Relative importance assigned to health care rationing principles at the bedside: Evidence from a Portuguese and Bulgarian survey

Micaela Moreira Pinho, PhD; Ana Pintto Borges,PhD

Abstract

Activity was undertaken to develop a Prioritization Scoring Index for Portugal and Bulgaria that weights the importance given to ethical rationing principles that should guide decisions at the bedside. Data from two random samples of 355 Portuguese and 298 Bulgarian members of the public were collected from an online questionnaire. Questions asked about the level of importance given to specific issues related to patient's prioritization criteria. Responses were analyzed quantitatively with the SPSS. In the process of selecting the patient to treat, Portuguese and Bulgarian respondents seem unanimous in giving greater importance to (i) the treatment outcomes,
(ii) the severity of illness, (iii) children, and (iv) patients' fragility. In general, Portuguese and Bulgarian respondents allocate more than 50% of the prioritization weight to equity considerations, approximately 35% to efficiency considerations, and 5% to lottery selection. Even so, Bulgarian respondents rate highly the equity and less the efficiency consideration than Portuguese respondents. Although the pursuit of efficiency seems to be valued by respondents, their major concern seems to be with the reduction of inequalities in health. Key words: *Bulgaria, efficiency, equity, Portugal, prioritization, social values*

Until recently, the rationing of health care was invisible and silent. Recently, mostly because of the economic crises, health care expenditures have become a major focus of public policy in developed countries. Rationing or priority setting (terms we will use inter- changeable following Coulter and Ham[1]) is unavoidable and occurs as long as needs are limitless and resources are not. Rationing can occur at the macro or micro level. Macroallocation includes decisions about how to allocate funds across a range of public goods. Microallocation involves bedside decisions about denying a potentially beneficial treatment to patients on the ground of scarcity. However, conceptually distinct, both levels of decision are related. Restrictive macroallocation decisions regarding health care funding create more situations for discriminating patients. In this article, we focus on the micro level of priority setting.

The difficulty in carrying out rationing in health is compounded by the need

to balance health care priority setting with health systems goals, broadly defined as maximization of health, reduction of inequalities in health, and financial protection against the costs of ill health.[2,3] Health economists proposed the use of cost-effectiveness analysis (CEA) as an approach to establish health priority setting. The CEA had no effective implementation at the micro level mainly, because it addresses only the first objective of maximizing the production of health given the resources available.[4]

It has been increasingly obvious from an increasing empirical literature that social values, rather than being a linear function of potential health gains seems to be sensitive to the fairness of health care distribution.[5-7] Recent years have witnessed an increasing number of proposals of ethical principles to address distributional concerns in priority setting among patients.[8-14] The ongoing theoretical debate in the health economics' literature shows that a universal theory concerning the meaning of equity is unlikely to be developed or ever agreed on, which clearly calls for information about societal preferences toward different dimensions in health care. In addition, it is difficult to conclude from the literature about the relative weight given to one equity criterion as compared with another.

To say something tentative about how people weight each of the criteria, we used Portuguese and Bulgarian preferences regarding general principles applicable to a broad range of bedside health care rationing decisions to develop an explicit priority setting methodology, Prioritization Scoring Index (PSI). The PSI is a framework for scoring and ranking distributional criteria and, consequently, can be a tool to inform decision-making. This prioritization methodology was developed and used elsewhere to prioritize bids for nonrecurring funding from specific allocations.[15,16] Through the PSI, it is possible to compare the emphasis given to each rationing principles by members of both countries. This is particularly relevant because robust research evidence comparing the public's viewpoint across countries is lacking.

METHODS

This study builds on the development of a PSI to weight the substantive rationing principles that should guide health care prioritization decisions at the bedside. We used an online questionnaire to determine the weight that each criteria should have in setting priorities among patients in Portugal and Bulgaria. Our study has two main objectives: firstly, to identify the weights attached by members of the Portuguese and Bulgarian public to each prioritization criteria to define an explicit process of

microallocating health care resources; secondly, to compare these weights between
Portuguese and Bulgarian citizens.

