

Aspects of physicians regarding Do Not Resuscitate (DNR) willingness of patients with end-stage disease. How is the clinical practice without a legal framework?

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Abstract

Background: Greece is a country without a legal legislature or legally advocated document for Do Not Resuscitate (DNR), where the physician dominates the DNR decision-making process. This study examines physicians' beliefs regarding the shortage of a legal legislature and how its existence would impact clinical practice.

Methods: We conducted this study utilizing a questionnaire distributed to physicians of various specialties serving in two central general hospitals, regardless of the years of their clinical experience, commencing from October 2021 to May 2022. The questionnaire included questions regarding participants' characteristics and aspects of physicians' willingness to accept DNR in end-stage disease or critically ill patients.

Results: We included 132 participants with a mean age of 41.6 years, including physicians from various surgical or pathological specialties with a male predominance (55.3 % male). The study's findings indicate that personal judgement and clinical experience outweigh the typical criteria for applying cardiopulmonary resuscitation (CPR) ($p=0.002$). Married participants, pathologists, and experienced physicians have a greater demand for a legal framework and, consequently, reduced legal and ethical dilemmas. Almost half of participants (47.7 %) strongly support that CPR is used just to delay the imminent death. In a percentage of 5.3 %, physicians proceeded to CPR against the verbal preference of patients or relatives for DNR. The great majority of patients (94.5 %) are positive regarding establishing legislative regulations and creating documents about DNR in end-stage disease or critically ill patients.

Conclusions: This study's findings depict the need to regulate DNR in end-stage disease or critically ill patients after informed consent. Patient rights preservation and physicians' clinical dilemmas during decision-making process avoidance are undoubtful benefits of such legislative reforms. HIPPOKRATIA 2024, 28 (2)65-71.

Keywords: Do not resuscitate, DNR, ethics, informed consent, cardiopulmonary resuscitation

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Introduction

End-stage disease patients constitute a category of patients with increased needs demanding special care. As the disease progresses, these patients become familiar with the idea of death and often request to be left untreated in case of cardiopulmonary arrest without implementing cardiopulmonary resuscitation (CPR). This statement is authorized and defined by legislation in many countries, while others avoid establishing regulations on this domain. This is commonly known as the Do Not Resuscitate (DNR) statement, a binding formal document declaring the willingness of the patient to be left untreated in case of cardiopulmonary arrest, and the law recognizes this willingness¹. This decision should be made when the patient is fully conscious, emotionally stable, and well-informed about his medical condition².

Managing such situations is complicated, as different health professionals are involved and must be capable of

providing the best health services for the patient concerning his/her willingness³. The guideline protocols also include information regarding DNR patients and their management⁴. Although most health professionals know what they have to do in theory, in clinical practice, things are different. Moreover, legislation in many countries needs to be revised in this domain. Consequently, due to the fact that they have more responsibilities, health professionals, especially physicians, find themselves unprotected and stressed in decision-making⁵. Respectively, there is no definite legislation regarding such issues in the Greek legislative system⁶.

In this light, the current study focuses on the aspects of physicians working in the Greek National Hospital System (GNHS) regarding the cases of patients suffering from end-stage disease with the intention of DNR. This data is interesting, considering that Greek legislation has no regulations in this domain.

Methods

This research aims to investigate the aspects of Greek physicians of all specialties working in the GNHS regarding DNR in patients with end-stage disease. Additionally, this study investigates the impact of a specific regulation on DNR on daily medical practice.

We conducted this study in two general hospitals from January 2022 to June 2022. Through personal interviews, the participants completed a questionnaire of 20 points that included five questions on the participants' characteristics and 15 questions on the research subject. One hundred thirty-two physicians of all specialties and degrees participated in the survey through direct interviews. We conducted the study after obtaining the National Kapodistrian University of Athens Medical Faculty's Bioethics Committee's written approval (decision No 87, date 21/9/2021). All physicians who participated were fully informed regarding the purpose of the study, and the entire investigating and experimenting process was according to the Declaration of Helsinki and the Greek legislation in Bioethics. All participants' data and rights were protected according to existing laws regarding personal data.

In this study, physicians from different specialties (pathologists and surgeons) participated voluntarily, regardless of their hierarchic position. The exclusion criteria consisted of: a) physicians working in the emergency unit department, as they do not often handle end-stage disease patients fully conscious; b) physicians in the intensive care unit as the patients of these departments are usually under sedation or intubated and lack decision-making capability; c) physicians that have clearly consulting role in the management of such patients (etc. endocrinologists); and d) physicians with specialty excluding trainees.

