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Approach to the Do-Not-Resuscitate Patient in the Periendoscopic Period: Survey about the Current Portuguese Reality

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Abstract

Background and Aims: Cardiopulmonary arrest is a rare but possible complication of endoscopic procedures, particularly when performed under sedation and/or analgesia. Hospitalized patients, and probably those with a Do-Not-Resuscitate (DNR) order, present a higher risk of severe cardiopulmonary complications during endoscopy. The request for endoscopic examination, particularly urgent procedures, is becoming increasingly more frequent in patients with DNR orders. In this study, we aimed to assess current practices, concepts, and guideline awareness of nationally surveyed Portuguese gastroenterologists regarding the approach to code status for DNR patients in the periendoscopic period. ***Methods:*** Online anonymous and self-administered survey was adapted to the Portuguese reality and was conducted to assess gastroenterologists and gastroenterology trainees' basic demographics data and details about current practice, personal opinions, and knowledge of existing guidelines concerning the reversal of periprocedural DNR orders. ***Results:*** One hundred forty-five gastroenterologists, including 26 trainees (17.9%), responded to the survey. In patients with a DNR order, code status is rarely discussed (<25% of cases) with the patient/legal representative (66.9%, n = 97) or hospitalist (58.6%, n = 85), and the DNR order is also rarely reversed (reversal in all [100% of cases] or most cases [75–99% of cases] in 8.3%, n = 12). Most respondents were unaware of the procedures necessary for DNR prescription in Portugal (81.3%, n = 118), as well as existing guidelines on DNR reversal (96.5%, n = 140). Regarding personal beliefs, the majority considered that in these patients, the DNR order should be reversed to an intermediate option that includes limited resuscitation maneuvers (62.1%, n = 90) and that the urgency of a procedure should not influence the decision to reverse the DNR order (n = 89, 61.4%). There was consensus on the need for recommendations on this topic for gastroenterologists (97.9%, n = 142). ***Conclusion:*** Portuguese gastroenterologists usually do not revisit the DNR order before endoscopic procedures as a matter of course and consequently do not reverse it. Furthermore, we found significant variation in practices and beliefs among Portuguese gastroenterologists in their approach to the patient with a DNR order, probably due to the unawareness and lack of specific existing guidelines.

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Abordagem do doente com Decisão de Não Reanimação no período periendoscópico: inquérito sobre realidade portuguesa atual

Palavras Chave
Ordem de Não Reanimação · Grau de investimento · Endoscopia

Resumo

Introdução e Objetivos: A paragem cardiorrespiratória é uma complicação dos procedimentos endoscópicos, particularmente quando realizados sob sedação e/ou analgesia. Doentes internados, e provavelmente aqueles com Decisão de Não Reanimação (DNR) prescrita, apresentam um risco mais elevado de complicações cardiorrespiratórias graves durante a endoscopia. A solicitação de exames endoscópicos, nomeadamente urgentes, está a tornar-se cada vez mais frequente neste grupo de doentes. Este estudo teve como objetivo avaliar a prática clínica atual, conceitos sobre o tema e conhecimento de recomendações dos gastroenterologistas portugueses relativamente à abordagem do doente com DNR no período periendoscópico. ***Métodos:*** Um questionário auto-administrado, anónimo e online foi adaptado à realidade portuguesa e utilizado para avaliar dados demográficos, bem como aspetos sobre a prática clínica, opiniões e conhecimento de recomendações relativos à reversão da DNR no período periendoscópico dos gastroenterologistas e internos de Gastroenterologia. ***Resultados:*** Cento e quarenta e cinco gastroenterologistas, incluindo 26 internos de Formação Específica (17.9%), responderam ao inquérito. Nos doentes DNR prescrita, o grau de investimento raramente é discutido (<25% dos casos) com o doente/representante legal (66.9%, *n* = 97) ou com o médico responsável (58.6%, *n* = 85), e a DNR é revertida também raramente (reversão em todos (100% dos casos) ou na maioria dos casos (75–99% dos casos) em 8.3%, *n* = 12). A maioria dos inquiridos desconhece os procedimentos necessários para a prescrição de DNR em Portugal (81.3%, *n* = 118), bem como as recomendações existentes sobre a reversão de DNR (96.5%, *n* = 140). Quando questionados sobre as suas convicções pessoais, a maioria considera que nestes doentes a DNR deve ser revertida para uma opção intermédia que inclua manobras de reanimação limitadas (62.1%, *n* = 90) e que a urgência de um procedimento não deve influenciar a decisão de reverter a DNR (*n* = 89, 61.4%). Foi consensual a necessidade de recomendações sobre este tópico para os gastroenterologistas (97.9%, *n* = 142). ***Conclusão:*** Os gastroenterologistas portugueses habitualmente não discutem a prescrição de DNR previamente a procedimentos endoscópicos e, consequentemente, não a revertem. Para além disso, verificou-se uma variabilidade significativa nas práticas e crenças dos gastroenterologistas portugueses relativamente à abordagem do doente com DNR, provavelmente justificada pelo desconhecimento e escassez de recomendações específicas existentes sobre o tema.

