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Patients' perspectives on ethical principles to fairly allocate scarce surgical resources during the COVID-19 pandemic in the Netherlands: a Q-methodology study

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ABSTRACT

Objectives During the COVID-19 pandemic, healthcare professionals were faced with prioritisation dilemmas due to limited surgical capacity. While the views of healthcare professionals on fair allocation have been given considerable attention, the views of patients have been overlooked. To address this imbalance, our study aimed to identify which ethical principles are most supported by patients regarding the fair allocation of surgical resources.

Design A Q-methodology study was conducted. Participants ranked ordered 20 statements covering different viewpoints on fair allocation according to their point of view, followed by an interview. Principal component analysis followed by varimax rotation was used to identify subgroups who broadly agreed in terms of their rankings.

Setting The setting of this study was in the Netherlands.

Participants 16 patient representatives were purposively sampled.

Results Two perspectives were identified, both of which supported utilitarianism. In perspective 1, labelled as 'clinical needs and outcomes', resource allocation should aim to maximise the health gains based on individual patient characteristics. In perspective 2, labelled as 'population outcomes and contribution to society', allocation should maximise health gains as with perspective 1, but this should also consider societal gains.

Conclusions There was a broad agreement among patient representatives that utilitarianism should be the guiding ethical principle for fair allocation of scarce surgical resources. The insights gained from this study should be integrated into policymaking and prioritisation strategies in future healthcare crises.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The use of Q-methodology aligns effectively with the goal of gaining comprehensive insights into patient representatives' perspectives on surgical prioritisation.

⇒ The set of statements used was comprehensive and saturated, which supports the robustness of the results.

⇒ All participants were patient representatives; therefore, other patients may hold additional viewpoints.

⇒ Q-methodology describes the characteristics and scope of viewpoints rather than their prevalence within the population.

postponed, resulting in an extensive backlog of patients awaiting surgery.[2–4] Given the scarcity of surgical capacity, the prioritisation of patients needing surgery became inevitable. This forced healthcare professionals to make decisions on how to allocate the scarce surgical capacity among patients on an unprecedented scale.

Apart from shortages of intensive care staff and beds, healthcare professionals also had to deal with other allocation dilemmas during the COVID-19 pandemic, including the allocation of personal protective equipment, ventilators, medication and COVID-19 vaccines.[5–9] In all these dilemmas, the key question was how to ethically, objectively and consistently prioritise certain patients and on what grounds.[10] Various strategies have been suggested for informing medical decision-making and supporting healthcare professionals in fairly allocating scarce resources. Fairness, however, is a multifaceted concept, and there is no all-encompassing agreed definition.[11]

INTRODUCTION

From December 2019 onwards, the rapid global spread of COVID-19[1] led to significant changes in surgical practice. Critical resources for surgical specialties (such as intensive care staff and beds) were allocated to COVID-19 patients. Consequently, many (semi-)elective surgeries were cancelled or

At present, there are several ethical principles that all have different implications for what would be considered a fair approach to prioritisation. While various conceptualisations exist in literature,[12] the four categories constructed by Persad *et al* are commonly referred to and used for policymaking by the WHO: (1) treating people equally, (2) favouring the worst-off, (3) maximising total benefits and (4) promoting and rewarding social usefulness.[10 13–17] Each category, a representative of different ethical values, can be further subdivided into principles which come with different practical implications for prioritisation. First, egalitarianism builds on the concept of social equality, resulting in a lottery system or first-come-first-served as a prioritisation method.[13] Egalitarianism is strongly supported by the public as an approach to healthcare decision-making in countries with a public healthcare system (eg, Denmark, France, the Netherlands).[18 19] Second, individual prioritisation emphasises priority setting on the basis of individual patient characteristics such as need for treatment or age[10 13] or, more generally, severity of illness.[20 21] Third, social usefulness prioritises patients that have significantly contributed to society in the past or are expected to do so in the future.[10 22] Fourth, utilitarianism is focused on creating the greatest good for the greatest number of people.[23] In a healthcare setting, this can be interpreted as maximising health gains across the population. This can be achieved by saving the most lives or prioritising those patients with the best prognosis. Utilitarianism is often applied in healthcare settings and, in times of scarcity, seems to be preferred by healthcare professionals.[10] A recent study showed that the public in the Netherlands, in the context of rationing intensive care unit (ICU) beds during the COVID-19 crisis, supported a mix of these principles.[24]

During the COVID-19 crisis, several guidelines, strategies and decision models were developed to inform rapid decision-making on resource allocation and prioritisation. Many of those were based on utilitarianism[25–28] as the ethical principle favoured by healthcare professionals in times of scarcity.[10] Such decision models quantify the expected health loss due to delaying surgery for a range of surgical procedures and then prioritise patients across disciplines based on the greatest expected health loss from surgery. For such models to be accepted in healthcare practice, it is important to assess the support for the underlying principles and their implication for priority setting among a broader range of stakeholders in the healthcare sector (eg, policymakers on different levels and patients). To date, it remains largely unclear which ethical principles these stakeholders would support in the context of a healthcare crisis like the one posed by COVID-19.

