvas" cancer Hospital, Athens, Greece; Athens Naval Hospital, Athens, Greece; Venizeleio Hospital, Heraklion, Crete, Greece; Lamia General Hospital, Lamia, Greece; Democritus University of Thrace, University General Hospital of Alexandroupolis, Greece; "Konstantopoulou-Patision" General Hospital of Nea Ionia, Athens, Greece; Medical School, National and Kapodistrian University of Athens, Attikon University General Hospital, Athens, Greece

Abstract

Background Percutaneous endoscopic gastrostomy (PEG) is the standard method for long-term enteral feeding in patients unable to maintain adequate oral intake. Despite the availability of international guidelines, regional clinical practice patterns often vary. This nationwide study aimed to describe current practices, adherence to guidelines, and variability in PEG management among Greek gastroenterologists.

Methods A web-based, cross-sectional, self-reported survey was distributed to all registered members of the Hellenic Society of Gastroenterology between September and October 2024. The 36-item questionnaire assessed pre-, peri-, and postprocedural management of PEG, as well as compliance with the recommendations of the European Society of Gastrointestinal Endoscopy. Data were analyzed using descriptive statistics and chi-square tests.

Results A total of 127 gastroenterologists participated (response rate 16.5%). Neurological disorders were the leading indication for PEG placement (67.7%), followed by dementia (18.1%), and obstructive malignancies (11.8%). Only 15% reported routine multidisciplinary team (MDT) involvement in PEG decision-making, while 58% consistently administered prophylactic antibiotics prior to the procedure. Nearly 40% reported at least 1 serious adverse event during their clinical practice, most commonly in endoscopists with <10 years of experience ($P=0.03$). Half of the respondents provided nutritional guidance at discharge, and 50% distributed educational material for PEG care.

Conclusions This nationwide survey provides insight into self-reported PEG practices among Greek gastroenterologists, highlighting variability in relation to international guideline recommendations. The findings suggest potential areas for improvement, including structured MDT involvement, standardization of infection prevention practices, and enhanced training to support procedural safety and quality of care.

Keywords Percutaneous endoscopic gastrostomy, gastroenterology, survey, Greece, endoscopy

Ann Gastroenterol 2026; 39 (XX): 1-9

Conflict of Interest: None

Correspondence to: Paraskevas Gkolfakis, MD, PhD, Second Department of Gastroenterology, Medical School, National and Kapodistrian University of Athens, Attikon University General Hospital, Athens, Greece, e-mail: pgolfakis@gmail.com

Received 31 December 2025; accepted 25 April 2026; published online 30 September 2026

DOI: <https://doi.org/10.20524/aog.2026.1114>

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms

© 2026 Hellenic Society of Gastroenterology

Introduction

Percutaneous endoscopic gastrostomy (PEG) has been established as the primary procedure used to ensure adequate enteral nutrition in patients with expected long-lasting inadequate oral intake. The number of PEG procedures has been rapidly increasing worldwide, with a recent report showing ≈150,000 PEGs being placed annually in the United States [1]. To homogenize clinical practice, clinical guidelines have been developed, aiming to provide evidence-based recommendations with regard to indications, technical aspects,

www.annalsgastro.gr

periprocedural considerations and post-discharge care [2,3]. However, there are significant discrepancies in the observed practice patterns [4], which may be attributed to physician characteristics, type of practice and ethical considerations regarding patient eligibility [5].

Although PEG placement has been a routine procedure for the past few decades worldwide, there are few reports regarding real-life physicians' practices. Existing reports focus on specific aspects of care, such as the timing of placement, indications and feeding instructions, and are usually confined to small geographical regions [4,6,7]. Furthermore, many such surveys focus on the practice patterns of referring physicians, and the factors that influence the recommendation of PEG placement [4,8]. As a result, studies investigating the technical aspects of the procedure and the decision-making process of the endoscopists performing it are lacking. Finally, there are no studies assessing nationwide practices in Greece, which would highlight the level of compliance with the existing guidelines, deficiencies and discrepancies. The aim of this study was to record the daily practices of Greek gastroenterologists with regard to every aspect of PEG placement, from initial decision-making to periprocedural management and long-term care aspects.

Materials and methods

Study population and survey design

This was a cross-sectional, web-based survey conducted in Greece between September and October 2024. The questionnaire was distributed nationwide to all full and associate members of the Hellenic Society of Gastroenterology (HSG), including gastroenterology trainees. The manuscript was structured according to the Strengthening the Reporting of OBservational studies in Epidemiology (STROBE)

^aDepartment of Gastroenterology, Metaxa Cancer Hospital, Piraeus, Greece (Stamatina Vogli); ^bDepartment of Gastroenterology, Medical School, University of Thessaly, General University Hospital of Larissa, Larissa, Greece (Apostolis Papaefthymiou); ^cFirst Propaedeutic Department of Internal Medicine, Aristotle University of Thessaloniki, AHEPA University Hospital, Thessaloniki, Greece (Adonis Protopapas); ^dDepartment of Gastroenterology, "G. Papanikolaou" General Hospital of Thessaloniki, Thessaloniki, Greece (Dimitrios Kapetanos); ^eDepartment of Gastroenterology, General Hospital of Chania, Crete, Greece (Aikaterini Mantaka); ^fDepartment of Gastroenterology, "Agios Savvas" cancer hospital, Athens, Greece (Filippos Papakonstantinou); ^gDepartment of Gastroenterology, Athens Naval Hospital, Athens, Greece (Artemis Trikola); ^hDepartment of Gastroenterology, Venizeleio Hospital, Heraklion, Crete, Greece (Maria Fragaki); ⁱDepartment of Gastroenterology, Lamia General Hospital, Lamia, Greece (Paraskevi Polyzou); ^jFirst Department of Internal Medicine, Democritus University of Thrace, University General Hospital of Alexandroupolis, Alexandroupolis, Greece (Konstantinos Mimidis); ^kDepartment of Gastroenterology, "Konstantopoulou-Patision" General Hospital of Nea Ionia, Athens, Greece (Georgios Tziatzios, Konstantina Paraskeva); ^lSecond Department of Gastroenterology, Medical School, National and Kapodistrian University of Athens, Attikon University General Hospital, Athens, Greece (Paraskevas Gkolfakis)

statement [9] and the corresponding checklist is provided in Supplementary Table 1.

