

## Economic decisions on who to treat when resources are not enough for everyone. Evidence from a Spanish survey

Decisiones económicas respecto a quién tratar cuando los recursos no son suficientes para todos. Evidencia de una encuesta española

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Received 23<sup>th</sup> December 2017 / Sent for Modification 12<sup>th</sup> January 2018 / Accepted 20<sup>th</sup> August 2018

### ABSTRACT

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**Objective** To analyze the attitudes of Spanish citizens towards the criteria that should be used as a guide to make decisions regarding the prioritization of patients, namely, medical, economic and person-based criteria.

**Methods** An online self-administered questionnaire was used to collect data from a sample of 546 Spanish respondents. The questionnaire was made up of three questions. In the first two questions respondents faced a hypothetical rationing dilemma involving four patients (differentiated by personal characteristics and health conditions) where they were asked to: (i) choose only one patient to be treated and (ii) rank the patients' assistance priority order. As for the third question, respondents were asked to state their level of agreement with 14 healthcare rationing criteria through a five-point Likert scale. Descriptive statistics, factor analysis and multinomial regressions were used.

**Results** Findings suggest that Spanish respondents support a plurality of views on the rationing principles on which healthcare microallocation decisions should be based. Despite the fact respondents support the idea that all patients should receive healthcare assistance equally, they also consider the age of the patient, as well as economic factors when establishing assistance priorities among patients.

**Conclusions** If it is not possible to provide health care assistance and treatments to all people, then age and economic factors should guide healthcare priority setting.

**Key Words:** Healthcare rationing; economics; ethics; social values; public opinion (source: MeSH, NLM).

### RESUMEN

**Objetivo** Explorar las actitudes de los ciudadanos españoles hacia los principios que deben guiar las decisiones relativas a la priorización de pacientes.

**Métodos** Se utilizó un cuestionario auto administrado en línea para recopilar datos de una muestra de 546 encuestados españoles. El cuestionario consta de tres preguntas. En las dos primeras preguntas, los encuestados se enfrentaron a un hipotético dilema de racionamiento con cuatro pacientes (diferenciados por características personales y condiciones de salud) donde tuvieron que: (i) seleccionar un solo paciente para tratar y (ii) clasificar a los pacientes por orden de asistencia. En la tercera pregunta, los encuestados tuvieron que indicar su nivel de acuerdo con 14 criterios de racionamiento a través de una escala de Likert de cinco puntos. Se usaron estadísticas descriptivas, análisis de factores y regresiones multinomiales.

**Resultados** Los resultados sugieren que los encuestados españoles soportan una pluralidad de puntos de vista sobre los principios de racionamiento que sostengan las decisiones de microasignación de los cuidados de salud. A pesar de que los encuestados apoyan el valor ético de tratar a las personas por igual, también valoran la edad de los pacientes y los factores económicos al establecer las prioridades entre pacientes.

**Conclusiones** Si las personas no pueden ser tratadas por igual, entonces la edad del paciente y las consideraciones económicas deben apoyar el establecimiento de prioridades de atención médica.

**Palabras Clave:** Prestación de atención de salud; asignación de recursos para la atención de salud; economía; ética; valores sociales; opinión pública (*fuentes: DeCS, BIREME*).

Health systems sustainability is one of the major challenges public policymakers in developed countries face. Since the second half of the 20th century, health expenditure has been increasing at a faster pace than national income levels all over the world (1). The worldwide 2008 financial crisis made evident the financial difficulties of health systems, and provided an opportunity to bring healthcare rationing to the political agenda (1). Currently, health care rationing is no longer a discussion issue, but rather how it should be performed in a transparent and explicit manner. At the micro-level, rationing or priority setting (terms that will be used interchangeably) is particularly complex and controversial, for it involves bedside treatment decisions about denying, on the grounds of scarcity, a potentially beneficial treatment to patients. On what basis should these priorities be established? This question remains unanswered among main social actors involved.

In response to this situation, several studies have proposed appropriate and conflicting ethical principles to take bedside healthcare rationing decisions (2-9), which can be divided into three groups: (i) economic (direct consequences of treatments, such as increasing life expectancy or improving the quality of life, or indirect consequences, such as long term care costs, both financial or the burden it represents to other people involved, either physical or emotional); (ii) medical (severity of illness), and (iii) patient based (age, life-styles, economic condition, among others).

Somehow, according to a fourth principle, explicit rationing is unethical, as no one should be forced to decide who is going to live or to die. Based on the 'fair chances' reasoning (including lottery and first come, first served basis) everyone has a fair chance in terms of receiving an appropriate treatment (10).