Throughout the pandemic, there has been a strong call to embed patients' perspectives in medical decision-making[29–31] because this is often neglected.[32] Indeed, previous research has stressed the importance of taking patients' perspectives into account in the debate about allocating scarce medical resources.[33 34] The moral argument is that patients should have the right to be involved in decisions that affect them, thereby reducing the gap between professionals and patients and supporting patient empowerment.[35] Furthermore, involving patients has previously been demonstrated to contribute to a more comprehensive, efficient and sustainable healthcare system.[36 37]

Patients' perspectives on the fair prioritisation of scarce surgical capacity have not been explored, with most of the existing research focusing on the allocation of scarce medical resources from the perspectives of professionals, policymakers or the general public.[22 38] The aim of the present study is to identify to what extent a range of ethical principles are supported by patients in fairly allocating scarce surgical resources. This study will inform healthcare professionals and decision-makers about patients' preferences in the context of the COVID-19 pandemic. We would expect these preferences to extend to prioritisation in the context of other healthcare crises, and, therefore, we would encourage them to be integrated into prioritisation strategies for application in other future circumstances.

MATERIALS AND METHODS

To explore patients' perspectives on the fair allocation of surgical capacity, we apply Q-methodology, a mixed methods approach often used to empirically study viewpoints on value-laden topics.[39] The checklist for reporting Q-methodology studies was used.[40] Typically, participants are given the task of ranking a set of statements about a particular issue based on their personal views and, subsequently, asked to explain their ranking. The quantitative ranking data are subjected to by-person factor analysis in order to identify a number of similar ways in which the statements were ranked, and the qualitative data are then used to help interpret and describe the resulting factors as viewpoints on the topic of study. Although an ideal participant count remains undefined, it is advisable—and commonly used in other studies—to select a number of participants that are fewer than the total number of statements.[39 40] Q-methodology has previously been used several times to investigate stakeholders' viewpoints on various healthcare dilemmas.[18 19 41–46] The current study involved four phases: (1) development of the statement set, (2) selection and invitation of the study sample, (3) conducting the ranking exercise and interviews and (4) analysis and interpretation of the collected data. These phases are described in more detail below.

Development of the statement set

The set of statements should broadly represent all the aspects that are relevant to opinions about the topic. In this case, this amounts to perspectives on priority setting for surgical resources in times of scarcity. The statement set for this study was developed in four steps. First, we composed a long list of statements covering all the topics

Table 1 Overview of the four ethical principles and their practical application in the fair allocation of scarce medical resources[10 13 16]

Ethical principles	Practical application	Definition	Advantages	Disadvantages
Utilitarianism	Save the most lives	Aims to save the most lives by offering treatment to as many individuals as possible	Benefits the greatest number of lives	
	Prognosis or life-years	Aims to save the most life-years by prioritising those with the best prognoses	Maximises life-years gained	Strong prediction model needed
Egalitarianism	Lottery	Allocation of treatment through random selection	Difficult to manipulate; easy to implement as little information is needed	
	First-come–first-served	Allocation based on the order of request	Secures current treatments; easy to implement as little information is needed	Favours the privileged; open to corruption
Social usefulness	Instrumental value	Prioritises those with skills that are useful or can be in the future	Helps promote important societal values; oriented towards the future	Vulnerable to corruption through choice of who is prioritised
	Reciprocity	Prioritises those who have contributed to society in the past	Does justice to those who have been important for society in the past; oriented on the past	Vulnerable to corruption through choice of who is to be prioritised; undermines social solidarity
	Monetary contribution	Prioritises those who contribute to the costs of medical treatment[16]	Reduces healthcare costs; intuitive as it reflects the principle that those who need more should pay more	Favours wealthy citizens; makes allocation to worst-off impossible; undermines social solidarity and increases inequality
Individual prioritisation	Sickest first	Prioritises those who currently have the greatest need for treatment	Intuitive to healthcare system; favours the 'worst-off'	Ignores post-treatment prognosis; ignores those who might become seriously ill in the future if not treated
	Youngest first	Prioritises those who have had the least life-years	Favours those who have had the least life-years and thus have the highest potential to live a long time	Prioritises infants over children and adolescents
	Behaviour	Prioritises those who have not behaved in such a way that it either caused their condition or negatively affected it[16]	Promotes and rewards a healthy lifestyle; promotes individual responsibility[16]	Ignores reasons for individual behaviour; might conflict with privacy or liberty rights