A survey-based design was selected to capture nationwide variation in PEG-related decision-making and periprocedural practices across different clinical settings, including elements that are not consistently documented in procedural records (e.g., multidisciplinary team (MDT) involvement, informed consent practices, discharge education and follow-up pathways). In the absence of a national PEG registry in Greece, this approach enabled a rapid mapping of current clinical practices and the identification of potential gaps in adherence to European and international guideline recommendations.

Questionnaire development and content

The Enteral Nutrition Working Group of the HSG (consisting of PG, SV, AE, AT, AM, DK, MF, FP, KM and PP) designed the survey questionnaire, based on the available literature [2,3,10]. The questionnaire included 36 items related to current practices regarding PEG procedure and was divided into 5 sections: (1) demographics; (2) training and indications; (3) technical aspects; (4) post-PEG management; and (5) other techniques and expectations. The full questionnaire is presented in Supplementary Table 2.

Questionnaire administration

The study concept and the final version of the questionnaire were approved by the HSG Governing Board. The survey was developed using the commercially available web-based platform Google Forms. It was distributed through the official HSG mailing list by sending personal email invitations with the survey link, as well as via the official HSG social media accounts (Facebook and LinkedIn), accompanied by a cover letter outlining the study's objectives. Prior to participation, respondents were required to confirm their consent, thereby agreeing to the processing and publication of anonymized data derived from the survey. Duplicate entries were prevented by the platform's built-in settings, allowing only 1 submission per respondent. Participation was voluntary and anonymous. The questionnaire was configured so that all items required a response before submission; therefore, no missing data were recorded. The initial invitation was sent on September 17, 2024, followed by 2 reminders at 2-week intervals. All responses were automatically recorded and exported to a Microsoft Excel database (Microsoft Corp., Redmond, WA, USA), where they remained anonymous to the study investigators.

Study endpoints

The primary aim of the study was to record Greek endoscopists' practice regarding PEG procedure. To this end,

data were collected on various aspects of PEG placement and management. Specifically, the questionnaire explored: (1) preprocedural management, including indications for PEG placement, multidisciplinary decision-making, informed consent practices, and referral acceptance or rejection rates; (2) periprocedural practices, such as catheter type and size, technique modifications for specific clinical indications, use of antibiotic prophylaxis, sedation methods, patient monitoring, and adherence to aseptic precautions; and (3) postprocedural management and care, encompassing the occurrence of adverse events and associated factors (experience, practice setting), the availability of institutional PEG registries, the provision of nutritional guidance at discharge, patient education materials, and the presence of structured follow-up programs. Additionally, the questionnaire was designed to evaluate compliance with the European Society of Gastrointestinal Endoscopy (ESGE) guidelines on PEG [3,11].

Statistical analysis

All variables were categorical and are presented as absolute frequencies and percentages. Comparisons between categorical variables were conducted using the chi-square (χ^2) test, with P-values <0.05 considered statistically significant. These analyses were performed to explore potential associations between respondent characteristics and key outcomes, and should be interpreted as exploratory and hypothesis-generating. All analyses were performed using STATA statistical software, version 17.0 (StataCorp LLC, College Station, TX, USA).

Ethical considerations

The study protocol was approved by the Governing Board of the HSG. Participation was voluntary and anonymous, and survey completion did not require the registration of any unique physician identifiers. All participants were informed about the confidentiality of the collected data and the anonymous and voluntary nature of the survey.

Results

A total of 127 members of the HSG participated in the survey, out of 766 registered members (response rate: 16.5%). Among these, 27 (21.4%) were gastroenterology residents. The most represented age group was 25-40 years (n=45, 35.4%), followed by the 41-50 and 51-60 age groups, both equally represented at 26.8%. Of the 127 respondents, 96 were male (76.2%). Regarding workplace setting, 62.1% (n=79) reported working in a public hospital, while 49.6% (n=63) reported affiliation with a private healthcare facility (private clinic or hospital). The majority of participants (n=87, 68.5%) were based in the 2 largest Greek cities, Athens and Thessaloniki. Concerning PEG placement activity, 66.7% (n=84) of the respondents stated

that they participate (either as primary or assisting physicians) in up to 2 PEG procedures per week. The number of weekly PEG procedures was not statistically significantly associated with any of the examined factors, such as the years since board certification, geographic location, healthcare setting or age group. The demographic and professional characteristics of the participants are presented in Table 1.

Study endpoints

Preprocedural management of PEG

The primary indication for PEG placement was neurological disorders, specifically stroke, traumatic brain injury, motor neuron diseases and Parkinson's disease, accounting for 67.7% (n=86) of participants. Dementia followed as the main indication in 18.1% (n=23) of respondents, while obstructive head-and-neck or esophageal malignancies were reported as the leading indication in 11.8% (n=15). The primary indication for PEG placement differed significantly (P=0.007) between gastroenterologists working in public versus private healthcare settings. Neurological conditions were more frequently cited as the main indication in the private sector (40.5% vs. 26.1%), whereas obstructive tumors were less commonly reported in this group (1.6% vs. 10.3%) compared to public hospitals (Fig. 1).

Table 1 Demographic and professional characteristics of survey participants (N=127)

Variable	n (%)
Age group	
25-40 years	45 (35.4%)
41-50 years	34 (26.8%)
51-60 years	34 (26.8%)
Over 60 years	14 (11.0%)
Male sex	96 (76.2%)
Years post-specialization	
Currently a resident	27 (21.4%)
<10 years	32 (25.4%)
10-20 years	35 (27.8%)
20-30 years	25 (19.8%)
>30 years	7 (5.6%)
Practice location	
Public hospital	79 (62.1%)
Private clinic/hospital	63 (49.6%)
University clinic/hospital	17 (13.4%)
Region of practice in Greece	
Athens/Thessaloniki	87 (68.5%)
Rest of Greece	40 (31.5%)
Annual PEG procedures	
0-25 (up to 2 per month)	84 (66.7%)
26-50 (about 3-4 per month)	24 (19%)
51-75 (about 5-6 per month)	10 (7.9%)
76-100 (2-3 per week)	4 (3.2%)
More than 100 (>3 per week)	4 (3.2%)