In addition, an increasing number of empirical studies have been conducted around the world in order to find out which of these criteria are supported by the general public, on whose behalf health care rationing decisions are being made. Whereas medical based principles seem to be generally considered as valid for priority setting (11-14), there is not enough information on whether economic (13-19) or patient-based criteria (18-23) are acceptable by the general public for this purpose.

However, it is not possible to draw any detailed conclusion from these studies, since their results vary depend-

ing on aspects such as the countries that were surveyed, the operationalization that was chosen, and the research design (22). In fact, it seems that healthcare rationing preferences differ not only at individual levels, but also at cultural levels, thus a successful policy in health care priority setting must consider the values and cultural setting of the population for which it is intended.

In this context, the aim of this study is to explore the preferences of Spanish citizens regarding the criteria on which healthcare rationing decisions at the micro-level should be based. This research is particularly relevant for Spain for two reasons. First, the Spanish health system has faced great challenges due to the severe austerity measures that have been imposed for obtaining the bailout from the European Financial Stability Facility [for more detailed information on the Spanish health system reforms see Gallo and Gené-Badia (24) and Cervero-Liceras et al. (25)]. Second, to the best of our knowledge, so far there are not studies addressing the preferences of the Spanish population regarding the health care priority setting principles that should be considered as the basis for the allocation of scarce healthcare resources at micro-levels.

Therefore, this study is the first of its kind assessing, in a systematic way, people's beliefs and perceptions about healthcare rationing in the Spanish context.

## MATERIALS AND METHODS

### Questionnaire design

The questionnaire consisted of three questions. The first two questions addressed a hypothetical rationing exercise designed elsewhere (20). The scenarios used for said hypothetical exercise described four patients, each one distinguished by their personal features and health status (Table 1). Respondents were asked to act as decision makers and indicate: (i) among the four patients who should be treated if there were enough resources to treat them all, and (ii) what should be the order of health care assistance or treatment provision in the case there are not enough resources to provide treatment to all the patients at the same time. On the other hand, the third question was composed of 14 statements, designed elsewhere (13), related to the criteria that should be considered in order to define treatment provision priorities between patients. In this case, respondents were asked to express their level of

agreement with each statement through a five-point Likert scale (1 = “strongly disagree” and 5 = “strongly agree”).

**Table 1.** First two questions of the questionnaire: Hypothetical scenarios

Suppose that you are a decision maker in a hospital with available resources to treat:	Hypothetical scenarios
#1 Question: only one of the following patients. What patient would you choose?	Juan. An 18 years old who suffered a road traffic accident which resulted in severe facial scarring and psychological problems. Plastic surgery would correct the scarring.
#2 Question: all patients but not at the same time. Indicate the priority order (where 1st stands for the highest priority and 4th, the lowest priority)	Maria. A 45 years old woman with no children and single. She has been diagnosed with hepatitis B as a result of their long years of drugs use. Maria has not done drugs for 5 years. At present, there is a treatment available with a 75% effectiveness rate that will provide her with more years of quality of life.
	Rosa. A 65 years old who is almost blind. She has been waiting over 3 years for a surgery to remove her cataracts. Her visual impairment has worsened over time and soon she will no longer be able to live on her own. Besides, she has no family to rely on. This surgery will allow her to live on her own without anyone looking after her.
	Pedro. An 8 years old who has been diagnosed with leukemia. His survival probability is 50%, but there is a new treatment available that has been partially tested in a few cases.

### Data collection and participants' description

Data were collected through a self-completion questionnaire made available in several social networks (Facebook, Twitter, LinkedIn, and Google Plus) and via email during four months. Only Spanish residents over 18 years were allowed to complete the survey. The questionnaire was designed to be complete anonymously and was preceded by a sheet in which the scope of the study was explained, and the permission to use the data obtained through it was requested.

A total of 546 respondents completed the questionnaire. A detailed description of the random sample is shown in Table 2. On average, participants were younger and had a higher schooling than the average Spanish population (26).

### Data analysis

Quantitative analysis was made through descriptive statistics. Then, the 14 statements were subjected to principal components analysis with varimax rotation to identify the main rationing principles regarding patients' treatment prioritization. Factorability of the factorial analysis

was confirmed through several pre-tests, including the determinant of the correlation matrix, Cronbach's alpha coefficient, a Kaiser-Meyer-Olkin ( $\kappa_{MO}$ ) test of sampling adequacy and a Bartlett's test of sphericity. In addition, multinomial logistic regressions were used to test for differences in the priority order that was assigned to the hypothetical patients, taking into account the main rationing principles. The whole analysis was performed with SPSS (version 24) and STATA (version 14) software.