that might be relevant to patients in the context of prioritisation. For this purpose, a framework was established starting from the four previously mentioned ethical principles (see table 1). Statements were formulated for the elements of this framework, and this list was complemented with statements from previous Q-methodology studies on criteria for priority setting in healthcare.[18 19 41] This resulted in a long list of 122 potential statements (which is available from the corresponding author on request). Second, two authors (CL, KA) reviewed this long list and removed duplicate and redundant statements. Further, two statements on patient perspectives on professional autonomy and patient input were added because these aspects were seen as relevant and were missing from the long list. This initial review resulted in a short list of 36 potential statements. Third, in an iterative

process, the set of 36 statements was assessed for comprehensiveness given the aim of the study and comprehensibility for the target population by three authors (CL, KA, JvE). This resulted in a reduction to a set of 20 statements that broadly covered the relevant elements for gaining opinions on prioritisation based on the four ethical principles. Finally, a pilot study was conducted using a convenience sample (n=3) of health-literate participants. This pilot study indicated that the statement set was clear and comprehensive and that no further changes were required. This thus resulted in a final set of 20 statements (see table 2). As these statements were derived from international literature in English, they were translated into the Dutch language for ranking during the interviews with patients.

Table 2 Factor arrays per perspective; statements categorised according to underlying ethical principle

Statements	Perspective 1	Perspective 2
Egalitarian		
Surgery places should be allocated by lottery, so everyone has an equal chance of getting surgery	−1**	−3
Surgery places should be allocated based on a first-come-first-served system	−1**	−4
Individual prioritisation		
Patients with the greatest need for treatment should be prioritised	+4**	0
Patients with the worst health status should be prioritised	0	−1
Patients with the lowest quality of life should be prioritised	+1**	−2
Patients that are clinically deteriorating should be prioritised	+2**	0
Young patients should be prioritised (over older patients)	0	+1
Patients with a healthy lifestyle should be prioritised	−3**	0
Utilitarian		
Priority should be given to treatments that generate the best overall health for the most people	+3**	+4
Priority should be based on how many lives can be saved	+3**	+2
Priority should be based on how many life-years can be saved	+2**	+1
Priority should be based on the best prognosis for the patient after treatment	+1**	+3
Social usefulness		
Patients who are healthcare professionals should be prioritised	0	0
Patients who have an important societal function should be prioritised	−3**	−1
Patients who depend heavily on others for care should be prioritised	−2**	−1
Informal carers should be prioritised	-1	−2
It is important when prioritising that people can fulfil their role in society	−2**	+3
Patients who have contributed significantly to society should be prioritised	−4**	−3
Patient perspective		
Doctors should be the ones to judge which patients are prioritised based on their medical expertise	+1*	+2
Patients should have a voice in who gets prioritised	0	1

Scores range between −4 and +4.
*p<0.05, **p<0.01.

Selection and invitation of the study sample

In a Q-methodology study, participants are selected with the aim of capturing the diversity of perspectives on the topic. Here, we purposively included members of various patient associations in the Netherlands and members of the client council of a tertiary hospital (Erasmus Medical Centre, Rotterdam). These patient representatives were interviewed, rather than patients themselves, assuming that they are more health-literate and have greater experience in voicing their opinions on priorities in healthcare and can contribute from a broader, generic (rather than disease-specific) perspective. Information regarding age, sex, education level and current health status was obtained from all participants.

Conducting the ranking exercise and interviews

The interviews, of which the ranking exercise formed part, took place in April and May 2021 during the third COVID wave in the Netherlands. Due to COVID-related restrictions, the interviews were conducted online. Each participant was first presented with the sorting task through the online programme VQ method.[47] This tool provides guidance throughout the task and saves the answers provided by the participants. Further, as the interviewer (CL) was present throughout the task, participants were able to reach out if they had any questions.