PEG, percutaneous endoscopic gastrostomy

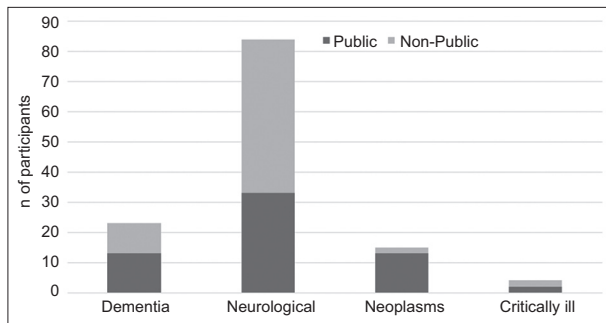


Figure 1 Distribution of participants according to healthcare sector (public vs. non-public) and primary indication for percutaneous endoscopic gastrostomy placement (n per category)

Regarding the initial PEG placement, 83.3% (n=105) of respondents reported routinely using 20 Fr and 24 Fr catheters. Notably, 31.7% (n=40) stated that in cases of head-and-neck malignancies, they modify their technique and perform a push-PEG instead. As for jejunal access, 37.8% (n=48) and 11.9% (n=15) of respondents reported using PEG-J and D-PEJ, respectively, in clinical practice.

When asked whether an MDT meeting is held prior to PEG placement, 82.0% (n=108) of gastroenterologists responded “rarely” or “never”. In addition, 47.2% (n=60) reported that the final decision regarding PEG indication is made by the gastroenterologist, while 39.4% (n=50) stated that the referring physician of the corresponding specialty makes the final call. Regarding referral refusal rates, nearly 3 out of 4 respondents (74.8%) reported that they reject up to 20% of referrals, considering them to be outside of indications. In addition, 108 of the 127 participants stated that they always obtain a signed informed consent form prior to the procedure, whereas 3.9% (n=5) reported that they rarely or never request consent. A summary of these results is provided in Table 2.

Periprocedural management of PEG

Regarding patient preparation, the majority of respondents (n=89, 70.0%) require 8-12 hours of fasting prior to PEG placement. Eight out of 10 perform the procedure under conscious sedation, while 85% stated that they always apply local anesthesia at the incision site. Continuous monitoring of vital signs (extending beyond the procedure and recovery period into the ward) was reported by 16.5% (n=21) of respondents. Regarding infection prevention measures, 74 participants (58.3%) stated that they routinely administer prophylactic antibiotics before PEG placement. Specific antisepsis steps and the corresponding adherence rates are presented in Table 3.

Postprocedural management and care of PEG

Seventy-eight respondents (61.4%) reported that they had never encountered serious adverse events during PEG

Table 2 Preprocedural practices and decision-making processes related to percutaneous endoscopic gastrostomy (PEG) placement (N=127)

Variable	n (%)
Main indication for PEG	
Dementia	23 (18.1%)
Neurological disorders	86 (67.7%)
Obstructive neoplasms	15 (11.8%)
High metabolic demand conditions	3 (2.4%)
PEG catheter size	
18 Fr	20 (15.9%)
20 Fr	44 (34.9%)
24 Fr	61 (48.4%)
MDT before PEG	
Always	6 (4.7%)
Usually	13 (10.2%)
Rarely	45 (35.4%)
Never	63 (49.6%)
Final decision on PEG placement	
Attending physician	50 (39.4%)
Relatives/caregivers	13 (10.2%)
Gastroenterologist	60 (47.2%)
Rejection rate	
No rejection	22 (17.3%)
Up to 20%	95 (74.8%)
20-50%	8 (6.3%)
>50%	2 (1.6%)
Push-PEG in head & neck cancers	40 (31.7%)
Direct PEJ use in clinical practice	15 (11.9%)
PEG-J use in clinical practice	48 (37.8%)

MDT, multidisciplinary team; PEG-J, percutaneous endoscopic transgastric jejunostomy

Table 3 Periprocedural practices in percutaneous endoscopic gastrostomy (PEG) placement (N=127)

Variable	n (%)
Fasting hours, 8-12 hours	89 (70.0%)
Sedation	74 (58.3%)
Conscious sedation with anesthesiologist	29 (22.8%)
Conscious sedation without anesthesiologist	20 (15.7%)
Deep sedation with anesthesiologist	
Infection prevention/antisepsis measures	
Always prophylactic antibiotic use	74 (58.3%)
Surgical hand washing	58 (45.7%)
Sterile gown, gloves, cover, mask	65 (51.2%)
Sterile field by bedside	111 (87.4%)
Skin antisepsis at the incision site	119 (93.7%)
Sterile materials & technique for instruments	113 (89%)
Limit personnel in endoscopy room	34 (26.8%)
Always local anesthetic	108 (85%)
Continuous vital signs monitoring	
During PEG placement	34 (26.8%)
During PEG and recovery	72 (56.7%)
During PEG, recovery and hours in ward	21 (16.5%)

placement. Participants were asked to indicate the most common serious adverse events they had experienced (at least 1 incident), with the option of selecting more than 1 category (Supplementary Table 2). Overall, 22 respondents (17.3%) reported having encountered at least 1 case of perforation/peritonitis, 16 (12.6%) reported severe bleeding, and 10 (7.9%) reported at least 1 PEG-related death. Among the examined variables (years post-specialization, practice location, annual PEG volume, and consistent use of prophylactic antibiotics), only years post-specialization showed a significant association with adverse events ($P=0.03$), whereas no significant differences were observed for the remaining factors. Participants with less than 10 years of experience reported the highest rate (50.0%) of at least 1 serious complication or death, whereas residents reported the lowest rate (11.0%). Those with 10-20 years or 20-30 years post-specialization reported at least 1 serious complication in 34.3% and 48.0% of cases, respectively.

Approximately half of the endoscopists (51.2%) reported that they personally provide nutritional guidance at the time of patient discharge, while in 31.5% ($n=40$) of cases, a dedicated nutrition department assumes this responsibility. Educational or informational material on PEG use and care is provided by half of the respondents ($n=60$, 50.4%). A detailed overview of responses related to postprocedural management is presented in Table 4.