Introduction

Endoscopic procedures, particularly when performed under anesthesia and/or analgesia, have associated risks, such as serious cardiopulmonary events [1]. Cardiovascular complications during endoscopic procedures occur in 5.4 per 1,000 cases, with the need for cardiopulmonary resuscitation (CPR) in 0.015–0.017% of cases [2–4]. Although this incidence seems low, the vast majority of patients undergoing endoscopy are relatively healthy [5] and are in an outpatient setting. In contrast, hospitalized patients, and probably those with a Do-Not-Resuscitate (DNR) order, are more likely to be severely ill and have a greater number of comorbidities, falling into a high-risk category with a higher chance of life-threatening events during endoscopic procedures [6]. Furthermore, requests for endoscopic examinations, particularly urgent ones, are becoming increasingly frequent in hospitalized and high-risk patients [7].

The term "code status" refers to the anticipated decision about using or forgoing CPR in the event of cardiopulmonary arrest: full code refers to a full attempt at resuscitation, partial code refers to limited attempt at resuscitation defined with regard to specific procedures and/or patient's goals and values, and DNR stands for do-not-resuscitate. Patients with a DNR order do not receive CPR or intubation in the event of cardiac arrest. The term "code status reversal" refers to changing a previously designated DNR code status to full or partial code [8–10]. In Portugal and according to Carneiro et al., the DNR decision is a medical prescription which establishes that CPR should not be initiated or attempted in the event of an ongoing or imminent cardiopulmonary arrest. This prescription can be based on either the existence of a patient's living will prior to the hospital admission or on their clinical status and evolution during admission. In

this last scenario, the decision of establishing the DNR status must always be shared with the patient or their legal representative, when the patient is not capable of deciding [11]. The recommended procedures for prescribing the DNR status in Portugal are suggested in a document approved in 2012 by the National Executive Council of Ordem dos Médicos [12]. However, a patient having a DNR status does not prevent the performance of invasive procedures for symptomatic control or the reversal of potentially treatable events. As life expectancy increases and the treatment of more complex diseases evolves, the discussion of endoscopy in DNR patients is becoming more frequent [13].

Since intra-procedural cardiac arrests have high survival rates and could be considered iatrogenic, code status reversal may be justified during the procedure, legitimizing CPR in case of arrest. However, deciding to universally reverse any DNR status to a full resuscitation attempt automatically before a procedure could undermine patient autonomy and restrict shared decisions [9]. Existing guidelines regarding the management of code status before invasive procedures under anesthesia have been recently reviewed by the American Society of Anesthesiologists [10].

Although there is a robust body of literature on revisiting DNR decisions before surgical procedures [14–16], there is a scarcity of literature discussing this topic for endoscopy. Evaluation of usual practices and beliefs of gastroenterologists on this topic have been previously published in a pioneer survey conducted in a distinct legal and health-care policy scenario [9]. Thus, the aim of this study was to assess Portuguese gastroenterologists' current practices, concepts, and guideline awareness regarding the approach to DNR patients in the periendoscopic period.

Materials and Methods

Sample Population and Survey Methods

Portuguese gastroenterologists and gastroenterology trainees were surveyed using the Sociedade Portuguesa de Gastrenterologia (SPG) mailing list. The survey was distributed twice, with a 1-month interval, via electronic mail to 755 members of the SPG, and it was also published once in the SPG Newsletter. Survey response was voluntary, anonymous, and without incentive of any kind. The survey included 24 multiple-choice questions (online suppl. Appendix 1; for all online suppl. material, see https://doi.org/10.1159/000543508), including demographic questions and information concerning management and concepts related to the reversal of periprocedural DNR status, as well as knowledge and opinion on the need of guidelines on this issue. The survey was developed in two phases: domain development (phase 1) – literature and national documents were reviewed for conceptual definition, background, and search for previously existing instruments to evaluate the aim of the study; scale development (phase 2) – the previously published survey by Feld et al. [9] was adapted for national reality by one trainee and one mentoring gastroenterologist, and reviewed by an experienced gastroenterologist unrelated to the research project. Cognitive interviews were conducted with two non-gastroenterology trainees and two end users of the survey to evaluate content validity.