During the interview, participants first received information from the interviewer, who described the background and aim of the study and provided a step-by-step guide on the sorting task (see online supplemental material 1). In brief, participants were presented with the 20 statements in random order and asked to read them carefully and categorise each statement into one of three piles (ie, agree, neutral, disagree). To make the findings representative of general prioritisation choices, the statements

deliberately refrained from including specific details such as the type of surgery. Next, participants were asked to reread the statements in each pile, beginning with the 'agree' pile, followed by the 'disagree' pile and 'neutral' pile, and rank them on the score sheet according to their relative agreement with each one (see online supplemental material 1). Finally, participants were asked to state their motivation for the statements they ranked most highly and lowest (ie, those placed at the extreme ends of the score sheet). The combination of the quantitative ranking data and the qualitative data from the motivation explanations provided a detailed understanding of the participants' perspectives.

Analysis and interpretation of the data

Each participant's ranking of the statements was transformed into an array of numerical data ranging from −4 to +4 according to their placement in the columns of the score sheet. These were then correlated with other participants' arrays. This correlation matrix (online supplemental material 2) shows which participants similarly ranked the statements. Subsequently, for factor extraction, principal component analysis (PCA) was used. By applying PCA, ranking patterns were revealed among the participants. As for the rotation, varimax rotation was applied. This technique redistributes the variance among factors to create a clearer distinction between them and therewith facilitate easier interpretation. These analysis were conducted using the software application KADE.[48] The number of factors was determined based on two criteria: (1) Eigenvalue (EV) of at least 1 and (2) more than one significant factor loading. Next, a factor array was computed for each retained factor, a weighted average ranking of the statements based on the significant factor loaders. The factor arrays and the qualitative data of significant loaders were then used to interpret the factors as representing a perspective on the fair prioritisation of scarce surgical capacity. Such a perspective is an abstract construct that encapsulates a shared viewpoint among participants whose rankings of the statements were similar enough to load significantly on the same factor. Quotes from the participants' explanations of their ranking of the statements—translated into English—are used to illustrate the perspectives. In the results section, the following notations are used: statement number (st.), position of the statement on the score sheet for that factor (eg, +4) and participant number (part.).

Patient and public involvement

Patients or the public were not involved in the design, conducting, reporting or dissemination plans of this study. Participants were asked to provide written informed consent for usage and storage of their data. Participants were informed that participation was on a voluntary and anonymous basis and that they could withdraw their consent at any time.

Table 3 Sampling characteristics of the participants (n=16).

Personal characteristics		N (%)	Median (quartiles)
Age			50.0 (36.0–65.0)
Sex	Female	10 (62.5)	
	Male	6 (37.5)	
Education level	High	16 (100)	
Current health situation	Healthy	9 (56.3)	
	Chronically ill	3 (18.8)	
	Ill partner	1 (6.3)	
	Ill peer	1 (6.3)	
	Ill child	1 (6.3)	
	Deceased partner	1 (6.3)	

RESULTS

16 participants completed the ranking exercise and interview. The median age of the participants was 50 years (IQR: 36–65), and the majority were female (62.5%). All participants were highly educated, and the majority were healthy. See table 3 for a detailed overview of the sample's characteristics.

Figure 1 shows the frequency distribution of the rankings of the 20 statements by the 16 participants. This shows generally high levels of support with the statements related to the 'utilitarianism' principle together with 'individual prioritisation' and much lower levels of agreement and opposition to the statements related to the 'social usefulness' and 'egalitarianism' principles. A notable observation is that none of the participants disagreed with statements 9 and 11 while all disagreed with statement 16.

The colours indicate the level of agreement (y-axis) of the participants with the statements (x-axis). A +4 (dark green, agree) indicates that the participant placed the statement in the +4 box on the score sheet, while a −4 (dark red, disagree) represents the opposite. The ranking data supported two factors. Factor 1 explained 44% of the variance and had an EV of 6.99 with nine participants loading significantly onto this factor. Factor 2 explained 14% of the variance and had an EV of 2.17, and seven respondents loaded significantly onto it. Participants from the client council and patient associations were evenly spread across the two factors. The factor arrays are shown in table 2. The correlation between the factor arrays was 0.56. Online supplemental material 3 shows the statements positioned on the score sheet according to the factor arrays.

