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Random paired scenarios – a method for investigating attitudes to prioritisation in medicine

Olli-Pekka Ryynänen, Markku Myllykangas, Tuula Vaskilampi and Jorma Takala *University of Kuopio, Finland*

Abstract

Objectives – *This article describes a method for investigating attitudes towards prioritisation in medicine.*
Setting – *University of Kuopio, Finland.*
Design – *The method consisted of a set of 24 paired scenarios, which were imaginary patient cases, each containing three different ethical indicators randomly selected from a list of indicators (for example, child, rich patient, severe disease etc.). The scenarios were grouped into 12 random pairs and the procedure was repeated four times, resulting in 12 scenario pairs arranged randomly in five different sets.*
Survey – *This method was tested with four groups of subjects (n=8, n=47, n=104 and n=36).*
Results – *Children and patients with a severe disease were prioritised in all groups. The aged, patients with a mild disease and patients with a self-acquired disease were negatively prioritised in all groups. Poor or rich patients were prioritised in some groups but negatively prioritised in others.*
Conclusions – *The validity and reliability of this method are good and it is suitable for investigating attitudes towards medical prioritisation.*

Introduction

Medical professionals in most Western countries have recently been confronted with the gap between diminishing resources and exponentially increasing demands.[1] Medical technology has been developed and the public's expectations have increased to the point where demands exceed available resources. As a result, it is very probable that in the near future high technology treatment will be available for only a small minority, such as the rich or otherwise privileged. This situation has led to a serious ethical dilemma: how can we treat all people equally if the resources do not allow it? One way to solve this problem is prioritisation, and several articles have recently appeared on this topic. Most of these are editorials or otherwise present opinions which are not based on empirical studies.

Prioritisation itself is not a new issue in medicine: it has for a long time been concealed, for example in the form of queuing or service fees. It is based on ethical values and decisions which, commonly, have been difficult to make due to the lack of a universal standard and the relativity of ethics. Ethical decisions must be analysed to identify the factors behind them, to help us decide how to act in the future. Several authors have attempted such an analysis, using a variety of methods.[2–7] The most common have been the following:

I. Conventional questionnaires eliciting information.[4]
II. Consensus methods, such as Delphi or nominal group techniques.[1 8]
III. Providing a list of services or activities and asking a subject to select the most important ones.[4 7]
IV. Providing imaginary or true-life scenarios and asking a subject to prioritise them.[2 3 5 7]
V. Examining the budget or organisations of the community.

One problem encountered in all these methods is that the questions asked reflect the researcher's values and attitudes, and thus they may be prone to bias to a greater or lesser degree. This problem, however, cannot be completely eliminated. Another problem arises due to social desirability: respondents tend to give favourable answers to positive questions and unfavourable ones to negative questions. People's answers also tend to reflect public opinion, formulated through the mass media.

Our aim was to find a method to analyse ethical values and decisions. We call our method Random Paired Scenarios (RPS), and this article describes the method and indicates its reliability and validity in a situation where we have applied it. It is based not on a fixed questionnaire, but on a procedure which could be adapted in examining ethical decisions in areas other than prioritisation.

Key words

Right to health care; rationing; allocation of health care; prioritisation; resources; purchasing; decision-making; research methods.

Subjects

To determine the intra-observer reliability and validity of the method, we formed four groups of subjects:

1. A group of postgraduate students (n=8) who filled in three different sets of RPS questionnaires during a single session. This procedure was comparable to the test-retest method used to investigate the intra-observer reliability of the questionnaire. It should be remembered that the RPS set was different each time the respondents filled in the questionnaire.

2. A group of people randomly selected from a telephone directory (n=49). They were first interviewed, using a non-structured method, about their attitudes to prioritisation in medicine, then they filled in the RPS questionnaire and commented on their decisions for each scenario pair. This was used to estimate the criterion validity of the RPS by comparing the non-structured interview and the RPS. Thus, we provided respondents with the opportunity to express their feeling when answering the RPS questionnaire. Three trained interviewers carried out the interview.

3. A group of medical and nursing school students (n=104), who filled in both a conventional and an RPS questionnaire. This was done to determine the criterion validity of the RPS questionnaire by comparing it with the traditional one.

4. A group of postgraduate nursing students (n=36). The RPS for them contained eight different scenario sets. Their answers were also analysed by multiple logistic regression. None of the members of any group were included in any other group.