Discussion

This is the first nationwide study to explore current practices regarding PEG procedure among Greek gastroenterologists. By capturing procedural volumes, techniques, decision-making patterns and postprocedural care, the study offers valuable insight into how gastrostomy is approached and managed in contemporary Greek clinical settings. More specifically, the survey revealed that neurological disorders represent the predominant indication for PEG placement in Greece, while multidisciplinary involvement in the decision-making process remains limited. Adherence to aseptic precautions and patient monitoring practices varied, and nearly 4 in 10 respondents reported not consistently administering prophylactic antibiotics before PEG placement. Approximately 40% of participants had encountered at least 1 major adverse event during their clinical

experience, with complication rates differing across levels of professional experience. Finally, only half of the respondents reported providing nutritional guidance and educational material to patients at discharge, while structured follow-up programs were largely lacking.

The exact number of PEG procedures performed annually in Greece remains unknown, and large-scale, prospective nationwide studies reporting procedure volumes are lacking across Europe. At the same time, the most common indications for PEG placement vary considerably among studies conducted in different countries and time periods. In a landmark national survey by Kurien *et al* [10], which included responses from 83% of endoscopy units across the United Kingdom, it was estimated that approximately 17,000 PEG procedures were performed annually. Neurological disorders were the leading indication for PEG placement, consistent with our overall findings. Notably, however, the primary indication differed significantly between gastroenterologists working in public versus private healthcare settings. Neurological conditions were more frequently reported as the main indication in the private sector, whereas obstructive tumors were less commonly cited compared with public hospitals. This difference may be clinically relevant and may reflect variations in referral pathways, case mix, and resource availability between healthcare settings. Specifically, oncological cases may be more frequently managed in public tertiary centers, while neurological patients requiring long-term enteral feeding may be more commonly referred to the private sector for elective PEG placement.

In the study by Kurien *et al* [10], dementia was reported as the primary indication for PEG placement by 36% of respondents, which is approximately twice the proportion observed in our cohort (18%). A plausible explanation is that dementia is increasingly regarded as a less appropriate indication for PEG placement, particularly in advanced stages of the disease, where alternative approaches to nutritional support are often preferred [2]. This shift in practice has been documented in the United States, where the proportion of nursing home residents with advanced dementia and feeding dependency receiving feeding tubes has declined by approximately 50% over the past 15 years [12]. Similarly, a recent nationwide study from South Korea reported dementia as the indication for only 8% of all PEG placements [13].

Apart from differences in indications, decision-making processes and interdisciplinary collaboration emerged as another area of variability. In our study, 85% of respondents reported that an MDT approach was not involved in the decision to proceed with PEG placement, a finding consistent with similarly low rates reported in other studies [13,14]. In addition, half of the respondents stated that the final decision for PEG placement was made by the referring physician or by the patient's family members, rather than through a structured team discussion. According to ESGE guidelines [3], the involvement of an MDT is strongly recommended to ensure that PEG placement is performed for appropriate indications and that patient-centered, ethically sound decisions are made.

An MDT, including gastroenterologists, dietitians, speech and language therapists, neurologists, oncologists and specialized nurses, can offer a more holistic assessment of each patient's

Table 4 Postprocedural care, adverse events, and follow-up practices in percutaneous endoscopic gastrostomy (PEG) placement (N=127)

Variable	n (%)
At least 1 serious adverse event	
No	78 (61.4%)
Perforation/peritonitis	22 (17.3%)
Bleeding	16 (12.6%)
Death	10 (7.9%)
PEG registry	83 (65.4%)
Nutrition department for post-PEG guidance	40 (31.5%)
Informational material	64 (50.4%)

nutritional needs, prognosis and quality of life expectations. Such collaboration helps to clarify goals of care, optimize timing of the procedure, and improve post-PEG management through shared expertise. Studies focusing on oncology and neurodegenerative disease populations have demonstrated that MDT-driven decision-making reduces inappropriate PEG placements, enhances communication with families, and contributes to better clinical and ethical outcomes [15-17].

This lack of structured multidisciplinary review may partially explain our finding that 75% of gastroenterologists reject approximately 1 in 5 PEG referrals because they lack clear indications. Notably, even in healthcare systems where MDT meetings are routinely implemented—such as in the study by Kurien *et al* [10]—high rates of referral refusals have still been documented, underscoring the complexity of case selection and the ethical challenges inherent to PEG decision-making.

Our study revealed both areas of strong adherence to international guidelines, and domains where endoscopic practice diverged from recommended standards. One notable deviation concerned the use of the push technique for patients with head-and-neck or esophageal malignancies. Although ESGE guidelines recommend this approach to minimize the risk of tumor seeding [11], only a third of the participants reported applying it in practice. The push technique is favored in this setting because of potential seeding of malignant cells along the catheter tract, and technical limitations that may prevent safe passage of the pull-type system. In the study by Ellrichmann *et al* [18], malignant cells were detected in brush cytology samples from the PEG tubing and insertion site in nearly 25% of patients with oropharyngeal or esophageal cancer, although none developed macroscopic recurrence. In contrast, 2 large retrospective series [19,20] found no clinically evident tumor seeding, while minor adverse events, such as tube dislodgement and periprocedural bleeding, were more frequent with the push technique. Major complication rates, however, did not differ significantly between techniques. The greater familiarity and shorter learning curve associated with the pull-PEG procedure, along with the lower overall material cost, may explain its continued predominance in clinical practice despite guideline recommendations.

In the present study, 39% of respondents reported having encountered at least 1 serious PEG-related adverse event (perforation/peritonitis, severe bleeding or death) during their clinical practice. However, these findings reflect self-reported cumulative experience, rather than audited complication rates, and should not be interpreted as incidence estimates or directly compared with rates reported in prospective cohorts or registry-based studies [10,13,14]. The relatively high proportion of respondents reporting serious adverse events may be partly attributable to the retrospective, web-based design of the survey, as responses relied on participants' recall rather than standardized, systematically collected outcome data, and may also have been influenced by selection bias.

Moreover, gastroenterology residents were included among respondents, which may have affected the accuracy of adverse event reporting. Importantly, the lower frequency of

reported serious adverse events among residents should not be interpreted as evidence of safer practice; rather, it probably reflects reduced procedural independence and/or fewer PEG procedures performed as primary operators, with most procedures being conducted under supervision. This may have contributed to differential reporting of complications across experience strata. Therefore, any observed associations between experience level and adverse events should be interpreted with caution and viewed as exploratory, as the descriptive survey design and the absence of adjustment for potential confounders (e.g., institutional volume, case complexity, and referral patterns) do not allow definitive conclusions or causal inferences. Additionally, no statistically significant associations were observed with practice location, annual PEG volume or consistent use of prophylactic antibiotics, and several subgroup comparisons were limited by sparse data (very small or zero counts) in certain categories. Future studies using larger datasets or registry-based designs would be valuable to further explore these associations and validate the present findings.