**Table 2.** Demographic, socio economic and health characteristics of the sample population

Characteristics	Respondents (n=546) %
<b>Gender</b>	
Female	52.8
Male	47.2
Total	100
<b>Age (in years)</b>	
[18, 24]	21.0
[25, 34]	47.4
[35, 44]	17.6
[45, 54]	8.4
> 54	5.6
Total	100
<b>Marital status</b>	
Single	63.8
Married	33.1
Divorced	3.1
Widow	0.0
Total	100
<b>Schooling</b>	
Elementary studies	1.1
Secondary studies	18.4
Higher education studies/degree	42.0%
Master or PhD degree	38.5%
Total	100%
<b>Professional status</b>	
Self-employed	8.2%
Employee	57.5%
Unemployed	11.0%
Student	22.3%
Retired	1.0%
Total	100%
<b>Net monthly income</b>	
< 700€	32.3%
[701 and 1200€]	44.4%
[1201€ and 1700€]	15.0%
> 1701€	8.3%
Total	100%
<b>Private insurance</b>	
Yes	25.3%
No	74.7%
Total	100%
<b>Self-rated Health</b>	
Very Good	24.7%
Good	57.7%
Average	17.6%
Bad	0.0%
Very bad	0.0%
Total	100%

## RESULTS

### Selecting patients and ranking treatment priority

The pattern of responses to the first (first column) and second questions (second column) of the questionnaire is presented in Table 3. Only two respondents refused to choose what patient should be treated and to set a treatment priority order, while all of the other participants gave priority to at least one patient. In the first scenario (where only one patient could be treated), the child (Pedro) was

the one chosen by most respondents (65.3%), followed by the elderly patient (Rosa) (19.9%), the young adult (Juan) (11%) and María, the former drugs user (3.8%). Likewise, from the mean and median of the priority ranking exercise in the second scenario (where all patients could be treated but not at the same time) it seems that the pattern of responses was consistent between both questions, as in this scenario, in average, Pedro was chosen as the one to receive the top or joint-top priority, followed by Rosa and Juan, and María was the one to be assigned the lowest priority.

**Table 3.** Selection of the single patient to be treated (1st scenario) and ranking of the four patients' treatment priority (2nd scenario). Mean and Median (n=544)

Patient	1st Question: Choice of the only one patient to be treated	2nd Question: Priority ranking of the patients				
	Frequency (%)	Priority rank 1	Priority rank 2	Priority rank 3	Priority rank 4	Median
Pedro	355 (65.3)	373 (68.3)	117 (21.5)	24 (4.4)	30 (5.5)	1.5 (1)
Rosa	108 (19.9)	87 (15.9)	187 (34.4)	163 (30.0)	107 (19.7)	2.5 (2)
Juan	60 (11.0)	69 (12.7)	121 (22.2)	214 (39.3)	140 (25.7)	2.8 (3)
María	21 (3.8)	15 (2.8)	119 (21.9)	143 (26.3)	267 (49.0)	3.2 (4)

### Support of rationing principles

Table 4 presents the respondents' level of agreement with the statements regarding the criteria to be used to prioritize patients. These results revealed that Spanish respondents seem to support all the criteria that have been discussed in the available literature in this regard. By order of importance respondents seemed to support medical based (priority assignment to patients with an increased life-threatening risk -ES5), fair-chances based (all patients deserve equal health care provision priority-ES1), person-based (priority is given to children for they have not lived enough and they are more vulnerable than other population groups-ES6 and ES7) and economic based (priority should be given to more effective treatments-ES14) criteria when healthcare rationing is necessary.

To identify the main rationing criteria, all statements were analyzed altogether by using the factor analysis method. Factor analysis was performed through a principal component analysis with varimax rotation. Correlations between variables were suitable to be performed as indicated by the Kaiser-Meyer-Olkin ( $\kappa_{MO} = 0,884$ ) test and the statistical value of the Bartlett's test ( $\chi^2 = 260,315$ ;  $p = 0,000$ ). Table 5 summarizes the main results of the analysis. Three distinct factors emerged, accounting for 67.251% of the total variance of the data. All items loaded highly onto the factors and no item loaded onto more than one factor, supporting the independence of the dimension. The most important factors were patients' age (representing 32% of the variance), followed by economic criteria (18.3%) and fair chances (16.9%).