Random paired scenarios

Firstly, we drew up 24 scenarios of imaginary patient cases involving different ethical value indicators, ie age (child, old patient), income (poor, rich patient), severity of the disease (mild, severe), prognosis of the disease (good, poor), social status of the patient (low, high), cost of treatment (inexpensive, expensive), and origin of the disease (a self-acquired illness like chronic bronchitis resulting from intensive smoking, or an illness or injury caused by negligent behaviour, for example an injury in a traffic accident when driving under the influence of alcohol). Scenarios were constructed so that each one contained three indicators. In some cases random selection produced logically inconsistent indicators and these were excluded.

In the second stage, we arranged the scenarios randomly in 12 pairs. An example of a pair is presented in figure 1. For the pilot studies, we repeated this procedure four times, thus obtaining 12 scenario pairs arranged in five different sets. In the last pilot study for 36 postgraduate students, we used the same scenarios arranged in eight different sets. We wrote a questionnaire containing questions about background information (sex, age, marital status, occupation, personal income level) and about ethical issues, and appended one set of 12 scenario pairs to each questionnaire, so that each questionnaire was accompanied by a different set of scenario pairs.

Subjects were asked which patient of the two presented in the scenario pair they would choose if only one could be subsidised by society. Each scenario was then classified as a winner (selected for treatment) or a loser (not selected for treatment), according to the responses. Each scenario was recorded as a single observation unit. Consequently, with 104 subjects considering 12 scenario pairs, the sample size totalled 2,448. The statistical power of the study will thus be high.[7]

The results were analysed as follows. Cross-tabulation was used to calculate the number of times each ethical indicator was selected as a winner. For example, the ethical indicator "child" was chosen as a winner in 70% of all the scenarios where it appeared. A selection rate over 50% indicated that the variable was prioritised, exactly 50% implied a neutral attitude, and below 50% indicated negative prioritisation.

We have also used multivariate logistic regression for the analyses. This was done only for the last test group (36 postgraduate students, 836 scenarios). The scenario nominated as a winner was used as a dependent variable and all the ethical indicators as independent variables. The patient's social status was dropped from this test. Statistical analyses were performed using SPSS Pc software.

Results

The results of the four inquiries are presented in table 1.

The reliability test is presented in columns A-C, which contain the answers of group 1 (n_1=8, n_2=192) (n_1= number of subjects, n_2=number of scenarios) in three different sets (A-C).

The results of the validity test in group 2 (n_1=47, n_2=1128) is presented in the column "Interview", and the results obtained from undergraduate students' answers (n_1=104, n_2=2448: 48 scenarios

Figure 1. An example of two randomly-paired scenarios, one of which is to be chosen for treatment.

A	B
A 75-year-old patient suffers from severe chronic bronchitis and emphysema due to heavy smoking.	A homeless alcoholic has a chronic skin disease which can be treated with an ointment.

Table 1 The results of reliability and validity tests of the RPS method. Columns A-C show the answers of eight subjects who filled in three sets of the RPS questionnaire, and the "Interview" column the answers of 49 persons who responded to five different sets of the RPS. The "Undergraduate students" column shows the answers of students who responded to five different sets of the RPS

Indicator	*A* $n_1=8$ $n_2=192$	*B* $n_1=8$ $n_2=192$	*C* $n_1=8$ $n_2=192$	*Interview* $n_1=49$ $n_2=1128$	*Undergraduate students* $n_1=104$ $n_2=2448$	*Postgraduate students* $n_1=36$ $n_2=837$
Age						
child	33	18	11	18	20	28
old	−12	−40	−12	−21	−24	−24
Economic status of the patient						
poor	−16	18	−9	−3	−5	13
rich	−10	−32	−2	−13	−8	−13
Severity of the disease						
mild	−31	−19	−16	−14	−17	−16
severe	31	6	23	13	14	5
Prognosis of the disease						
good	−33	0	−12	−12	−20	1
poor	9	−4	−12	−13	−10	−11
Social status of the patient						
low	0	0	−19	−8	−16	—
high	−6	−12	−34	−1	2	—
Cost of the treatment						
inexpensive	19	−12	−27	2	17	1
expensive	2	16	19	15	9	7
Self-acquired illness						
self-acquired	10	−6	−10	−16	−8	−22
illness acquired by negligent behaviour	−12	−37	−37	−26	−27	−11

n_1= number of subjects, n_2= number of scenarios.

were excluded due to incomplete answers) are presented in the column "Undergraduate students". The last study group were postgraduate nursing students ($n_1=36$, $n_2=836$: 28 scenarios excluded).