Finally, the questionnaire did not provide standardized definitions for adverse event categories (e.g., "severe bleeding"), which may have introduced variability in interpretation across participants. Collectively, these limitations should be considered when interpreting the reported frequency of complications, and the adverse event data should be viewed with caution and critical appraisal.

Another noteworthy finding was the relatively low proportion of endoscopists (58%) who reported consistently administering prophylactic antibiotics prior to PEG placement. This is concerning, given the established infectious risk of the procedure [21,22]. ESGE guidelines recommend a single intravenous dose of a beta-lactam antibiotic before PEG insertion [3], and multiple clinical trials [23,24] have demonstrated that prophylaxis significantly reduces postprocedural infection rates. A meta-analysis by Lipp *et al* [25] further confirmed that preprocedural antibiotics halve the risk of infection. The inconsistent use of antibiotic prophylaxis observed in our cohort probably reflects variability in institutional protocols and reliance on individual clinical judgment, as well as concerns about antimicrobial resistance. Additionally, the lack of structured multidisciplinary pathways for PEG decision-making may further contribute to the inconsistent adoption of evidence-based infection prevention strategies.

A summary of key PEG practice characteristics across the aforementioned studies is provided in Table 5. Overall, considerable heterogeneity is observed across studies in terms of design, study populations and reported outcomes. In particular, adverse event data are derived from different sources, including self-reported survey data and audited clinical records, with variable definitions and reporting timeframes. Therefore, these findings should be interpreted descriptively, and direct comparisons of adverse event rates across studies should be approached with caution.

This study has several notable strengths. To our knowledge, it is the first nationwide study to explore clinical practices related to PEG placement among gastroenterologists in Greece. Importantly, PEG placement in Greece is predominantly

Table 5 Summary of key percutaneous endoscopic gastrostomy (PEG) practice characteristics across published studies

Study (author, year, country) [ref.]	Study design / population	Sample size (n)	Response rate	Main indications	Antibiotic prophylaxis (routine use %)	MDT involvement (%)	Technique	Serious AEs reporting method (self-reported vs audited)	Serious AEs ¹
Present study (Greece, 2026)	Cross-sectional survey of Greek gastroenterologists (self-reported practice patterns)	127 gastroenterologists	16.5%	Neurological disorders 67.7%; dementia 18.1%; obstructive malignancy 11.8%	58.3% routine prophylaxis	Routine MDT involvement 15% (MDT meeting "rarely/never" 82%)	Push-PEG used in H&N malignancy cases by 31.7%	Self-reported (survey)	39% reported ≥1 serious AE in career; perforation/peritonitis 17.3%; severe bleeding 12.6%; PEG-related death 7.9%
Kurien <i>et al</i> 2011, UK [10]	National survey evaluating PEG service provision across UK units/hospitals	215 hospitals/units	83%	Neurological disorders were the main indications (details NR); Dementia 36%	93% routine prophylaxis	Formal MDT meeting 40%	Pull vs Push-PEG NR	Serious AEs NR	Serious AEs NR
Park <i>et al</i> 2024, South Korea [13]	Multicenter institutional survey	62 hospitals	~30%	Neurological disorders were the main indications (details NR)	Timing breakdown: 48% pre, 28% pre+post, 16% post-only, 8% none	MDT 3% always; 60% none	Pull-PEG 91.9%; Push-PEG push 17%	Self-reported (institutional questionnaire)	Major complications 10%, minor 26%; peritonitis 2.2%; bleeding 2.2%; 30-day mortality 0.1%
Mohandas <i>et al</i> 2019, International [14]	International survey of physicians' perspectives on PEG feeding in advanced dementia	50 physicians	NR	Advanced dementia	NR	MDT meeting 70%	Pull vs Push-PEG NR	Self-reported (survey perceptions/experience)	38% reported they had seen mortality within 4 weeks after PEG
Dragan <i>et al</i> 2021, Belgium [15]	National survey among radiation oncologists on prophylactic PEG in locally advanced H&N cancer	24 centers	100%	Locally advanced cancer during chemotherapy-radiotherapy	NR	MDT board discussion 83%	Placement technique: endoscopic 68%, radiologic 16%, laparoscopic 16%	Self-reported (survey)	Serious AEs NR (survey focused on indications/strategy)
Sarkar <i>et al</i> 2017, UK [16]	Retrospective single-center study	40 patients	100%	Neurodegenerative disease	NR	Swallow assessment by speech & language therapist 100% prior to PEG	Pull vs Push-PEG NR	Audited/medical record	30-day mortality 8%

¹Not directly comparable across studies due to differences in study design (survey vs audited data), adverse event definitions, reporting timeframes, and data sources
MDT, multidisciplinary team; AEs, adverse events; NR, not reported; H&N, head and neck

performed by gastroenterologists, the majority of whom are registered members of the HSG; therefore, our sampling frame was expected to capture the main provider group involved in PEG placement nationwide. Nevertheless, we cannot exclude that a smaller proportion of PEG procedures may also be performed by other specialties (e.g., surgeons), who were not included in the present sampling strategy.

In addition, the survey achieved broad geographic coverage, with participation from physicians across multiple regions and professional levels, including both specialists and trainees. As such, it provides a valuable snapshot of current practices and may serve as a foundation for larger, prospective, registry-based studies. By mapping the current clinical landscape, our findings may also help inform future initiatives aimed at improving standardization, implementation of guideline recommendations, and overall quality of care in PEG-related procedures.

Despite the valuable insights provided, the present study also has important limitations that should be acknowledged. The primary limitation is the relatively low response rate (16.5%), which introduces a substantial risk of selection and non-response bias and directly affects the generalizability of our findings. Respondents may systematically differ from non-respondents in key parameters such as procedural volume, adherence to guideline recommendations and MDT involvement. Importantly, as PEG provision is often concentrated in higher-volume units, the proportion of clinicians who responded does not necessarily reflect the proportion of PEG procedures performed nationwide. In the absence of a national PEG registry, the proportion of total procedural volume represented by the respondents cannot be determined; therefore, the procedural coverage of our sample may be either over- or underestimated.

