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Pre- and post-procedural quality indicators for colonoscopy: A nationwide survey

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ABSTRACT

Background: The provision of high-quality colonoscopy can be assessed by evaluating technical aspects of the procedure and, at individual center level, by comparing structural indicators and institutional policies for managing peri-procedural issues with guideline recommendations.
Aim: To assess the colonoscopy quality (CQ) in Italy at center level.
Methods: Gastroenterologists participating in a nationwide colonoscopy education initiative provided information on structural indicators of their centers and on institutional policies by answering 10 multiple-choice clinical scenarios. Practice variation across centers and compliance with guidelines were analyzed.
Results: Data from 282 Italian centers were evaluated. Overall, a significant proportion of centers did not meet CQ standards as concerns endoscopy facilities and equipments (e.g., dedicated recovery room, dirty-to-clean path, reporting software). CQ assurance programs were implemented in only 25% of centers. Concerning peri-procedural issues, main discrepancies with guidelines were recorded in the underuse of split-dose preparation (routinely adopted by 18% of centers), the routine request of coagulation tests prior to colonoscopy (30%), the routine interruption of aspirin for polypectomy (18%), and the adoption of 3-year surveillance for low-risk adenoma (49%).
Conclusions: Present survey shows a significant variation in the CQ of endoscopy centers in Italy on many items of colonoscopy practice that should be targeted for future interventions.
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1. Introduction

Colonoscopy plays a pivotal role in colorectal cancer (CRC) prevention and diagnosis, but its effectiveness depends on the quality of the examination. High-quality colonoscopy delivers better health outcomes (i.e., lower risk of interval CRC) [1,2], better patient experience, and fewer repeated procedures [3]. Although the overall quality of colonoscopy has significantly improved over the last few years, it can still vary considerably across centers and endoscopists.

Despite a set of quality indicators (QI) for the different steps of the colonoscopy procedure (i.e., pre-procedure, intra-procedure, and post-procedure) [4–6] has been developed, most studies on colonoscopy quality are focused on few key-performance measures mainly related to the technical aspects of the examination, such as adenoma detection and caecal intubation rate [1,2,7–9]. Nevertheless, the provision of high-quality colonoscopy is complex and it results from the interaction of a myriad of factors other than technical ones. To this regard, the characteristics and conditions of the healthcare institutions in which digestive endoscopy is delivered (structural indicators; e.g., endoscopy volume and workforce, type of instruments and other endoscopy equipment), and the institutional policies for patient care before (e.g., bowel preparation, management of anti-thrombotic therapy), during (e.g., sedation) and after (e.g., post-polypectomy surveillance) the examination [10] may also influence the overall quality of colonoscopy. For each of these areas (domains) of clinical practice [10], international professional GI societies have issued practice guidelines in order to advise on the best strategies, according to the available evidence, and optimize patient care. In this perspective, the quality of colonoscopy should be assessed not only by measuring individual endoscopist performance, but also, at endoscopy center level, by comparing local institutional policies for each domain to the evidence-based guideline recommendations [11].

The aim of present survey, including a large number of endoscopy units of both academic and non-academic hospitals all over Italy, was to explore the variability of colonoscopy practice across centers as concerns relevant periprocedural issues and to determine the adherence to current guidelines, in order to provide a snapshot of the quality of Italian endoscopy services and identify areas that might benefit from further research.

2. Methods

In 2014, a nationwide colonoscopy education initiative (Bowell.it Educational Tour) was held in Italy. Overall, 480 gastroenterologists and GI endoscopists from 289 different endoscopy centers participated in 14 meetings, aimed at increasing awareness on colonoscopy quality issues and optimizing colonoscopy practice. During these meetings, one endoscopist, representative of each participating center, was invited to take part in the survey by filling in a standard questionnaire. The questonnaire included 13 questions on structural indicators of each endoscopy center (Table 1) and 10 multiple-choice clinical scenarios exploring institutional policies on clinically relevant peri-procedural colonoscopy issues such bowel preparation, sedation practice, management of anti-thrombotic therapy, polyp resection and surveillance. Each endoscopist anonymously completed the questionnaire and returned it to secretary staff in the morning, before the meeting educational session had started.

Concerning the 10 clinical scenarios, two authors (SP, FR) reviewed practice guidelines by US and European GI Societies (American Society for Gastrointestinal Endoscopy, ASGE; American College of Gastroenterology, ACG; European Society for Gastrointestinal Endoscopy, ESGE; British Society of Gastroenterology, BSG), in order to determine, whenever possible, the recommended management strategy.

Data from collected questionnaires were gathered and processed. Finally, practice variation across centers and possible discrepancies with recommendations in guideline were analyzed and discussed.

The protocol was approved by the Ethics Committee of the coordinating center (Valduce Hospital).

3. Statistics

Categorical variables were summarized using frequencies and percentages with 95% confidence intervals. Chi-squared (χ^2) test was used to compare categorical variables. All statistical tests were two-sided and were considered statistically significant at $P < 0.05$.

4. Results

Overall, questionnaires from 282 centers were collected, representing the 58.1% of the 485 endoscopy centers in Italy, according to a Italian Society of Digestive Endoscopy (SIED) census spread in year 2014. Information was provided by 146 (51.8%) centers in Northern Italy, 70 (24.8%) from the center and 66 (23.4%) from the South and Islands. Of the participating centers, 234 (83%) were community hospitals, 39 (13.8%) academic hospitals and 9 (3.2%) private practice centers. Structure and organizational indicators, according to the type of centers, are shown in Table 1. All centers were "open access", so that endoscopy procedures could be scheduled at the request of a referring physician, without a previous clinic consultation [12]. Clinical scenarios exploring institutional policies on peri-procedural colonoscopy issues and responses provided by participants are analyzed below.

(1) *What bowel cleansing regimen for colonoscopy is routinely prescribed in your center?*

Bowel cleansing regimen	Number of centers [%, 95%CI]
4-Liters PEG-ELS[a]	150 [53.2, 45.0–62.4]
Low-volume bowel preparations[b]	103 [36.5, 29.8–44.3]
Sodium phospate	21 [7.4, 4.6–11.4]
Other (e.g., sennosides)	8 [2.9, 1.2–5.6]

[a] PEG-ELS: polyethylene glycol–electrolyte lavage solution.
[b] 2L PEG plus ascorbate, 2L PEG plus bysacodyl, sodium picosulphate plus magnesium citrate.

Both US and European guidelines on bowel preparation for colonoscopy consider 4l polyethylene glycol–electrolyte lavage solution (PEG-ELS) as the ideal agent for bowel cleansing, due to its efficacy and safety profile; low-volume preparations are valid alternatives, in particular for patients with no risk factors for inadequate bowel preparation. Although sodium phosphate (NaP) is effective and well tolerated by most patients, the risk of adverse events makes it unsuitable as a first-line agent; accordingly, current guidelines advise against its routine prescription [13,14].

Data from the survey underline a roughly 90% compliance with the above statements, as concerns the choice of the cleansing agent. However, a non-negligible proportion of centers include NaP as routine agent for bowel cleansing. This finding is relevant; taking into account that in "open-access" systems bowel prep instructions are usually delivered by non-health care professionals (i.e., secretary staff) to an unselected population, the routine use of NaP should be proscribed.

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