Table 1. Demographic features of respondents

	n (%)
Gender	
Female	86 (59.3)
Male	58 (40)
Prefer not to specify	1 (0.7)
Years since training	
Currently a trainee	26 (17.6)
0–5 years	33 (22.8)
6–10 years	34 (23.4)
11–20 years	20 (13.8)
>20 years	32 (22.1)
Annual procedures	
<250	6 (4.1)
251–500	27 (18.6)
501–1,000	46 (31.7)
>1,000	66 (45.5)
Main activity	
Gastroenterology	104 (71.7)
Interventional endoscopy	37 (25.5)
Hepatology	4 (2.8)
Practice setting for inpatients endoscopic procedures	
2nd level public hospital	52 (35.9)
3rd level public hospital	69 (47.6)
Private hospital	23 (15.9)
Social sector hospital	1 (0.7)
Sedation provider	
Anesthesia	72 (49.7)
Gastroenterology	54 (37.2)
Not provided	19 (13.1)
Advance life support	
Yes, valid	29 (20)
Yes, expired	56 (38.6)
No	60 (41.4)

Statistical Analysis

Descriptive statistics were used to express survey responses. In order to find patterns of response among certain demographic groups that could inform better about the Portuguese reality and possibly guide interventions to improve clinical practice, we assessed for differences in management, opinions, and knowledge on national and international recommendations on this topic based on training level (trainee versus attending), years in practice (attendings less than 10 years of experience versus more than 10 years of experience), practice setting (public versus private sector), and main activity (general gastroenterology versus interventional endoscopy) with bivariate analysis using the chi-squared test. An alpha value of 0.05 was set for significance level. Data analysis was performed using the Statistical Package for Social Science (SPSS) software.

Results

Demographics

A total of 119 gastroenterologists and 26 trainees (17.6%) responded to the survey, accounting for a response rate of 19.2% (145 of 755). The demographic characteristics of the respondents are presented in Table 1. Most respondents were female (59.3%, *n* = 86) and the time of practice among the attending gastroenterologists was evenly distributed. The volume of endoscopic procedures performed per year was high, with many respondents performing >1,000 endoscopic procedures annually (45.5%, *n* = 66). Twenty-six percent dedicated their activity to interventional endoscopy (e.g., advanced resection techniques, third-space endoscopy, endoscopic retrograde cholangiopancreatography, and interventional endoscopic ultrasound, *n* = 37) and 2.4% (*N* = 4) to hepatology. Most respondents performed inpatient endoscopic procedures in the public sector (83.5%, *n* = 121), and mainly in tertiary hospitals (47.6%, *n* = 69). Many reported performing endoscopic procedures with sedation provided by anesthetist (49.7%, *n* = 72). Many respondents did not have advanced life support certification (41.4%, *n* = 60) or their certification was expired (38.6%, *n* = 56).

Current Practices

Most respondents reported knowing the code status before the start of the procedure (73.1%, *n* = 106), and 66.2% (*n* = 96) reported that only a minority of patients (less than 25%) who needed an endoscopic inpatient endoscopy had a DNR decision at the time of the procedure. In DNR patients, most respondents referred discussing code status with the hospitalist or the patient/legal representative only infrequently (58.6%, *n* = 85), and 66.9% (*n* = 97) reported discussing this <25% of cases. We highlight that when this discussion existed, it happened more frequently with the physician than with the patient or their legal representative. If a patient had a DNR decision, only a minority reported reversing the code status before endoscopy always (100% of cases, 2.1%, *n* = 3) or frequently (75–99% of cases, 6.9%, *n* = 9), and 28 (19.3%) reported never reversing the code status. Regarding the existence of institutional protocols for the management of code status before endoscopic inpatient procedures, 2.8% (*n* = 4) reported they existed in their department; however, more than half (58.8%, *n* = 78) were unaware of whether or not these institutional protocols existed.