### Relationship between the healthcare priority setting criteria and the choice of the patient to treat

Multinomial logistic regressions were applied to test for differences in the top priority that was assigned to hypothetical patients (first question: choosing the only patient to be treated – first column of Table 3) in relation to the stated relevance of each of the three main rationing criteria (Table 5). Regressions were run for all patients; coefficients and marginal effects are shown in Table 6. Results reveal that the age of the patient (personal-based criterion) was statistically significant in choosing Pedro and Rosa to be attended first. Age factor increased the probability of selecting Pedro to be treated first by 11 percentage points (p.p) and Rosa by 9.2 p.p. In contrast, the economic criterion was only statistically significant when the young adult (Juan) was chosen. The economic criterion increased the probability of providing Juan with treatment first by 3.9 p.p. Finally, the fair chances criterion was not statistically significant in choosing any of the patients, something to be expected in accordance with its definition.

## DISCUSSION

An increasing number of studies have suggested that, when asked, citizens are able to make decisions involving patients' prioritization (18,19). However, given the plurality of views on rationing principles, no simple criteria can be defined to support patients' priority setting. Therefore, the purpose of this study was to explore Spanish respondents' attitudes concerning the principles on which health care microallocation decisions should be based. The results

**Table 4.** Scale application and descriptive analysis of the criteria used to decide the prioritization of patients

	Variables	SDIS (%)	DIS (%)	NAND (%)	AGR (%)	SAGR (%)	Mean	Standard Deviation
ES1	All patients deserve equal prioritization, and it's not up to anyone to decide who should be treated or not.	8.8	10.4	27.5	15.4	37.9	3.63	1.32
ES2	Patients should be treated according to their order of arrival – first come, first served.	52.7	23.1	17.0	2.2	4.9	1.84	1.10
ES3	Priority should be given to those patients who will obtain more years of life if treated - life expectancy increase principle.	18.1	23.6	37.9	12.6	7.7	2.68	1.14
ES4	Priority should be given to patients who will obtain a better quality of life if treated, regardless an increase in their life expectancy is achieved or not.	9.9	16.5	47.3	17.6	8.8	2.99	1.05
ES5	Priority should be given to patients with an increased life-threatening risk.	3.8	4.9	13.2	31.3	46.7	4.12	1.07
ES6	Priority should be given to children, for they have yet not lived enough	4.9	12.1	29.7	32.4	20.9	3.52	1.10
ES7	Priority should be given to children because they are more vulnerable and need more protection.	4.9	12.1	35.2	31.3	16.5	3.42	1.06
ES8	Priority should be given to the elderly since they are more fragile and need more protection.	8.2	27.5	42.9	17.6	3.8	2.81	0.95
ES9	Priority should be given to handicapped (physically or mentally disabled) patients	8.8	20.9	48.9	17.0	4.4	2.87	0.95
ES10	Priority should be given to the most economically disadvantaged patients.	22.5	19.8	33.0	18.1	6.6	2.66	1.19
ES11	Priority should be given to patients that are not engaged in risky behaviors such as smoking, drinking, taking drugs etc.	25.3	19.2	23.1	18.7	13.7	2.76	1.38
ES12	Priority should be given to those patients who, if treatment is provided, will not require further treatments in the future.	17.0	18.1	37.9	22.0	4.9	2.80	1.12
ES13	Priority should be given to patients requiring less expensive treatments.	57.1	18.7	17.6	3.8	2.7	1.76	1.05
ES14	Priority should be given to more effective treatments.	10.4	8.2	26.9	28.0	26.4	3.52	1.26
ES15	This type of choices / decisions should always be taken by health professionals	3.8	3.3	13.7	25.8	53.3	4.21	1.05
ES16	Such choices / decisions should always be taken by managers/economists	57.1	23.1	12.6	2.2	4.9	1.75	1.08
ES17	Economic recession might, in time, make these choices real.	7.1	3.8	11.5	26.4	51.1	4.10	1.19

Notes: SDIS = strongly disagree; DIS = disagree; NAND = neither agree nor disagree; AGR = agree; SAGR = strongly agree

**Table 5.** Main distributive principles: factorial analysis

Variables	Loading*		
	Age	Economic criterion	Fair Chance
ES6 - Priority should be given to children, for they have not yet lived long enough	0.93		
ES7 - Priority should be given to children because they are more vulnerable and need more protection	0.91		
ES14 - Priority should be given to more effective treatments		0.85	
ES12 - Priority should be given to those patients who, if treatment is provided, will not require further treatments in the future		0.79	
ES4 - Priority should be given to patients who will obtain a better quality of life if treated, regardless an increase in their life expectancy is achieved or not		0.67	
ES2 - Patients should be treated according to their order of arrival – first come, first served			0.74
ES1 - All patients deserve equal prioritization, and it's not up to anyone to decide who should be treated or not.			0.70
Eigenvalues/Rotation Sums Squared Loadings	2.24	1.28	1.19
% Variance	32.03	18.28	16.94