The results suggest that ethical indicators such as age, severity of disease, prognosis of disease and self-acquired illness varied very little among the different RPS sets and different groups of subjects. On the other hand, social or economic indicators, such as wealth of the patient, social status and treatment costs, showed more variation in different RPS sets.

Children, patients with severe disease, moderate prognosis and inexpensive care were prioritised in almost all sets of the questionnaire. Also, expensive care was prioritised, probably due to the common assumption that expensive care is probably associated with severe disease. Patients who were elderly or mildly diseased and those with good prognosis or self-acquired disease were negatively prioritised. It is easy to explain why patients with mild disease and good prognosis were negatively prioritised, as it is commonly believed such patients will recover even without treatment.

Most respondents did not accept the negative prioritisation of the aged when their opinions were elicited, but in the RPS the aged were negatively prioritised. This suggests that the responses depended on how the questions were formulated. Also, answers to RPS questions seem to be less contaminated by social desirability than are conventional techniques.

A summary of the results of the logistic regression is presented in table 2. In the multivariate analysis, "child" and "poor patient" were prioritised while "elderly", "mild disease", "poor prognosis" and "a self-acquired disease" were negatively prioritised, and there was a tendency to negatively prioritise rich patients (goodness of fit $\chi^2=847{\cdot}855$, df=843, p=0·447). "Severe disease", "good prognosis", "inexpensive treatment", "expensive treatment" and "a disease acquired by negligent behaviour" showed no statistically significant effect on prioritisation decisions.

Most of the respondents in the general public said that the questions were difficult because in some pairs it was impossible to favour one scenario only. However, most filled the RPS set of 12 scenario pairs in less than 15 minutes. Some of these respondents found the RPS questionnaire made them anxious. One subject reacted aggressively. The undergraduate students treated the RPS questionnaire lightheartedly and filled it in quickly without any visible difficulties.

Discussion

We consider both prioritisation and studying attitudes towards it to be matters of deep ethical

Table 2 Summary of logistic regression analysis of indicators affecting prioritisation decisions with odds ratios (OR) and 95% confidence intervals (95%CI). OR>1 indicates prioritisation and OR<1 posteriorisation (negative prioritisation)

Indicator	*OR*	*95%CI*
Prioritisation:		
Child	3·4	2·6–6·0
Poor patient	2·8	1·5–4·9
Posteriorisation:		
Poor prognosis	0·3	0·2–0·5
Self-acquired disease	0·3	0·2–0·6
Elderly	0·4	0·2–0·6
Rich patient	0·5	0·3–1·0
Mild disease	0·5	0·3–0·9

concern. Prioritisation will become inevitable when demand overwhelms supply in health care. If prioritisation is not done openly and the ethics of it have not been considered, treatment limitations may be imposed in some other form, for example by raising consumer fees, creating queues, lowering quality standards, treating the most vociferous patients first, or providing everybody with all technically possible treatments until resources run out. All these alternatives have desperate consequences. We conclude that open discussion and decision-making is a better and more ethical alternative.

Hidden prioritisation

There is a danger that prioritisation may be applied to the poorest sections of society only, while those who are able to pay for it get the treatment they want. While recognising this risk, we see another problem which may become even more serious if prioritisation is abandoned. In the Nordic welfare states, the rich can claim all the benefits they are entitled to from public services, and then supplement them with private services. The poorest people are commonly not even able to demand services. Moreover, without systematic prioritisation, a process of hidden prioritisation may be operated, with the most insistent patients being treated first.

Ranking-list methods and scenario methods were found more useful than conventional inquiries or consensus methods. With these, social desirability leads to results which are commonly accepted by the community, but this does not necessarily reflect what actually happens. Since prioritisation means putting some people before others, it would be better if the method used to study prioritisation decisions imitated real-life situations. A ranking-list method may be free from the social desirability difficulties, but it still has problems: the answers may be influenced by the order of questions, and small differences in verbal expression can lead to great differences in results. Also, small variations in attitudes can modify the results greatly.

Scenario, or vignette, methods seem to reveal attitudes relatively uninfluenced by social desirability, and they reflect real life better than other methods. Such methods have been used by Charny and Lewis[2 3] and Fowler *et al.*[7] Lewis and Charny[3] studied the effect of age on prioritisation decisions. They posited a pair of imaginary patients with the same disease, but of different ages. They found that when the ages differed greatly prioritisation benefited the younger. When the difference in ages was small, the decision was random, or no decision could be made. Hence, age was an important factor in prioritisation, and usually younger patients were preferred to older ones. Using a similar method, Charny *et al*[2] showed that married persons were preferred to singles, and non-smokers, patients with an inherited disease and those with low alcohol consumption were preferred to smokers, patients with a diet-induced disease and patients with high alcohol consumption. Gender and employment did not affect the prioritisation process.