In addition, as a cross-sectional study based on a self-administered online questionnaire, our results are inherently subject to recall and self-reporting bias. The respondent profile may also have been skewed toward younger gastroenterologists and trainees, potentially over-representing less experienced endoscopists. This imbalance may have influenced key findings, including self-reported adverse events and reported adherence to standard practices (e.g., antibiotic prophylaxis and MDT involvement), and may not fully reflect practice patterns in high-volume or tertiary referral centers. Therefore, the observed associations should be interpreted with caution and ideally validated in appropriately powered multicenter audits or registry-based studies.

We acknowledge that a retrospective (or prospective) audit of consecutive PEG cases would offer more objective and measurable real-world data on technique selection, antibiotic prophylaxis, complication rates, and compliance with European and international guidelines. However, such an approach requires standardized documentation and, ideally, a national registry, which is currently lacking in Greece. The present survey was therefore designed as a first step to map practice patterns and identify heterogeneity and potential implementation gaps at a nationwide level. Importantly, the reported adverse events in our study reflect physicians' cumulative experience and perceptions, rather than event

rates derived from procedural registries, and should not be interpreted as true complication incidence. Future multicenter studies based on hospital records or a standardized national PEG registry could validate the present findings, quantify complication rates using uniform definitions, and explore variability across regions and healthcare settings.

In conclusion, this nationwide survey provides a snapshot of self-reported PEG practices in Greece, suggesting variability in relation to international guideline recommendations. Our findings point to potential opportunities to strengthen multidisciplinary decision-making, infection prevention measures, and structured postprocedural education and follow-up pathways. However, given the self-reported nature of the data, the lack of a predefined reporting timeframe for adverse events, the relatively low response rate, and the possibility of clustering of responses from the same institutions, these findings should be interpreted with caution and may not be fully generalizable to all PEG providers nationwide. Further multicenter audits or registry-based studies are warranted to validate and expand upon these observations.

Summary Box

What is already known:

- Percutaneous endoscopic gastrostomy (PEG) is widely used for long-term enteral feeding, with substantial international variability in indications and practice patterns
- Multidisciplinary decision-making improves the appropriateness of PEG placement and patient-centered outcomes
- Antibiotic prophylaxis prior to PEG significantly reduces postprocedural infectious complications

What the new findings are:

- This study provides the first nationwide survey-based snapshot of self-reported PEG practices among Greek gastroenterologists, capturing procedural techniques, decision-making patterns, and postprocedural care
- Neurological disorders are the primary indication for PEG in Greece, while multidisciplinary team involvement remains uncommon
- Implementation gaps were identified in post-PEG management, including low rates of structured nutritional counseling, patient education, and follow-up pathways

References

1. Stein DJ, Moore MB, Hoffman G, et al. Improving all-cause inpatient mortality after percutaneous endoscopic Gastrostomy.

- Dig Dis Sci* 2021;**66**:1593-1599.
2. Bischoff SC, Austin P, Boeykens K, et al. ESPEN guideline on home enteral nutrition. *Clin Nutr* 2020;**39**:5-22.
 3. Arvanitakis M, Gkolfakis P, Despott EJ, et al. Endoscopic management of enteral tubes in adult patients - Part 1: definitions and indications. European Society of Gastrointestinal Endoscopy (ESGE) Guideline. *Endoscopy* 2021;**53**:81-92.
 4. Modi SC, Whetstone LM, Cummings DM. Influence of patient and physician characteristics on percutaneous endoscopic gastrostomy tube decision-making. *J Palliat Med* 2007;**10**:359-366.
 5. Schneider PL, Fruchtman C, Indenbaum J, Neuman E, Wilson C, Keville T. Ethical considerations concerning use of percutaneous endoscopic gastrostomy feeding tubes in patients with advanced dementia. *Perm J* 2021;**25**:20.302.
 6. Verhage AH, Vliet ACM. A survey of regional percutaneous endoscopic gastrostomy discharge practices. *Nutr Clin Pract* 2000;**15**:244-248.
 7. Wilmskoetter J, Simpson AN, Simpson KN, et al. Practice patterns of percutaneous endoscopic gastrostomy tube placement in acute stroke: are the guidelines achievable? *J Stroke Cerebrovasc Dis* 2016;**25**:2694-2700.
 8. Callahan CM, Haag KM, Buchanan NN, Nisi R. Decision-making for percutaneous endoscopic gastrostomy among older adults in a community setting. *J Am Geriatr Soc* 1999;**47**:1105-1109.
 9. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of OBservational studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *J Clin Epidemiol* 2008;**61**:344-349.
 10. Kurien M, Westaby D, Romaya C, Sanders DS. National survey evaluating service provision for percutaneous endoscopic gastrostomy within the UK. *Scand J Gastroenterol* 2011;**46**:1519-1524.
 11. Gkolfakis P, Arvanitakis M, Despott EJ, et al. Endoscopic management of enteral tubes in adult patients - Part 2: Peri- and post-procedural management. European Society of Gastrointestinal Endoscopy (ESGE) Guideline. *Endoscopy* 2021;**53**:178-195.
 12. Mitchell SL, Mor V, Gozalo PL, Servadio JL, Teno JM. Tube feeding in US nursing home residents with advanced dementia, 2000-2014. *JAMA* 2016;**316**:769-770.
 13. Park JW, Kim TG, Cho KB, et al; Research for Multidisciplinary Therapeutic Endoscopy group of Korean Society of Gastrointestinal Endoscopy. A multicenter survey of percutaneous endoscopic gastrostomy in 2019 at Korean medical institutions. *Gut Liver* 2024;**18**:77-84.
 14. Mohandas N, Kumar R, Leelakrishnan V, Sharma S, Aparanji K. International survey of physicians' perspectives on percutaneous endoscopic gastrostomy tube feeding in patients with dementia and review of literature. *Cureus* 2019;**11**:e4578.
 15. Dragan T, Duprez F, Van Gossum A, et al. Prophylactic gastrostomy in locally advanced head and neck cancer: results of a national survey among radiation oncologists. *BMC Cancer* 2021;**21**:656.
 16. Sarkar P, Cole A, Scolding NJ, Rice CM. Percutaneous endoscopic gastrostomy tube insertion in neurodegenerative disease: a retrospective study and literature review. *Clin Endosc* 2017;**50**:270-278.
 17. Van Eenennaam RM, Kruitthof WJ, Kruitwagen-Van Reenen ET, van den Berg LH, Visser-Meily JMA, Beelen A. Current practices and barriers in gastrostomy indication in amyotrophic lateral sclerosis: a survey of ALS care teams in The Netherlands. *Amyotroph Lateral Scler Frontotemporal Degener* 2022;**23**:242-251.
 18. Ellrichmann M, Sergeev P, Bethge J, et al. Prospective evaluation of malignant cell seeding after percutaneous endoscopic gastrostomy in patients with oropharyngeal/esophageal cancers. *Endoscopy* 2013;**45**:526-531.
 19. Kucha P, Zorniak M, Szmit M. To push or to pull? A clinical audit on the efficacy and safety of the pull and push percutaneous endoscopic gastrostomy techniques in oncological patients. *United European Gastroenterol J* 2023;**11**:951-959.
 20. Bouchiba H, Jacobs MAJM, Bouma G, Ramsoekh D. Outcomes of push and pull percutaneous endoscopic gastrostomy placements in 854 patients: a single-center study. *JGH Open* 2022;**6**:57-62.
 21. Tae CH, Lee JY, Joo MK, et al; Korean Society of Gastrointestinal Endoscopy Task Force on Clinical Practice Guidelines. Clinical practice guidelines for percutaneous endoscopic gastrostomy. *Clin Endosc* 2023;**56**:391-408.
 22. Khashab MA, Chithadi KV, Acosta RD, et al; ASGE Standards of Practice Committee. Antibiotic prophylaxis for GI endoscopy. *Gastrointest Endosc* 2015;**81**:81-89.
 23. Blomberg J, Lagergren P, Martin L, Mattsson F, Lagergren J. Novel approach to antibiotic prophylaxis in percutaneous endoscopic gastrostomy (PEG): randomised controlled trial. *BMJ* 2010;**341**:c3115.
 24. Adachi Y, Akino K, Mita H, et al. Systemic prophylactic antibiotics for the modified introducer method for percutaneous endoscopic gastrostomy: a prospective, randomized, double-blind study. *J Clin Gastroenterol* 2016;**50**:727-732.
 25. Lipp A, Lusardi G. Systemic antimicrobial prophylaxis for percutaneous endoscopic gastrostomy. *Cochrane Database Syst Rev* 2013;**2013**:CD005571.