Concepts

Most respondents believed that patients with a DNR order should be offered a third option of limited resuscitation according to their preferences in case of cardiac arrest during endoscopic procedures (62.1%, *n* = 90). The majority considered that the urgency of a procedure should not affect whether or not a DNR decision is reversed before endoscopy (61.4%, *n* = 89); however, many thought that DNR decisions should be reversed more frequently if the procedure is urgent (29.7%, *n* = 43). Almost all the respondents were of the opinion that the hospitalist that prescribed the DNR decision in the first place should be responsible for its reversal (91.7%, *n* = 133), rather than the gastroenterologist who performed the endoscopy or the anesthetist who assisted the procedure. When asked if they would perform an endoscopic examination in a DNR patient with a sustained DNR order, respondents were divided as follows: 49.7% (*n* = 72) responded yes, 28.3% (*n* = 41) responded no, and 22.1% (*n* = 32) had no formed opinion.

Awareness of Available Guidelines and Procedures

Only 18.6% (*n* = 27) of responders claimed to know which are the suggested necessary performances to prescribe DNR decision in Portugal, while 43.4% (*n* = 64) claimed to know about its existence but did not know its content, and 37.9% (*n* = 55) were unaware of whether or not they exist. Only 3.4% (*n* = 5) of responders claimed to know which are the existing guidelines for DNR reversal before invasive procedures, while 18.6% (*n* = 27) claimed to know about its existence but did not know its content,

Table 2. Bivariate analysis between training status and practice, beliefs, and guideline awareness

	Trainee, *n* (%)	Attendant, *n* (%)	*p* value
Current practices			
Discuss <25% with hospitalist	19 (73.1)	66 (55.5)	0.099
Discuss >25% with hospitalist	7 (26.9)	53 (44.5)	
Discuss <25% with patient/surrogate	21 (80.8)	76 (63.9)	0.097
Discuss >25% with patient/surrogate	5 (19.2)	43 (36.1)	
DNR reversal >75%	2 (7.7)	10 (8.4)	0.905
DNR reversal <75%	24 (92.3)	109 (91.6)	
Beliefs			
Support DNR automatic reversal	0 (0)	15 (12.6)	**0.056**
Do not support DNR automatic reversal	26 (100)	104 (87.4)	
Would perform endoscopy in sustained DNR	15 (57.7)	57 (47.9)	0.366
Would not perform endoscopy if sustained DNR	11 (42.3)	62 (52.1)	
Guideline awareness			
Knows the existence of guidelines	0 (0)	32 (26.3)	***0.003***
Does not know the existence of guidelines	26 (100)	87 (92.7)	
Knows the content of the guidelines	0 (0)	5 (4.2)	0.287
Does not know the content of the guidelines	26 (100)	114 (95.8)	

and 77.9% ($n = 113$) were unaware of whether or not they exist. There was a strong agreement among respondents that developing specific guidelines on DNR reversal for gastroenterologists would be helpful to clarify the approach to these complex clinical scenarios (97.9%, $n = 142$ responded yes; 2.1%, $n = 3$ responded no).

Patterns of Response

When compared to attendings, trainees were significantly less aware of the existence of guidelines about DNR reversal before invasive procedures (trainees 0%, attendings 26.3%, p = 0.003) and were less likely to support the automatic reversal of DNR; however, this trend did not reach statistical significance (trainees 0%, attendings 12.6%, p = 0.056) (Table 2). Gastroenterology attendings with more than 10 years of practice were more likely to reverse DNR orders before procedures, although without reaching statistical significance (<10 years 4.5%, >10 years 13.5%, $p = 0.08$) (Table 3). Gastroenterologists who provided inpatient endoscopy in the private sector were significantly more aware of the existence of guidelines on DNR reversal before the procedures (public sector 19%, private sector 39.1%, $p = 0.033$), as well as of its content (public sector 1.7%, private sector 13%, $p = 0.006$) (Table 4). Interventional endoscopists reversed the DNR order significantly less frequently before procedures (non-interventionalists 11.1%, interventionalists 0%, $p = 0.034$) and were significantly more likely to be willing to perform a procedure without a previous DNR reversal (non-interventionalists 44.4%, interventionalists 64.9%, $p = 0.032$) (Table 5). No significant differences were found between groups regarding having code status discussion with hospitalist and/or patient/legal representative before the procedure (Tables 2–5).