\*Extraction method: Principal Component Analysis. Rotation Method: Varimax with Kaiser normalization

**Table 6.** Multinomial logistic estimates: associations between rationing criteria and top priority assigned to patients

Variables	Coef.	Marginal effects Juan	Coef.	Marginal effects María	Coef.	Marginal effects Rosa	Marginal effects Pedro
Age	0.37 (0.29)	-0.01 (0.02)	0.4 (0.42)	-0.00 (0.01)	0.68*** (0.21)	0.09*** (0.03)	0.11*** (0.03)
Economic criterion	0.39 (0.29)	0.04*** (0.03)	-0.12 (0.41)	-0.01 (0.01)	-0.01 (0.19)	-0.03 (0.03)	0.01 (0.03)
Fair chance	0.28 (0.29)	0.03 (0.02)	0.44 (0.46)	0.02 (0.02)	0.01 (0.20)	-0.03 (0.04)	-0.01 (0.03)
Constant	-0.57* (0.31)		-1.59*** (0.45)		1.29*** (0.21)		
Number of observations							
LR Chi2(9)	546						
Prob > Chi2	17.4						
McFadden's	0.0						
AdjR2	0.05						

Notes: Significant at: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$  level. The multinomial logistic regression estimates the probability of choosing all patients at first place given the main rationing principles (age, economic criterion and fair chances) are set to their mean values

obtained here show that, despite the fact all respondents considered that all patient deserved equal healthcare provision, they showed their support for medical, economic and person-based criteria when prioritization of patients is necessary. However, regarding person-based criteria, only the age of the patient was considered as relevant.

When all the criteria used to prioritize patients were analyzed, three emerged as the most important: (i) patients' age; (ii) economic based criteria and (iii) fair chances. The age-related preferences of the respondents seem to be caused by their aversion to lifetime health inequalities alongside with their protective instinct towards the most vulnerable individuals. This would explain why Pedro and Rosa were given priority by most of the respondents. The same pattern of preferences was reported in Brazilian and Portuguese respondents (27,13). One possible explanation of this concern phenomenon in relation with the elderly in Latin cultures may be the strong concept of family that still prevails in these societies.

The support Spanish respondents gave to the economic criterion was evidenced by their concern regarding the treatments outcomes. This way, choosing Juan to be treated first may be justified by this reasoning. Besides, respondents seem to value the quality of life more than life expectancy, which is in agreement with findings reported around the world (18,19).

Overall, the findings reported here suggest that if patients cannot be treated equally, their age and economic related aspects (such as treatment outcomes) should work as a guide for healthcare priority setting. These results also allow to state that Spanish respondents are concerned about the distributive principles to be applied in healthcare rationing, which is interesting, considering that in recent years the Spanish health system has experienced sizeable cutbacks that have had a direct impact on

the users enrolled in it, the benefits that are covered, and what share of the costs of the service provision is paid by the general population.

In this context, policy makers in Spain have the opportunity to start a public and open debate on this matter, in order to define systematic criteria to choose who should receive healthcare. Likewise, this public discussion is of great importance more than ever as decisions involving patients' prioritization may become unavoidable due to the increasing scarcity of resources. However, any health system reform involving ethical values should be discussed with the general population and health professionals in order to achieve their support, otherwise, a serious reform is unlikely to be developed or agreed upon.

The results of this study should be interpreted with proper caution, given the nature of the sample, as it is not representative of the Spanish population and therefore these findings cannot be generalized to the rest of the country's population. Furthermore, data on preferences were collected through an online-based questionnaire; somehow, despite the wide limitations of using online questionnaires, there has been an increasing interest in collecting preferences data online in recent years (27,28) and the few studies that assessed the impact of how social preferences are elicited have described broadly similar responses across the different modes of questionnaires administration (29). We hope these drawbacks are overcome by the contributions made by the present study.

In future studies, it would be useful to replicate this work to a representative sample of Spanish citizens. Also, it would be interesting to explore and compare the opinions of other parties involved, like politicians and health professionals. This is a matter of procedural justice, in facilitating transparency and helping to ensure that open and fair decision making processes are followed (30). There

is some evidence suggesting that the opinions of medical doctors and the general public on the appropriate ethical principles for healthcare priority setting may differ (31) ♣

*Conflict of interest:* None.

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