Perspective 1

In this perspective on how one should prioritise scarce surgical capacity, the focus is on patients with the greatest need for treatment (st. 3, +4**), deteriorating health (st. 6, +2**) or the lowest quality of life (st. 5, +1**). Typical
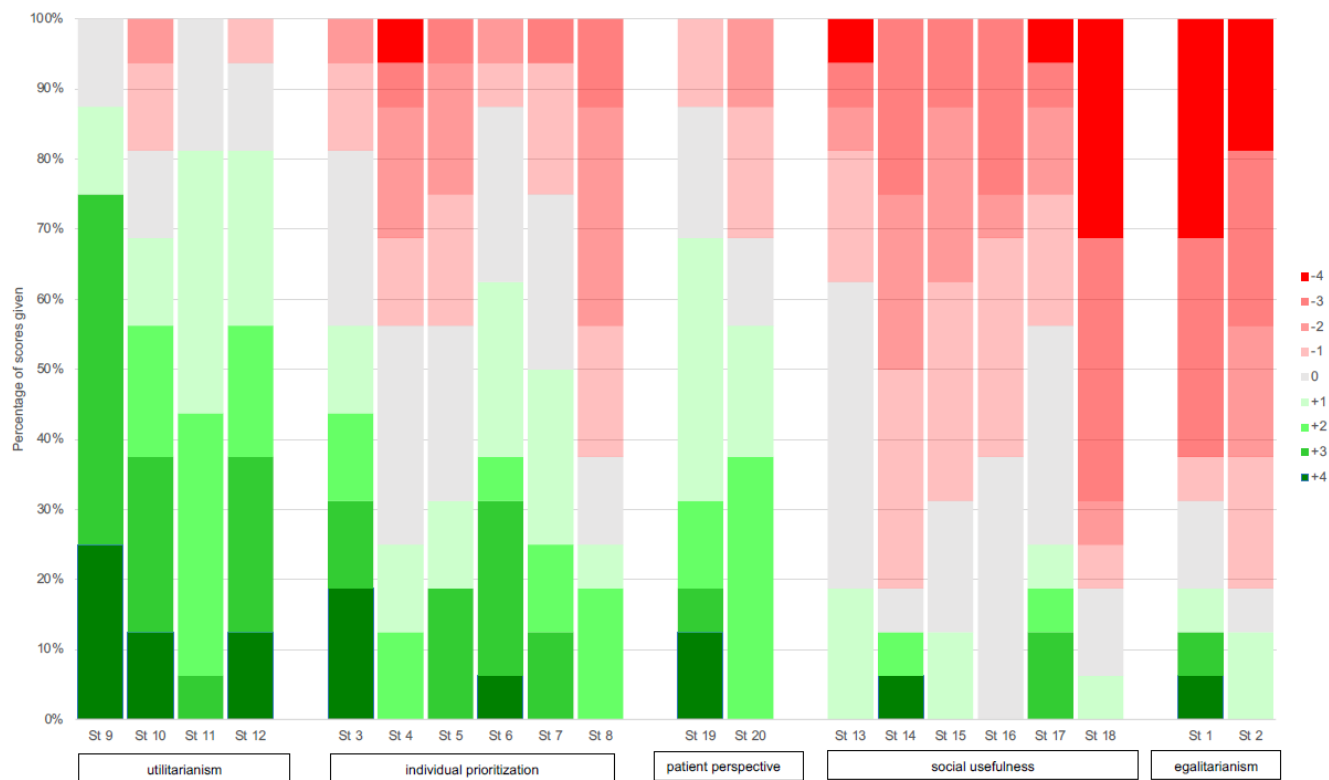
Figure 1 Distribution of the overall scoring of statements (n=16 participants).

comments expressing this perspective included: 'This is classic triaging of patients. I think the patient who most needs treatment should therefore be prioritised. This is what happens in everyday hospital life. Doctors are used to this and can agree on this' (part. 1); 'Well, do not doctors already do this? In an emergency department. And that seems unfair sometimes too, when you wait for hours because you are not that sick. But it is what we have done for years now. And that is what we do in healthcare. We should not try to change that principle. Because we, as a society, are used to this' (part. 14). In addition to these already commonly used medical criteria, maximisation of health gains was also deemed highly important: priority should be given to treatments that generate the most health for the most people (st. 9, +3**) and those that save the most lives (st. 10, +3**) or life-years (st. 11, +2**). From a pragmatic perspective, participants observed that these statements are closely aligned with current practice, which makes it more practical to continue using them: 'We should not attempt to reinvent the wheel but instead examine the existing systems that are already in place' (part. 14).