Supplementary material

Supplementary Table 1 STROBE checklist for cross-sectional studies [9]

	Item No	Recommendation	Where addressed in the manuscript
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	Title "Percutaneous endoscopic gastrostomy in Greece: a nationwide assessment of current practice". Abstract – first sentence. Abstract: Summarizes background, objectives, methods (survey among HSG members), key numerical findings (response rate, main results), and conclusions. Balanced, with no over-interpretation.
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Introduction – paragraphs 1-2: clinical relevance of PEG, need for standardization, lack of Greek data.
Objectives	3	State specific objectives, including any prespecified hypotheses	Last paragraph of Introduction: "The aim of this study was to..."
Methods			
Study design	4	Present key elements of study design early in the paper	Methods – first paragraph: nationwide, web-based, cross-sectional survey.
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow up, and data collection	Methods – "Study design and population": conducted among HSG members during Sept-Oct 2024.
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	Methods – "Study design and population": all HSG members invited via email and social media.
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Methods – "Study endpoints": pre-, peri-, postprocedural management, adverse events, compliance with ESGE.
Data sources/measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than 1 group	Methods – "Questionnaire development": structured 36-item survey, validated by expert panel.
Bias	9	Describe any efforts to address potential sources of bias	Methods – mention of anonymous participation, standardized online format, voluntary response.
Study size	10	Explain how the study size was arrived at	Methods – "Data collection": survey distributed to all 766 HSG members; response rate reported.
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Methods – "Statistical analysis": categorical variables summarized as n (%); χ^2 used for comparisons.
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Methods – "Statistical analysis": STATA 17.0, descriptive statistics, χ^2 tests, $P < 0.05$ threshold.
		(b) Describe any methods used to examine subgroups and interactions	Not applicable – no predefined subgroup or interaction analyses were performed, as the study aimed to provide a descriptive overview of practices.
		(c) Explain how missing data were addressed	Methods – "Data handling": Incomplete responses were excluded from individual item analyses (pairwise deletion). The overall sample (n=127) reflects fully submitted questionnaires.
		(d) If applicable, describe analytical methods taking account of sampling strategy	Not applicable – the survey included all active members of the Hellenic Society of Gastroenterology; no sampling or weighting was applied.
		(e) Describe any sensitivity analyses	Not applicable – no sensitivity analyses were conducted given the descriptive, cross-sectional design.

(Contd...)

Supplementary Table 1 (*Continued*)

	Item No	Recommendation	Where addressed in the manuscript
Results			
Participants	13	(a) Report numbers of individuals at each stage of study—e.g., numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow up, and analyzed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	Results – first paragraph: A total of 766 HSG members were invited to participate; 127 completed the survey (response rate: 16.5%). All submitted responses were included in the final analysis. Not applicable – reasons for non-participation were not collected given the anonymous, voluntary, web-based design of the survey. A flow diagram was not created, as the study involved a single survey round with a clearly defined eligible population (all HSG members).
Descriptive data	14	(a) Give characteristics of study participants (e.g., demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest	Results – first paragraph and Table 1: Demographic and professional characteristics of participants. Information on PEG activity (procedural volume) and exposure to different clinical settings also presented. Methods – “Data handling”: All questions were mandatory in the online form; therefore, there were no missing data for key variables included in the analysis.
Outcome data	15	Report numbers of outcome events or summary measures	Results – throughout subsections (Tables 2-4; percentages for each response category).
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Results and Tables 1-4: Unadjusted frequencies, percentages, and p-values from chi-square tests are reported. No adjusted analyses or confidence intervals were performed. Tables 1-3: Age (25-40, 41-50, 51-60, >60 years), years since board certification (Resident, <10, 10-20, 20-30, >30), and PEG volume per year (0-25, 26-50, 51-75, 76-100, >100). Not applicable – no risk estimates were calculated in this descriptive cross-sectional study.
Other analyses	17	Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses	Not applicable (descriptive cross-sectional study).
Discussion			
Key results	18	Summarize key results with reference to study objectives	Discussion – opening paragraph summarizing main findings.
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Discussion – “Limitations” section: recall bias, selection bias, inclusion of residents, definition variability.
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Discussion – comparison with international literature (UK, Korea, US studies) and interpretation of deviations. Table 5.
Generalizability	21	Discuss the generalizability (external validity) of the study results	Discussion – final paragraph: applicability to Greek gastroenterology practice and implications for training.
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Acknowledgments – “No external funding was received.”