Statistical analysis

We present descriptive statistics to summarize participants' characteristics, including frequency and percentage for qualitative and mean \pm standard deviation for quantitative variables. We conducted an exploratory factor analysis to assess construct validity, decrease the number of variables, and disclose underlying structures. We chose principal component analysis as the extraction procedure using Varimax rotation and applied the Kaiser-Meyer-Olkin method to estimate sample adequacy. The cut-off point for Eigenvalues was 1.00, and for factor loadings was 0.40. We used the intraclass correlation coefficient to evaluate the questionnaire's reliability in the test-retest procedure. We determined internal consistency reliability by the Cronbach's alpha coefficient calculation. Scales with reliability equal to or greater than 0.70 were considered acceptable. We utilized multiple linear regression analyses with dependent factors emerging from the exploratory factor analysis. We computed adjusted regression coefficients (β) with standard errors from the results of the linear regression analyses. We conducted regression analyses after having logarithmically transformed the dependent variables. We set statistical

significance at a p-value <0.001 ; all reported p-values are two-tailed. We conducted analyses utilizing IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp., Armonk, NY, USA).

Results

The sample consisted of 132 participants with a mean age of 41.6 ± 10.7 years. Their attributes are presented in Table 1. Most participants were men (55.3 %), married (56.8 %), and had children (92.1 %). Half of the participants (54.6 %) were specialists in internal medicine, while the mean clinical practice duration was 14.3 ± 10.2 years. Nearly all participants (97.7 %) had basic CPR training, with 47 % considered experts, and 37.1 % performed CPR on more than 100 patients.

Participants' opinions regarding CPR and legal regulations are presented in Table 2. Half of the participants stated that family members participated "much/very much" in DNR/do not attempt resuscitation (DNAR) decisions regarding critically ill/terminally ill patients. Furthermore, 95.4% of the participants believed "much/very much" that there should be a legal regulation or legally supported document regarding DNR/DNAR decisions in critically ill/terminally ill patients. Only 5.3% of the participants had performed CPR despite the wishes of the patient or their family.

We applied the test-retest procedure to 15 participants. There was significant agreement between the two evaluations in all questionnaire elements (Table 3).

We evaluated the sampling adequacy of exploratory factor analysis through a Kaiser-Meyer-Olkin of 0.56 and a significant Bartlett's sphericity ($p < 0.001$). After Varimax rotation, the principal component analysis of the 13 items revealed three factors (Table 4). All factors combined explained 44.6 % of the variance. Factor "Criteria for applying CPR" had five elements and explained 17.6 % of the variance. The "Dilemmas and legal frame about applying CPR" factor had four elements and explained 15.3 % of the variance. The "Doctor's personal acumen in applying CPR" factor also had four elements and explained 11.6 % of the variance. All 13 elements had loading at least 0.40, and no secondary loadings were found. We summed elements across the factors and divided their sums by the number of the items. All factors had acceptable reliability since their Cronbach alpha coefficient was above 0.7.

When we conducted multiple linear regression, it was discovered that the number of times involved in CPR was significantly associated with the factor "Criteria for applying CPR" (Table 5). More specifically, participants who applied CPR 50-100 times or more than 100 times had significantly lower scores on this particular factor than participants who had applied CPR less than 10 times. Likewise, participants practicing internal medicine specialty and those with greater clinical experience had more outstanding scores in the "Dilemmas and legal frame about applying CPR" factor. Moreover, women had significantly greater scores in the factor "Doctor's

Table 1: Attributes of the 132 participants comprised the study's sample investigating the aspects of Greek physicians' view of Do Not Resuscitate in patients with end-stage disease.

Gender	
Men	73 (55.3)
Women	59 (44.7)
Age	41.6 ± 10.7
Family status	
Single	48 (36.4)
Married	75 (56.8)
Divorced	9 (6.8)
Have children	58 (92.1)
Specialty	
Surgical	59 (45.4)
Internal Medicine	71 (54.6)
Years of clinical experience	14.3 ± 10.2
Trained in CPR?	
Not at all	3 (2.3)
A little	5 (3.8)
Moderately	30 (22.7)
Much	62 (47)
Very much	32 (24.2)
How many times have you practiced CPR on patients?	
Never	1 (0.8)
1-10	20 (15.2)
10-50	32 (24.2)
50-100	30 (22.7)
>100	49 (37.1)

Values are presented as number with percentage in brackets or as mean ± standard deviation, CPR: cardiopulmonary resuscitation.

personal acumen in applying CPR”, while practicing an internal medicine specialty and having greater clinical experience were associated with lower scores in the factor above.