Statements related to social usefulness, such as contribution to society (st. 18, −4**), having an important societal function (st. 14, −3**), being able to fulfil a role in society (st. 17, −2**) or depending heavily on care from others (st. 15, −2**), were considered much less relevant, as illustrated by the following quotes: 'I hold a PhD, but when you have to compare lives, your achievement doesn't count. Every life has the same value, that is not

discriminatory. It doesn't matter what profession [you have], who you are, how much money you have. Everyone is equal' (part. 10); 'Everything that could or should play a role must be related to health, in whatever form' (part. 7). The aversion to incorporating social usefulness into priority setting may stem from the perception that social usefulness is highly subjective and, therefore, difficult to measure. This sentiment is exemplified by the comment: 'There is nothing measurable in this. Because when does someone heavily depend on others and should therefore receive support? … Objective criteria are better' (part. 15). Consistent with these views, whether or not patients adopt a healthy lifestyle should also not be taken into consideration (st. 8, −3**).

In conclusion, this perspective on prioritisation favours making treatment decisions based on medical grounds in combination with maximisation of health gain. It is therefore closely related to both utilitarianism and individual prioritisation. Consequently, we refer to this perspective as 'clinical needs and outcomes'.

Perspective 2

In this perspective, priority should be given to treatments that result in the most health gain for the most people (st. 9, +4**). Maximising health gain was considered the most important goal for priority setting: 'This statement [st. 9] inherently integrates all important elements from the other statements' (part. 13). This preference is strongly driven by the principle of efficiency: 'Healthcare should be efficient and useful. By prioritising health gains for the

most people and considering prognosis, we can ensure this' (part. 3). Moreover, it was considered important to focus on patients with a good post-treatment prognosis (st. 12, +3**) and, subsequently, able to continue to fulfil their role in society (st. 17, +3**): 'I think that is a way to keep society running. That is important too… That has not yet been the case [during] much of the crisis and that is a shame' (part. 8). In line with this, prioritising young patients was also considered conceivable (st. 7, +1). However, usefulness should not be the dominant focus: 'You must be careful about a commercial perspective. Not as in corporate life, where you can get a potential return on investment. This should not happen in healthcare' (part. 2). Therefore, the other statements related to social usefulness were ranked lower (st. 18, −3**; st. 16, −2; st. 14, −1**; st. 15, −1**). This suggests that, overall, priority setting should take account of capability to function after treatment irrespective of the patient's role or previous level of achievement. Here, people also recognised that whether someone's contribution to society is significant is subjective. In the end, medical criteria should prevail (st. 19, +2).

For those adopting this perspective on the allocation of surgical resources, egalitarian principles, such as prioritisation based on a lottery (st. 2, −4**) or on a 'first come, first serve' basis (st. 1, −3**), ranked the lowest. Three arguments were given for this. First, the egalitarian system was considered unfair: 'There is no logic behind this. It is not fair. In order to be fair, there must be a rationale behind it' (part. 3). Second, implementing egalitarian strategies was not seen as feasible: 'You remove the idea of rationality in decision-making in this way. And then there is also too high an opportunity for bias. I do not believe it can be implemented or properly enforced … This does not work. There is no commitment, there is a good possibility for corruption' (part. 2). Third, the fact that the overall population's health outcomes are disregarded is considered unacceptable. Contrary to perspective 1, statements related to patients' need for treatment were considered less relevant (eg, st. 5, −2**; st. 3, 0**; st. 6, 0**).

In conclusion, this perspective stresses the importance of maximising overall population health when prioritising surgical resources while also giving some thought to patients' capability to contribute to society after treatment. Therefore, this perspective is referred to as 'population outcomes and contribution to society'.

DISCUSSION

This study investigated which ethical principles are most strongly supported by patient representatives in the context of fairly allocating scarce surgical resources during a healthcare crisis. Two different perspectives were identified that both strongly featured utilitarianism: one more at the individual level, considering a patient's need for treatment and thus integrating values of individual prioritisation, and the other more at the collective level, emphasising patient's capability of contributing to society after surgery. This has been the first study to explore patient representatives' perspectives on the fair allocation of surgical resources. First, our findings show that they do not favour prioritising healthcare workers. This echoes earlier work investigating the opinions of laypeople on the prioritisation of healthcare workers.[16 49] These studies were published before COVID-19, and so it seems that the pandemic has not affected the representatives' perspective on this.

The principle of social usefulness (eg, prioritising healthcare workers based on reciprocity) has been included in ethical guidelines published throughout the pandemic, although not as the primary criterion for prioritisation.[10 50] Our results do not support this with patient representatives generally disagreeing with the statements related to this principle. Social usefulness arguments were considered by many as unfair and flawed.[50 51]

Our results resonate with other studies evaluating allocative decisions for non-surgical resources. When the distribution of ventilators and ICU beds was considered, utilitarianism was also preferred.[49 52 53] Likewise, healthcare professionals have shown strong support for utilitarian principles in prioritisation,[10] which ultimately resulted in utilitarianism being the guiding principle for ethical guidelines developed during the pandemic.