Questionnaire

Preferences were collected through an on- line questionnaire made available on various social networks for 6 months during 2015. The questionnaire included criteria identified from the literature on priority setting and used pre- viously.[17] The criteria were chosen because they are widely accepted, seem relevant to Portugal and Bulgaria, or have implication on equity of access to health care. The criteria were organized to reflect three major categories of rationing principles: (i) maximizing health,[18] (ii) egalitarian or reducing health inequalities,[19-21] and (iii) lottery by addressing the patient's needs as equal.[22]

Based on the importance that Portuguese and Bulgarian respondents ascribe to each criterion, we developed a ranking and scoring of the rationing principles. Respondents used a five-point Likert scale that ran from 1 (not important) to 5 (very important) to indicate the level of importance that they attach to each of the 12 statements (described in the first column of Table 1). Each question began with the statement: "If, between two patients who need health care, you have to choose one, how important are the following factors in your decision?" The questionnaire was pretested and piloted in both countries using participants living in each country of different ages, qualifications, and professions.

Samples

Data were collected from a sample of 355 Portuguese and 298 Bulgarian citizens. Table 2 gives a breakdown of the characteristics of respondents and shows that, on average, the samples were better educated and had higher incomes than the general population.

Table 1. Relative Importance of the Criteria Contained in the PSI, Median Values for Portugal and Bulgaria

If, between 2 patients that need health care, you have to choose one, how important are the following factors in your decision:	Portugal, Median	Bulgaria, Median
1. Consideration is given to "not choosing"		
Order of arrival or "first come first served"	2	2
2. Consideration is given to the more efficient use of the scarce resources		
Years of life gained—life expectancy increase	3	3
Gains in quality of life	3	3
Future treatments avoided—future savings for the health system	3	3
Treatment outcomes/recovery	4	4
Cheaper treatments—avoid expensive treatments	1	1
3. Consideration is given to the reducing of inequalities in health		
Urgency or severity of the clinical condition	4	5
Age—preferences for children	4	5
Patients' economic situation—preference for the poor	3	3
Patients with physical and/or mental disabilities	3	3
Harmful health behaviors—preference for patients with no risk behavior	3	3
Patients' fragility and/or vulnerability	4	5

Data Analysis

The quantitative analysis was performed using Excel (Microsoft, Redmond, Washington) and SPSS statistical software (version 23; IBM, Armonk, New York). We tested for possible association between respondents' characteristics and the level of importance attached to each criterion in PSI using the analysis of variance (ANOVA) test. The ANOVA is appropriate to compare means of a continuous variable (PSI criteria) with two or more independent comparison groups (respondents' characteristics).

RESULTS

Table 1 presents the median values chosen by Portuguese and Bulgarian respondents for each patient prioritization criterion. We use the median, rather than the mean, because the distribution of values for each question tended to be skewed, rather than being normally distributed. In this context, the median is considered to be a more accurate indicator of the view of the "majority" compared with the mean.

The main conclusions that we can draw from these responses are as follows:

- Portuguese respondents, contrary to Bulgarian, did not classify any of the criteria as very important.
- In general, and according to Portuguese and Bulgarian respondents when priorities must be established among patients much, greater importance should be given to (i) the treatment outcomes, (ii) life-threatening conditions (severity of health condition), (iii) children, and (iv) patient's fragility and/or vulnerability. Furthermore, Bulgarian respondents assigned greater importance to the last three issues compared with the Portuguese.
- For Portuguese and Bulgarian respondents, less importance should be given to the health care costs and to the patient order of arrival. Respondents seem to believe that prioritizing decisions are necessary.

To build the PSI, we combined the previous 12 criteria into three main substantive rationing principles. We then obtained the median values for these three sets of principles that should guide the microallocation of scarce health care resources. These are (i) lottery principle, (ii) efficiency (to maximize health gains), and (iii) equity (to reduce health in- equalities). We then used these median values to allocate percentage weights and to establish the PSI criteria for both countries according to the pattern of respondents' preferences. Table 3 presents the assigned weights for each group of respondents to each of the rationing principles. These results show that Portuguese and Bulgarian respondents would allocate more than 50% of the total weighting to equity consideration, which comprises reducing health inequalities. They assigned a lower weighting to efficiency consideration, approximately 35% and 38% for Portuguese and Bulgarian respondents, respectively. The remaining 5% is attributed to the lottery criteria.