Discussion

This study investigates the beliefs and views of physicians of various specialties who deal with end-stage disease patients regarding DNR intention. DNR and other end-of-life issues in a country are determined by four main factors, including local legislation, the aspects of physicians in such matters, the willingness of the relatives, and the beliefs of each society according to religion, cultural beliefs, and worldview⁷. A large study from Dutch hospitals found that other factors affecting DNR are age, as it is more often in patients older than 80 years (66.4 % of DNR cases), and the administration of many medications, as patients using more than ten drugs represent 45.3 % of cases⁸. It is worth mentioning that even when there is legislation regarding DNR issues, physicians cannot use these tools properly⁹.

The study sample consisted of 132 individuals (55.3 % men) with a mean age of 41.6 years; 56.8 % were married, and 54.6 % practiced an internal medicine specialty. The results show that clinical experience plays a principal role in the criteria for applying CPR ($p=0.011$). Furthermore, it is evident from this study that married people ($p=0.004$), doctors with increased years of clinical ex-

perience ($p < 0.05$), and practicing an internal medicine specialty ($p=0.03$) have a greater need for a legal framework and consequently reduced legal and ethical dilemmas. Notably, the years of clinical experience appeared to play a decisive role in the physician's personal judgment regarding CPR application ($p=0.002$). Our findings suggest that personal aspects of physicians outweigh clinical protocols in decision making for resuscitation, as half of them have answered that decisions are based mainly on personal judgement. More specifically, their choices are made predominantly from their scientific point of view without undoubtful criteria or in opposition to the patient's willingness. This action can sometimes conflict with the fundamental medical principle of “do good, not harm”¹⁰.

In order to minimize the impact of personal beliefs and the insecurity of physicians, educational programs in this field are necessary. The knowledge of the legislation, the method of management of such cases and the improvement in communication skills of the physicians are parameters that can be beneficial in ensuring patient's capability to take his own decisions¹¹. Another point of interest in managing such cases, is the timing of the discussion of DNR orders. It was found that end-stage disease patients with DNR orders decided more than three days from the day of demise received more psychological support and palliative care than those in whom the decision is taken within the three days preceding death. Also, in the earlier DNR orders group, fewer patients were transferred to the intensive care unit and were intubated¹².

About seven in ten participants of the study declared that the information provided to patients was satisfactory. In the question whether the end stage disease patient should be informed about the option of DNR, 29.5 % of patients support that this option shouldn't be mentioned at all, while on the contrary similar percentage of patients supports that these patients must be fully informed about this choice. This finding highlights that physicians have different aspects ranging from “paternal” views to more liberal approaches. It should be mentioned that the tendency among physicians worldwide, especially in Western countries, is to provide all the information to the patient in order to make the decisions on his own¹³. Data from the East and, more specifically, from China showed that only half of the patients with in-hospital cardiac arrest had received DNR consultation¹⁴. In any case, this data suggests that a high percentage, but not the majority of physicians, tend to be more conservative in decision-making, as they avoid discussing such matters with patients.

The results of this study show that 47.7 % of participants strongly support that CPR is used to delay imminent death. However, 5.3 % of physicians had proceeded to CPR against the oral intention of patients or relatives for DNR. These findings suggest that physicians feel unprotected and afraid of lawsuits if the CPR protocol is not performed¹⁵. Definite legislative regulation improves the use of DNR in clinical practice, aiming substantially

Table 2:Registration of participants' opinions regarding Cardiopulmonary Resuscitation and its legal regulation.