Discussion

Even though most respondents reported knowing the patient's code status before starting the procedure and believe that the patient should be offered a third option of limited resuscitation according to their preferences when there is a DNR decision, the majority do not usually discuss the code status with the hospitalist or patient/legal representative or reverse the DNR decision. This incongruence might be justified by the finding that most respondents were unaware of the existing guidelines for DNR reversal before invasive procedures, indicating that this is not a subject of debate among Portuguese gastroenterologists. Before an invasive procedure, these guidelines recommend an informed shared decision-making discussion between the physician and the patient/legal representative to sustain the DNR order or, if needed, a change of the code status to a full attempt at resuscitation or a limited attempt at resuscitation, restricting the procedures offered or adapting them to the patient's will [10]. Still regarding the periprocedural code status discussion, almost all respondents were of the opinion that the DNR decision should be reversed by the

Table 3. Bivariate analysis between experience and practice, beliefs, and guideline awareness

	<10 years, *n* (%)	>10 years, *n* (%)	*p* value
Current practices			
Discuss <25% with hospitalist	38 (56.7)	28 (53.8)	0.755
Discuss >25% with hospitalist	29 (43.3)	24 (46.2)	
Discuss <25% with patient/surrogate	43 (64.2)	33 (63.5)	0.936
Discuss >25% with patient/surrogate	24 (35.8)	19 (36.5)	
DNR reversal >75%	3 (4.5)	7 (13.5)	**0.08**
DNR reversal <75%	64 (95.5)	45 (86.5)	
Beliefs			
Support DNR automatic reversal	10 (14.9)	5 (9.6)	0.387
Do not support DNR automatic reversal	57 (85.1)	47 (90.4)	
Would perform endoscopy in sustained DNR	35 (52.2)	22 (42.3)	0.282
Would not perform endoscopy if sustained DNR	32 (47.8)	30 (57.7)	
Guideline awareness			
Knows the existence of guidelines	16 (23.9)	16 (30.8)	0.401
Does not know the existence of guidelines	51 (76.1)	36 (69.2)	
Knows the content of the guidelines	1 (1.5)	4 (7.7)	0.095
Does not know the content of the guidelines	66 (98.5)	48 (92.3)	

Table 4. Bivariate analysis between practice setting and practice, beliefs, and guideline awareness

	Public, *n* (%)	Private, *n* (%)	*p* value
Current practices			
Discuss <25% with hospitalist	75 (59.5)	13 (56.5)	0.79
Discuss >25% with hospitalist	19 (40.5)	10 (43.5)	
Discuss <25% with patient/surrogate	85 (70.2)	12 (52.2)	0.09
Discuss >25% with patient/surrogate	36 (29.8)	11 (47.8)	
DNR reversal >75%	8 (6.6)	4 (17.4)	0.086
DNR reversal <75%	113 (93.4)	19 (82.6)	
Beliefs			
Support DNR automatic reversal	12 (9.9)	3 (13)	0.653
Do not support DNR automatic reversal	109 (901)	20 (87)	
Would perform endoscopy in sustained DNR	61 (50.4)	11 (47.8)	0.82
Would not perform endoscopy in sustained DNR	60 (49.6)	12 (52.5)	
Guideline awareness			
Knows the existence of guidelines	23 (19)	9 (39.1)	***0.033***
Does not know the existence of guidelines	98 (81)	14 (60.9)	
Knows the content of the guidelines	2 (1.7)	3 (13)	***0.006***
Does not know the content of the guidelines	119 (98.3)	20 (87)	

same physician who prescribed it, which is consistent with the document approved by Ordem dos Médicos in Portugal. Despite this, again, most respondents reported discussing the patient's code status with the hospitalist only infrequently, reflecting once more the dissociation between clinical practice and gastroenterologist's beliefs when they reflected on the DNR status and end of life issues. Clearly discussing the DNR decision with the patient and among physicians is of utmost importance since if there is ambiguity and/or this conversation does not occur, there are potentially serious outcomes, such as unwanted interventions or complex emergent decisions about whether to continue life support.

Despite the considerable divergence in terms of management, concepts, and guideline awareness across the gastroenterologists surveyed, some patterns of

Table 5. Bivariate analysis between area of focus and practice, beliefs, and guideline awareness