In the current study, the egalitarianism principle received little support from patient representatives. Interestingly, egalitarianism is the ethical underpinning of the organ donation system in the Netherlands and, in that context, is highly supported by both healthcare professionals and the general public.[31 54] Egalitarian principles have also been found to be important in the views of members of the public on criteria for decision-making on which treatments to fund, or not to fund, from the healthcare budget in public healthcare systems.[18 19] This could perhaps be explained by the rationale that if a scarce resource (eg, an organ) is to be allocated, then the only way of ensuring a fair distribution is to give all potential recipients equal chances. In addition, egalitarianism avoids forcing a wicked dilemma on healthcare professionals and making them decide who should be prioritised. It could be that surgical resources are perceived differently, but this may also relate to the context of a healthcare crisis.

This study had several strengths. First, the use of Q-methodology fits well with the aim of obtaining in-depth insights into patient representatives' perspectives on surgical prioritisation. The quantitative data collected allowed us to directly compare subjective perspectives from various participants, while the qualitative data helped us to interpret and describe the shared perspectives in more detail. Second, our statement set was derived from a broad ethical framework including all the main ethical principles used in a context of prioritisation.[13 15] Three researchers independently and iteratively reviewed all the possible statements during multiple meetings, resulting in a saturated and comprehensive set. This

claim is supported by the fact that the pilot testing did not result in a need to revise the statement set and that none of the participants in the main study suggested that any important aspects were missing. This supports the robustness of our findings since a comprehensive set of statements is crucial when adopting the Q-methodology.

Nevertheless, this study also has some limitations. First, the participants were a purposively selected group of health-literate patient representatives; thus, their perspectives may not fully represent all patients. While they are skilled in articulating their viewpoints, contributing to a much more in-depth conversation, it is possible that perspectives from other patients were not captured. Second, contextual factors may have influenced the perspectives derived from the interviews since these took place during a COVID-19 lockdown that resulted in more than 140 000 surgeries being postponed.[55] Although this will certainly have raised awareness among the participants about the urgency of prioritising, it is also possible that the participants themselves, or someone they know, were awaiting surgery, which might have influenced their opinions. Finally, due to COVID-19–related measures, the ranking exercise and interviews had to be held online. Generally, face-to-face interactions result in more in-depth information and, therefore, to richer qualitative data. However, evidence suggests that there is no apparent difference in the reliability of Q-methodology studies using face-to-face interviews and a computer-based task.[56]

Our findings have several implications for the development of surgical prioritisation strategies. Foremost, both the identified perspectives show that patient representatives widely support utilitarianism in times of scarcity, which is in line with the views of healthcare professionals. Since patients and healthcare professionals, as two major stakeholders in the context of prioritisation in healthcare, seem to agree on normative principles, it is suggested that utilitarianism should play a central role in policymaking concerning surgical prioritisation in the Netherlands in times of crisis. However, further research with a more representative sample is necessary to validate these conclusions for the broader population in the Netherlands. Furthermore, the findings of the current study underpin the assumptions inherent to the various decision models developed during the pandemic to support the prioritisation of surgical patients. It is important to note, however, that ultimately no ethical principle is sufficient on its own to embody all morally and practically relevant considerations.[13] As such, both perspectives identified in this study demonstrate a blend of utilitarianism with other ethical principles, such as individual prioritisation (perspective 1) and social usefulness (perspective 2).

Such ethical principles have to be combined or enriched with additional elements to formulate prioritisation strategies. Therefore, further research should evaluate which elements (eg, patient characteristics, process measures) should be integrated to devise an acceptable prioritisation strategy.

CONCLUSIONS

The fair allocation of scarce surgical resources was a pressing normative issue during the COVID-19 pandemic. Our Q-methodology study has shown that patient representatives generally favour utilitarianism as a guiding ethical principle for prioritisation, although there are some differences as to whether this should be at the individual or the collective level. Policy decisions in healthcare crises demand careful consideration of ethical, practical and societal implications.

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Supplemental material

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Supplementary material 1: Participant instructions

These instructions will step-by-step guide you through this study's process. Please carefully read each step completely before you start carrying out the activity. Please fully complete each step before proceeding to the next one.