	Not at all	A little	Moderately	Much	Very much	Much/very much (%)
Does your personal acumen trump scientific protocol in your decision to perform CPR?	61(46.2)	36(27.3)	22(16.7)	7(5.3)	6(4.5)	13(9.8)
In your department, do you consider that patients, or their immediate family, are properly informed about the severity of their clinical condition?	8(6.1)	7(5.3)	26(19.7)	62(47)	29(22)	91(69)
Is DNR/DNAR discussed with critically ill/terminally ill patients?	39(29.5)	35(26.5)	19(14.4)	30(22.7)	9(6.8)	39(29.5)
Is DNR/DNAR discussed with the immediate family of the critically ill/terminally ill patient?	19(14.4)	24(18.2)	23(17.4)	42(31.8)	24(18.2)	66(50)
Is your decision to proceed with CPR influenced by the patient's life expectancy?	15(11.4)	33(25)	36(27.3)	32(24.2)	16(12.1)	48(36.3)
Do you consider that after successful resuscitation, patients receive the proper support and monitoring?	11(8.3)	30(22.7)	59(44.7)	26(19.7)	6(4.5)	32(24.2)
In your opinion, mainly, is CPR performed to prolong life?	7(5.3)	34(25.8)	45(34.1)	37(28)	9(6.8)	46(34.8)
In your opinion, mainly, is CPR performed to delay death?	8(6.1)	15(11.4)	46(34.8)	54(40.9)	9(6.8)	63(47.7)
Are there instances where you have performed CPR despite the patient's or the family's verbal wish not to proceed?	78(59.1)	30(22.7)	17(12.9)	7(5.3)	0(0)	7(5.3)
If you were in critical condition (irreversible condition) would you want CPR to be applied?	93(70.5)	23(17.4)	7(5.3)	4(3)	5(3.8)	9(6.8)
Are you aware that in Greece, the DNR/DNAR wishes of the patient and/or relatives of the first degree, are not supported by law or any legal document?	10(7.6)	7(5.3)	17(12.9)	50(37.9)	48(36.4)	98(74.3)
Would your decision to execute CPR on critically ill/terminally ill patients be influenced by the existence of a legal framework and written consent/refusal?	9(6.8)	12(9.1)	22(16.7)	39(29.5)	50(37.9)	89(67.4)
Do you consider there should be legal framework and a consent/refusal document supporting non- resuscitation order for critically ill/terminally ill patients?	0(0)	1(0.8)	5(3.8)	32(24.2)	94(71.2)	126(95.4)

Values are presented as number with percentage in brackets, CPR: cardiopulmonary resuscitation, DNR: do not resuscitate, DNAR: do not attempt resuscitation.

at physicians, although legislative changes without further actions lack achieving the desired outcomes¹⁶. Consequently, they follow the typical or defensive clinical practice to avoid legislative troubles, as the local law does not include such regulations.

The data collection time should also be commented on, as this study was conducted during the COVID. Indeed, during the pandemic of the coronavirus disease 2019 (COVID-19), such issues arose with serious dilemmas for physicians in daily practice¹⁷. The increased need for hospital beds during the pandemic affected more or less the aspects of physicians in DNR issues. More specifically, the DNR order was conceived as a rational choice in cases of futility in the United Kingdom due to COVID-19 compared to previous periods, leading to

more ease in proposing DNR to patients¹⁸. This phenomenon was observed even in traditionally more conservative societies of the Islamic world, such as Iran, even though there were no legislative regulations in this direction¹⁹. Beliefs regarding DNR were affected by the COVID-19 pandemic for sure, but this is not necessarily positive. According to Fins, a new risk of expansion of physician's paternalism over patients is emerging, as under the pressure of pandemic physicians may restrict patient's autonomy in decision making²⁰.

About three of four participants knew there was no legislative regulation regarding the willingness of patients or their relatives regarding DNR. Additionally, 67.4 % of physicians declared that a clearly defined law for written consent in this field would substantially im-

Table 3: Test-retest results were applied to 15 participants, and significant agreement was demonstrated between the two evaluations in all questionnaire elements.

	ICC	p
Does your personal acumen trump scientific protocol in your decision to perform CPR?	0.98	<0.001
In your department, do you consider that patients, or their immediate family, are properly informed about the severity of their clinical condition?	0.98	<0.001
Is DNR discussed with critically ill/terminally ill patients?	0.98	<0.001
Is DNR/DNAR discussed with the immediate family of the critically ill/terminally ill patient?	0.91	<0.001
Is your decision to proceed with CPR influenced by the patient's life expectancy?	0.98	<0.001
Do you consider that after successful resuscitation, patients receive the proper support and monitoring?	0.95	<0.001
In your opinion, mainly, is CPR performed to prolong life?	0.80	0.002
In your opinion, mainly, is CPR performed to delay death?	0.92	0.001
Are there instances where you have performed CPR despite the patient's or the family's verbal wish not to proceed?	0.93	<0.001
If you were in critical condition (irreversible condition) would you want CPR to be applied?	1.00	<0.001
Are you aware that in Greece, the DNR/DNAR wishes of the patient and/or relatives of the first degree, are not supported by law or any legal document?	0.95	<0.001
Would your decision to execute CPR on critically ill/terminally ill patients be influenced by the existence of a legal framework and written consent/refusal?	0.95	<0.001
Do you consider there should be legal framework and a consent/refusal document supporting non-resuscitation order for critically ill/terminally ill patients?	0.79	0.003

ICC: intraclass correlation coefficient, CPR: cardiopulmonary resuscitation, DNR: do not resuscitate, DNAR: do not attempt resuscitation.