Table 2. Respondents' Sociodemographic Characteristics

Characteristics	Portuguese (n = 355), %	Bulgarian (n = 298), %
Sex		
Female	54.9	69.1
Male	45.1	30.9
Age		
18-24	16.6	15.8
25-34	25.6	35.6
35-44	32.2	26.5
> 44	25.6	22.1
Marital status		
Single	38.9	41.9
Married	52.7	47.3
Divorced	6.8	7.7
Widow	1.6	3.1
Education		
Elementary studies	7.9	2.0
Secondary studies	14.6	33.6
Higher studies/ degree	49.6	24.2
Master or PhD	27.9	40.2
Work situation		
Self-employed	16.4	11.4
Employee	62.5	63.8
Unemployed	7.3	6.4
Student	11.3	12.1
Retired	2.5	2.0
Domestic	0.0	4.3
Net monthly income		
≤ €485	15.5	5.7
€486-€1000	29.1	33.9
€1001-€1500	23.9	40.6
> €1501	31.5	19.8
Has it ever been denied health care to you (or to a family member or friend)?		
Yes	23	28
No	77	72

Abbreviations: ANOVA, analysis of variance.

By directly comparing the PSI weights of both groups of respondents, we may conclude that Bulgarian respondents ascribe a greater weight to equity consideration than Portuguese and less to efficiency (approximately 3 percent- age points difference).

The ANOVA test revealed a few associations. A detailed description of the results can be found in appendix (Table A1). For Portuguese respondents, there was a significant relation between (i) the importance attached to efficiency and equity considerations and sex, (ii) the importance attached to lottery and efficiency considerations and marital status, and (iii) the importance attached to all three principles and education and net income. It seems that the less educated and poorer respondents where those who gave greater relative importance to equity considerations. This result may be expected but needs more research. For Bulgarian respondents, the only significant associations were found between age and equity and between marital status and the lottery criteria. The perception of having been victim of health care rationing was significant in both samples in explaining the importance given to all the distributive principles. Respondents who believe (or know someone) that have been denied health care are those who give a greater relative importance to equity and lottery and less to efficiency consideration. This is interesting and merits further investigation.

DISCUSSION AND CONCLUSION

Priority setting requires transparent approaches and explicit debate on the principles that are used to make decisions about allocating health care resources.[23,24] We have achieved our aim of identifying the weights that Portuguese and Bulgarian citizens (rep- resented by sample respondents) would al- locate to substantive rationing principles that may guide explicit prioritization decisions. Equity, translated as favoring the worse off, was given a high rating, followed by the efficiency criteria. In general, it seems that both respondent groups accept that patients are not equal and are aware of the importance of other relevant circumstances in the process of selecting patients, such as the disease, an intervention target, and/or patients characteristic. Issues relating to cost were not high- lighted as key to prioritization decisions among respondents.

There was a striking level of consistency be- tween the views, values, and preferred weighting of the Portuguese and Bulgarian respondents. There were also some differences in opinions.

Table 3. Portugal and Bulgaria PSI Criteria

	Portugal, PSI Weightings (%)	Bulgaria, PSI Weightings (%)
Lottery	5.41	5.00
In order of arrival or "first come first served"	5.41	5.00
Efficiency	37.84	35.00
Years of life gained	8.11	7.50
Gains in quality of life	8.11	7.50
Future treatments avoided	8.11	7.50
Treatment outcomes	10.81	10.00
Cheaper treatments	2.70	2.50
Equity	56.76	60.00
Urgency or severity of the clinical condition	10.81	12.50
Age—preference for children	10.81	12.50
Patient economic situation—preference for the poor	8.11	7.50
Patients with physical and/or mental disabilities	8.11	7.50
Harmful health behaviors—preference for patients with no risk behavior	8.11	7.50
Patients fragility and/or vulnerability	10.81	12.50
	100.00	100.00

Bulgarian respondents rate highly the equity consideration, namely the severity of the health conditions, the intergenerational equity, and patients' fragility/vulnerability. Likewise, Bulgarian respondents attach less importance to the prosecution of efficiency especially in what concerns treatment outcomes.

The reduced weight attributed to the lottery criteria raises interesting questions about the extent to which public participation in health care decisions should be informed and how the results of studies such as this should be used. By giving approximately 5% of the total weight to the ethical principles of "treating people equally" or the "not playing God" approach,[22] respondents seem to acknowledge the importance of ethical principles to guide patients' selections. Furthermore, respondents did not refuse to assign a level of importance neither to the disease-related criteria nor to patient's socioeconomic characteristics. This suggests that members of the public are interested in being involved and want to have some influence in the health care rationing process. Also important to note is that the economic status, the level of education of the population, and having experienced rationing may influence the choice of the distributive criterion.