Supplementary Table 2 Questionnaire used in the nationwide survey on PEG practices among Greek gastroenterologists (36 items)

Section	Question	Response type / Options
1. Demographics	1. What is your age group?	Multiple choice: A 25-40 B 41-50 C 51-60 D >60
	2. What is your sex?	Multiple choice: A Male B Female C Other
	3. How many years have passed since obtaining your medical specialty title?	Multiple choice: A Resident B <10 C 10-20 D 20-30 E >30
	4. Where do you practice medicine?	Multiple choice: A General public hospital B Private hospital C Oncology hospital D Military hospital E University hospital/clinic F Private practice only
	5. In which region of Greece do you work?	Multiple choice: A Athens/Attica B Thessaloniki C Macedonia (excl. Thessaloniki) D Peloponnese E Central Greece F Epirus G Thessaly H Crete I Other (specify)
2. Training and indications	6. How many PEG procedures do you participate in annually (either as primary or secondary physician)?	Multiple choice: A 0-25 (up to 2/month) B 26-50 (3-4/month) C 51-75 (5-6/month) D 76-100 (2-3/week) E >100 (>3/week)
	7. How did you learn the PEG placement procedure?	Multiple choice: A During residency B Post-residency training abroad C Post-residency training in Greece D From colleagues in practice
	8. What is the most common indication for which you place PEGs?	Multiple choice: A Dementia B Neurological disorders C Obstructive neoplasms D High metabolic demand conditions E Other (specify)
	9. Besides referring physicians from other specialties, do you receive PEG referrals from other professionals?	Multiple choice: A No B Yes, dietitians C Yes, speech/occupational therapists D Other (specify)
	10. How often is a multidisciplinary meeting held before PEG placement?	Multiple choice: A Always B Usually C Rarely D Never
	11. If such a meeting does not take place, do you think it would be beneficial to introduce one?	Multiple choice: A Definitely yes B Probably yes C Probably not D Definitely not
	12. In your opinion, who makes the final decision on PEG placement?	Multiple choice: A Attending physician B Relatives/caregivers C Gastroenterologist D Other (specify)
	13. What percentage of referrals do you reject for PEG placement due to lack of indication?	Multiple choice: A Never reject B Up to 20% C 20-50% D >50%
	14. Have you ever felt pressured to perform a PEG you considered inappropriate?	Multiple choice: A Never B Yes – by patient C Yes – by family D Yes – by referring physicians
3. Technical aspects	15. Prior to PEG placement, is a written informed consent form signed by the patient (or caregiver)?	Multiple choice: A Always B Usually C Rarely D Never
	16. What types of enteral feeding catheters do you place in clinical practice?	Multiple selection: A Pull-type B Push-type C Direct percutaneous endoscopic jejunostomy (D-PEJ) D PEG-J
	17. What catheter size do you use for initial PEG placement?	Multiple choice: A 18 Fr B 20 Fr C 24 Fr D Other (specify)
	18. Do you modify the PEG placement technique based on the indication?	Multiple choice: A No, always pull B Yes, push for neoplastic cases C Don't know / No answer
	19. Is radiological assistance available for PEG placement at your center?	Multiple choice: A Yes B No C Don't know
	20. How many hours of fasting do you require before PEG placement?	Open-ended response
	21. Do you administer prophylactic antibiotics before PEG placement?	Multiple choice: A Always B Most of the time C Sometimes D Never
	22. What type of sedation do you usually administer during PEG placement?	Multiple choice: A Conscious without anesthesiologist B Conscious with anesthesiologist C Deep with anesthesiologist D Other (specify)

(Contd...)

Supplementary Table 2 (Continued)

Section	Question	Response type / Options
	23. What is your practice regarding continuous vital-sign monitoring during PEG placement?	Multiple choice: A During PEG only B During PEG + recovery C During PEG + a few hours post-procedure D Other (specify)
	24. Which aseptic measures do you consistently follow before PEG placement?	Multiple selection: A Surgical hand washing B Sterile gown/gloves/mask C Sterile field D Skin antisepsis E Sterile handling of instruments F Limit personnel in room
	25. Do you administer local anesthesia at the incision site?	Multiple choice: A Always B Most of the time C Sometimes D No
	26. What are the most common serious adverse events related to PEG placement (≥ 1 incident)?	Multiple selection: A None B Perforation/Peritonitis C Severe bleeding D Death E Other (specify)
4. Post-PEG management	27. Does your center maintain a registry of endoscopically placed gastrostomies/jejunostomies?	Multiple choice: A Yes B No C Don't know
	28. Is there a nutrition department providing dietary guidance after PEG placement?	Multiple choice: A Yes – provides guidance B Yes – no guidance C No
	29. Before discharge, who provides dietary instructions?	Multiple choice: A Gastroenterologist B Dietitian C Attending physician D Other (specify)
	30. Before discharge, who provides instructions on PEG use and care?	Multiple choice: A Gastroenterologist B Dietitian C Attending physician D Other (specify)
	31. Do you provide informational material on PEG care and use?	Multiple choice: A Yes B No C Don't know
	32. After discharge, do you offer a structured follow-up program for PEG patients?	Multiple choice: A Yes B No C Only upon request/complications
5. Other techniques and expectations	33. Are you familiar with direct percutaneous endoscopic jejunostomy (D-PEJ) placement?	Multiple choice: A Yes – perform B No – would like training C No – not interested
	34. Are you familiar with percutaneous endoscopic gastrostomy with jejunal extension (PEG-J)?	Multiple choice: A Yes – perform B No – would like training C No – not interested
	35. Are you familiar with administration of parenteral nutrition formulas?	Multiple choice: A Yes – manage B No – would like training C No – not interested
	36. In what ways could the Hellenic Society of Gastroenterology support clinical practice in enteral nutrition?	Multiple selection + Open comments: A Hands-on workshops B Seminars/webinars C Patient/caregiver materials D Audiovisual material E National registry