Table 4: Exploratory factor analysis results, using principal components method, after Varimax rotation.

	Criteria for applying CPR	Dilemmas and legal frame about applying CPR	Doctor's personal judgement in applying CPR
Does your personal acumen trump scientific protocol in your decision to perform CPR?			0.72
In your department, do you consider that patients, or their immediate family, are properly informed about the severity of their clinical condition?			-0.49
Is DNR discussed with critically ill/terminally ill patients?	0.75		
Is DNR/DNAR discussed with the immediate family of the critically ill/terminally ill patient?	0.47		
Is your decision to proceed with CPR influenced by the patient's life expectancy?	0.55		
Do you consider that after successful resuscitation, patients receive the proper support and monitoring?	0.61		
In your opinion, mainly, is CPR performed to prolong life?	0.71		
In your opinion, mainly, is CPR performed to delay death?			0.56
Are there instances where you have performed CPR despite the patient's or the family's verbal wish not to proceed?		-0.63	
If you were in critical condition (irreversible condition) would you want CPR to be applied?		-0.46	
Are you aware that in Greece, the DNR/DNAR wishes of the patient and/or relatives of the first degree, are not supported by law or any legal document?		0.40	
Would your decision to execute CPR on critically ill/terminally ill patients be influenced by the existence of a legal framework and written consent/refusal?			-0.45
Do you consider there should be legal framework and a consent/refusal document supporting non-resuscitation order for critically ill/terminally ill patients?		0.69	
% of variance explained	17.6	15.3	11.6
Cronbach's a	0.74	0.72	0.71
Minimum	1.2	2.8	1.0
Maximum	5.0	5.0	4.3
Mean \pm standard deviation	2.9 \pm 0.7	4.3 \pm 0.6	2.4 \pm 0.6
Median (interquartile range)	3.0 (2.4-3.4)	4.5 (4.0-4.8)	2.5 (2.0-2.9)

CPR: cardiopulmonary resuscitation, DNR: do not resuscitate, DNAR: do not attempt resuscitation.

Table 5: Multiple linear regression analysis results with the factors as dependent variables in a stepwise method.

Dependent variable	Independent variable	β +	SE++	p
Criteria for performing CPR	How many times have you practiced CPR on patients?			
	0-10 (reference)			
	10-50	-0.05	0.07	0.460
	50-100	-0.19	0.07	0.011
	>100	-0.21	0.07	0.002
Dilemmas and legal regulations regarding CPR	Specialty			
	Surgical (reference)			
	Internal Medicine	0.05	0.02	0.041
	Years of clinical experience	0.01	0.001	<0.001
Doctor's personal acumen in applying CPR	Gender			
	Men (reference)			
	Women	0.15	0.05	0.002
	Specialty			
	Surgical (reference)			
	Internal Medicine	-0.15	0.05	0.004
	Years of clinical experience	-0.01	0.002	0.002

Analyses were made after logarithmic transformation of the dependent variables, β : regression coefficient, SE: standard error.

pact doctors' decisions and practice. Indeed, the tendency is to extend the patient's autonomy, especially for end-stage and critically ill patients. Therefore, the discussions about patient-centered decisions after informed consent are increasing. So, except DNR, other intentions have appeared, such as Do Not Intubate (DNI) or Do Not Operate (DNO)²¹. Moreover, 94.5 % of the participants are positive about establishing the legislative regulation and document creation regarding DNR in patients with end-stage disease or those critically ill to ensure patients' rights and make the decision-making process for physicians less stressful.

The main limitation of the current study is the necessity of broader data collection. While the sample was collected from two hospitals in one city, data from more hospitals from different regions is essential to improve the generability of reported outcomes.

Conclusions

The findings of this study depict the need for regulation of DNR in end-stage disease or critically ill patients after informed consent. Patient rights preservation and physicians' clinical dilemmas during decision-making process avoidance are undoubtful benefits of such legislative reforms.

Conflict of interest

No conflicts of interest declared.

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