Naturally, this result must be read within the context of the limitations of the sample used and the mode of administration the questionnaire. We are aware of the wide limitations of using online surveys as a way to elicit preferences. We rely on its capacity to collect a greater number of responses in a faster and more convenient way and believe in the seriousness of the data. Furthermore, in recent years, there has been increasing interest in collecting preferences data online.[25-29] The few studies that evaluated the impact of the mode of administration for social preferences elicitation found broadly similar responses across the different modes of administration.[25,27-29] Because the perfect mode for solicitations and delivery does not exist, the best we can do is to be aware of the limitations. Besides this preference elicitation limitation, there are also limitations in our samples. The sampled population differed from the general population, which could have affected the results. This may be particularly true for Bulgarian respondents, overrepresented by women. We can only speculate, but probably, the woman's maternal instinct may ex- plain the greatest weight attributed to children and patients' fragility.

Despite these limitations, the study still constitutes an indication of the aspirations of the population, suggesting an urgent need for an open debate and a large and representative consultation of the Portuguese and Bulgarian population on these matters. Thus, although a total adherence to CEA is not observed, the results obtained in this exploratory study indicate that, in complete opposition to the "state of the art" in Portugal and Bulgaria in matters of health care rationing (characterized as "hidden and nonsystematic"), the process that emerges as the "best solution" for the country is the "open and systematic" rationing characterized by Obermann and Buck.[30]

REFERENCES

1. Coulter A, Ham C. *The Global Challenge of Health- care Rationing*. Philadelphia, PA: Open University Press; 2000.
2. World Health Organization. *World Health Report: Financing for Universal Coverage*. Geneva, Switzerland: World Health Organization; 2010.
3. World Health Organization. *Making fair choices on the path to universal health coverage. Final report of the WHO Consultative Group on Equity and Universal Health Coverage*. Geneva, Switzerland: World Health Organization; 2014. World Health Organization Web site. http://www.who.int/choice/documents/ making_fair_choices/en/. Accessed January 8, 2016.
4. Weatherly H, Drummond M, Claxton K, et al. Methods for assessing the cost-effectiveness of pubic health interventions: key challenges and recommendations. *Health Policy*. 2009; 93(2–3):85-92.
5. Dolan P, Shaw R, Tsuchiya A, Williams A. QALY maximisation and people's preferences: a methodological review of the literature. *Health Econ*. 2005; 14:197-208.
6. van Exel J, Baker R, Mason H, Donaldson C, Brouwer W. Public views on principles for health care priority setting: findings of a European cross-country study using Q methodology. *Soc Sci Med*. 2015;126:128-137.
7. Gu Y, Lancsar E, Ghijben P, Butler J, Donaldson C. Attributes and weights in health care priority setting: a systematic review of what counts and to what ex- tent. *Soc Sci Med*. 2015;146:41-52.
8. Clark S, Weale A. Social values in health priority setting: a conceptual framework. *J Health Organ Manag*. 2012;26:293-316.
9. Broome J. Selecting people randomly. *Ethics*. 1984; 95:38-55.
10. Butler J. *The Ethics of Health Care Rationing*: *Principles and Practices*. London: Cassell & Co; 1999.
11. Williams A, Cookson R. Equity in health. In: Culyer A, Newhouse P, eds. *Handbook of Health Economics*. Amsterdam: Elsevier; 2000;1B. (Part 9):Chapter 35.
12. Powers M, Faden R. *Social Justice*: *The Moral Foundations of Public Health and Health Policy*. New York, NY: Oxford University Press; 2008.
13. Persad G, Wertheimer A, Emanuel EJ. Principles for allocation of scarce medical interventions. *Lancet*. 2009;329:224-227.