Nord[5] studied prioritisation using two imaginary patients who were admitted to hospital within a few hours of each other. Most respondents said that they should be treated in the order of admittance, and only a minority felt that they should be treated in the order of better expected outcome.

Fowler *et al*[7] used a list of scenarios, and asked respondents to rank them in the order they thought they should be treated. The goal was to measure public priorities for health insurance. The results seem to indicate that the seriousness of the patient's condition and likely efficacy of the treatment were the most important factors determining prioritisation decisions. The results obtained in these four studies were quite similar to those in our pilot studies, which suggest that the scenario methodology has validity, despite the great differences in the methods used.

Fowler *et al*[7] carried out their studies in the United States, Lewis and Charny[3] and Bowling *et al*[4] in Great Britain, and Nord[5] in Norway, while our studies were made in Eastern Finland. In spite of the cultural differences in locations, the results of these studies resemble each other. This suggests that attitudes to prioritisation in health care are similar in Western societies and may not depend greatly on the cultural or ethnic background of the respondents, at least among Western cultures.

The difference between "medical" indicators (for example age, severity and prognosis of the disease) and "social" indicators (for example wealth and social status of the patient, cost of treatment) may be the result of difficulties in defining "social" variables. Another possibility may be that attitudes to those variables depend very much on the situation, so that a poor patient may be prioritised in one situation and negatively prioritised in another. To overcome this problem, we used five different sets of RPS. The reliability of the method will naturally increase as more RPS sets are used.

Hidden value indicators

There were several difficulties in constituting scenarios. For example, hidden value indicators might confuse the results. We found that expensive care was commonly associated with severe disease, and therefore expensive care was prioritised. Inexpensive treatment may have been similarly associated with a mild disease or good prognosis. When the RPS method is used again, reliability tests should be performed beforehand and scenarios with contradictory answers should be examined carefully to detect reasons for the contradictions, because they

may be a marker of uncertainty. Simplifying scenarios may lead to clearer framing of the questions.

The RPS seems to be a sensitive method for revealing hidden negative attitudes. When RPS answers were compared with conventional questionnaires, we found that positive opinions and prioritisation were very similar in both RPS and conventional questionnaires. However, negative opinions or negative prioritisation were difficult to detect using conventional methodology. The greater sensitivity of the RPS method is understandable, since this method forces subjects to prioritise 50% of cases and to negatively prioritise the other 50%.

Statistical testing between the groups of scenarios is quite useless because the method deals with the scenarios, not people, and the number of scenarios is 24 times greater than the number of respondents. The number of observation units becomes very high and, therefore, every visible difference becomes significant without statistical tests. In logistic regression analysis we used odds ratios and 95% confidence intervals. Multivariate logistic regression proved to be suitable for analysing the results. Using logistic regression, it will be possible to analyse the interplay between factors, for example, youth, age and severe illness when they occur together. In the interview, several people expressed factor combinations which were more powerful than others, for example child and severe disease, rich patient and a self-acquired disease.

Prioritisation is an inevitable process in health care.[8] Setting priorities should be a continuous process and not a problem to be solved by one final decision based on experimental studies, seminars or administrative procedures. Making decisions can be extremely difficult; it has proved to be complicated to decide even who should make the decisions. Medical professionals have said in public debate that decisions on health care prioritisation should be taken on the political level and be under democratic control. However, the public and politicians have felt that they have no expertise in this area, and want to leave the decisions to medical experts.

Identification of attitudes is of great importance. It is particularly important to identify the difference in attitudes between the public, professionals and political leaders.[4 6] Random paired scenarios can help in this task. The method identifies the attitudes, but does not tell us whether those attitudes are right or not.

It can be concluded that the RPS method provides a useful means for examining attitudes to prioritisation in medicine, and this method may also be used for investigating attitudes to other ethical issues in medicine, especially when used in combination with other methods.

Olli-Pekka Ryynänen, MD, and Markku Myllykangas, PhD, are Senior Lecturers in the Department of Community Health and General Practice at the University of Kuopio, Finland. Tuula Vaskilampi, PhD, is Associate Professor, and Jorma Takala, MD, is Professor of General Practice, in the same department.

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