	Non-interventionalist, *n* (%)	Interventionalist, *n* (%)	*p* value
Current practices			
Discuss <25% with hospitalist	63 (58.3)	22 (59.5)	0.904
Discuss >25% with hospitalist	45 (41.7)	15 (40.5)	
Discuss <25% with patient/surrogate	71 (65.7)	26 (70.3)	0.613
Discuss >25% with patient/surrogate	37 (34.3)	11 (29.7)	
DNR reversal >75%	12 (11.1)	0 (0)	***0.034***
DNR reversal <75%	96 (88.9)	37 (100)	
Performs exams mostly under sedation by anesthetist	52 (48.1)	20 (54.1)	0.535
Performs exams mostly under sedation by gastroenterologist or no sedation	56 (51.9)	17 (45.9)	
Beliefs			
Support DNR automatic reversal	9 (8.3)	6 (16.2)	0.174
Do not support DNR automatic reversal	99 (91.7)	31 (83.8)	
Would perform endoscopy in sustained DNR	48 (44.4)	24 (64.9)	***0.032***
Would not perform endoscopy in sustained DNR	60 (55.6)	13 (35.1)	
Considers DNR should be reversed by the anesthetist	4 (3.7)	2 (5.4)	0.654
Does not consider DNR should be reversed by the anesthetist	104 (96.3)	35 (94.6)	
Guideline awareness			
Knows the existence of guidelines	24 (22.2)	8 (21.6)	0.939
Does not know the existence of guidelines	84 (77.8)	29 (78.4)	
Knows the content of the guidelines	4 (3.7)	1 (2.7)	0.773
Does not know the content of the guidelines	104 (96.3)	36 (97.3)	

responses were identified. Trainees and gastroenterologists who perform inpatient endoscopy in the public sector have less knowledge of existing guidelines for periprocedural DNR reversal. Concerning the first ones, during residency, trainees might be more focused on learning and training the clinical aspects of their practice, often neglecting these ethical aspects yet with important medico-legal implications. Moreover, there is a difference in practice between gastroenterologists performing inpatient endoscopy in the public versus private sector, which may be in line with different medico-legal scenarios. However, despite the practice setting, the risk of life-threatening complications during endoscopic procedures always exists and the patient's values and rights to self-determination should always be addressed. Finally, interventional endoscopists reported reverting the DNR decision less frequently and stated that more frequently they would perform endoscopic procedures with a sustained DNR status. This may be related to the perception that the code status should be managed by the anesthetist. Indeed, interventionalists stated that they performed more procedures with sedation by the anesthetist and were more of the opinion that the DNR status should be reversed by the anesthetist; however, these differences did not reach statistical significance (Table 5), which may be related to a small sample population.

This study is the first nationwide assessment of the management, concepts, and guideline awareness of Portuguese gastroenterologists regarding code status approach prior to endoscopic procedures. This subject is of utmost importance comprising not only the need for national and international coherence of practice and medical-legal questions but also ethical and patient's autonomy-related issues. This study highlighted interesting differences between the national sample from the United States, including significantly less frequent DNR reversal than was reported in the United States. Currently, there are 721 working gastroenterologists in Portugal. Using the SPG mailing list, we managed to survey a diverse, representative, and considerable number of Portuguese gastroenterologists. Although female gastroenterologists accounted for more than half of the respondents, this distribution was not significantly different from national gastroenterologist's demographic data (female 48.7%). However, this study has some limitations. Since the inquiry was distributed through an electronic mailing list, selection bias may have influenced the

representativeness of our sample. Furthermore, recall bias could have affected the accuracy of participants' recollections of past behaviors. Response bias was also a concern, as participants might have provided socially desirable responses rather than accurate ones, which was tried to be minimized by anonymous responses. Finally, in Portugal, there is no formal distinction between general gastroenterologists and interventional endoscopists; therefore, this definition was based on self-reported data. However, this distinction was felt relevant to analyze patterns of response. Despite these limitations, given the relevance of the topic, we believe that these results offer valuable insights on the subject, which can provide crucial foundation for further research and guide interventions to improve clinical practice.

To summarize, this study revealed a non-consensual practice and divergent opinions on the management of DNR patients prior to endoscopic procedures among Portuguese gastroenterologists, probably justified by a lack of awareness of existent guidelines and national recommended procedures. Portuguese gastroenterologists usually do not revisit the DNR status before endoscopic procedures as a matter of course and consequently do not revert it. The development of dedicated guidelines for gastroenterologists addressing the management of DNR patients before endoscopy would emphasize the importance of this subject and help to guide these difficult medical decisions.

Statement of Ethics

Ethical approval for this research was not applied considering voluntary response of the survey and presence of introductory sentence with explanation of the aim of the study.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

A.R.F. contributed for study conception and design, data collection, analysis and interpretation of results, and manuscript draft. R.B. and L.F. contributed for critical revision of the manuscript for important intellectual content. P.L., I.S., R.R.M., and A.M. contributed for critical revision of the manuscript. C.C. contributed for the final approval of this version to be published.

Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material. Further inquiries can be directed to the corresponding author.

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