14. Beauchamp T, Childress J. *Principles of Biomedical Ethics*. New York, NY: Oxford University Press; 2012.
15. Scott SN, Lees A. Developing a prioritization framework: experiences from a Scottish Health Authority. *Health Expect*. 2001;4:10-17.
16. Lees A, Scott N, Scott S, MacDonald S, Campbell C. Deciding how NHS money is spent: a survey of general public and medical views. *Health Expect*. 2002;5:47-54.
17. Pinho M, Borges A. Bedside healthcare rationing di- lemmas: a survey from Portugal. *Int J Hum Rights Healthc*. 2015;8(4):233-246.
18. Culyer A. The principle objective of the NHS should be to maximize aggregate health. In: New B, ed. *Rationing*: *Talk and Action in Health Care*. London: King's Fund and British Medical Journal Publishing Group; 1997:95-100.
19. Jonsen AR. Bentham in a box: technology assessment and health care allocation. *Law Med Health Care*. 1986;14:172-174.
20. LeGrand J. *Equity and Choice*. *An Essay in Economics and Applied Philosophy*. London: Routledge. Taylor & Francis Group; 1991.
21. Williams A. Intergenerational equity: an exploration of the ''fair innings'' argument. *Health Econ*. 1997;6: 117-132.
22. Childress J. Who shall live when not all can live. *Soundings Interdiscip J*. 2013;96(3):237-253.
23. Roberts T, Bryan S, Heginbotham C, McCallum A. Public involvement in healthcare priority setting: an economic perspective. *Health Expect*. 1999;2: 235-244.
24. Daniels N. Accountability for reasonableness in private and public health insurance. In: Coulter A, Ham C, eds. *The Global Challenge of Health Care Rationing*. Philadelphia, PA: Open University Press; 2000: 87-106.
25. Damschroder LJ, Baron J, Hershey JC, Asch DA, Jepson C, Ubel PA. The validity of person tradeoff measurements: randomized trial of computer elicitation versus face-to-face interview. *Med Decis Mak*. 2004;24: 170-180.
26. Dillman D, Smith J, Christian L. *Internet*, *Mail and Mixed-Mode Surveys*. *The Tailored Design Method*. 3rd ed. Hoboken, NJ: John Wiley & Sons; 2009.
27. Covey J, Robinson A, Jones-Lee M, Loomes G. Responsibility, scale and valuation of rail safety. *J Risk Uncertain*. 2010;40:85-108.
28. Mulhern B, Longworth L, Brazier J, et al. Binary choice health state valuation and mode of administration: head-to-head comparison of online and CAPI. *Value Health*. 2013;16:104-113.
29. Rowen D, Brazier J, Keetharuth A, Tsuchiya A. Comparison of modes of

administration and alternative formats for eliciting societal preferences for burden of illness. *Appl Health Econ Health Policy*. 2016;14(1):89-104.
30. Obermann K, Buck D. The health care rationing de- bate: more clarity by separating the issues? *Eur J Health Econ*. 2001;2(3):113-117.

Appendix.

Table A1. PSI Criteria and Respondents' Characteristics, Mean (%), ANOVA Test

	Portugal, Mean (%)			Bulgaria, Mean (%)		
	Lottery	Efficiency	Equity	Lottery	Efficiency	Equity
Sex (ANOVA)	–	4.301[a] (0.039)	5.027[a] (0.026)	–	–	–
Female		41.48	53.17			
Male		42.98	51.62			
Age (ANOVA)	–	–	–	–	–	2.438[b] (0.065)
18-24						52.39
25-34						56.58
35-44						57.40
> 44						54.55
Marital status (ANOVA)	2.327[b] (0.074)	3.291[a] (0.021)		2.687[a] (0.047)	–	–
Single	4.93	43.26		5.82		
Married	5.81	41.53		6.29		
Divorced	6.04	39.46		8.08		
Widow	6.58	41.82		6.86		
Education (ANOVA)	6.936[c] (0.000)	8.455[c] (0.000)	2.752[a] (0.043)	–	–	–
Elementary studies	6.84	38.69	54.47			
Secondary studies	6.89	39.22	53.89			
Higher studies/degree	4.83	43.20	51.97			
Master or PhD	5.14	43.35	51.51			
Work situation (ANOVA)	–	–	–	–	–	–
Net monthly income (ANOVA)	3.359[a] (0.019)	6.509[c] (0.000)	5.054[c] (0.002)	–	–	–
≤€485	6.40	41.42	52.18			
€486-€1000	5.31	40.41	54.28			
€1001-€1500	5.69	42.54	51.78			
>€1501	4.69	44.31	51.00			
Has health care ever been denied to you (or to a family member or friend)? (ANOVA)	4.309[a] (0.008)	4.300[c] (0.000)	5.022[a] (0.022)	2.857[a] (0.025)	4.759[a] (0.026)	4. 120[a] (0.017)
Yes	6.40	40.98	52.62	6.10	36.44	57.46
No	4.92	44.88	50.20	5.24	38.09	56.67

Abbreviations: ANOVA, analysis of variance.

Cells with dashes indicate that results were not significant at $P = .001$, nor at $P = .01$ and at $P = .05$.

[a] Significant at $P \leq .05$.

[b] Significant at $P \leq .1$.

[c] Significant at $P \leq .01$.

We used the mean values of the responses (instead of the median as in Table 1) because it is not possible to test for associations using the median values.