This study is about decision-making in healthcare. We are interested in your views on this topic. There is currently a lot of debate on how to allocate scarce surgical capacity. Due to the corona-crisis, choices have had to be made about to whom to provide care and to whom not to provide care.

The statements on the twenty numbered cards describe ways in which we think the capacity of operation theatres could be prioritized. The first part of your task is to rank these statements. In the second part, you will be asked to elaborate on the choices you made.

1. Open the link to the VQ-method website. The twenty cards you will find contain statements about how surgical capacity *could be* prioritized in times of scarcity. This study is about peoples' individual opinions; there are no right or wrong answers. The numbers on the cards (from 1 to 20) are to help you to complete the exercise and have no other meaning.

2. Read through the twenty statements carefully. Press 'next'.

3. Place each statement into one of three piles:
   1. A pile (to your right) for statements with which you agree;
   2. A pile (on your left) for statements with which you disagree;
   3. A pile (in the middle) for statements with which you neither agree nor disagree, do not consider relevant or are unclear to you.

Press 'save and continue'.

4. Take the pile containing the statements you agree with (on your right) and read through them once again. Select the statement which you agree with the most strongly and place it in the extreme right column of the score sheet, below the "+4". Next, select the two statements with which you next most strongly agree and place them in the two spaces below the "+3". It does not matter in which order you place them. Proceed until all statements you agree with have been placed on the score sheet.

4. Next, take the pile containing the statements you disagree with (to your left) and read through them once again. Select the statement with which you disagree the most and place it in the extreme left column of the score sheet, below the "-4". Next, select the two statements which you now disagree with most strongly and place them in the two spaces below the "-3". Again, it does not matter which of them you place at the top. Proceed until all statements you disagree with have been placed on the score sheet.

5. Finally, take the remaining 'undecided' pile and read through these statements once again. Place these cards in the remaining spaces on the score sheet in what you feel are the appropriate places. Press 'save and continue'.

6. You will now see the statement you most strongly agreed with, and the one you most strongly disagreed with. In a maximum of two sentences, explain why you agree/disagree most with these statements. Press 'finish'.

The score sheet used by patients to rank the statements.

Supplementary material 2: Correlation matrix

Participants	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	100	50	0	20	63	29	50	-14	50	51	34	54	67	57	60	13
2	50	100	32	69	69	14	52	4	70	23	10	41	77	69	49	39
3	0	32	100	44	38	10	34	70	36	-8	34	-16	26	39	26	44
4	20	69	44	100	40	14	54	16	67	-8	-3	28	63	67	27	53
5	63	69	38	40	100	32	69	19	73	52	28	42	78	83	73	26
6	29	14	10	14	32	100	44	9	46	36	50	10	38	46	66	17
7	50	52	34	54	69	44	100	28	60	36	18	34	66	78	47	44
8	-14	4	70	16	19	9	28	100	17	-34	-16	-31	-4	33	18	41
9	50	70	36	67	73	46	60	17	100	21	23	39	74	86	70	57
10	51	23	-8	-8	52	36	36	-34	21	100	52	19	50	29	52	-21
11	34	10	34	-3	28	50	18	-16	23	52	100	17	31	13	48	-8
12	54	41	-16	28	42	10	34	-31	39	19	17	100	69	48	44	17
13	67	77	26	63	78	38	66	-4	74	50	31	69	100	82	71	40
14	57	69	39	67	83	46	78	33	86	29	13	48	82	100	78	53
15	60	49	26	27	73	66	47	18	70	52	48	44	71	78	100	16
16	13	39	44	53	26	17	44	41	57	-21	-8	17	40	53	16	100

This matrix represents the correlation of rankings among all 16 participants. The numbers 1 to 16 displayed horizontally (rows) and vertically

(columns) correspond to unique participants.

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Supplementary material 3: Factor arrays per perspective

The factor arrays shown below depict the position on the score sheet for each statement for each perspective.

Perspective 1 – clinical needs and outcomes

-4	-3	-2	-1	0	1	2	3	4
18. Patients who have contributed significantly in society should be prioritized	14. Patients who currently have an important societal function should be prioritized	15. Patients who depend heavily on others for care should be prioritized	16. Informal carers should be prioritized	7. Young patients should be prioritized (in comparison to older patients)	19. Doctors should be the ones to judge which patients get priority on the basis of their medical expertise.	6. Patients that are clinically deteriorating should be prioritized	10. Priority should be based on how many lives can be saved	3. Patients with the greated need for treatment should be prioritized
	8. Patients with a healthy lifestyle should be prioritized	17. It is important when prioritizing that people can fulfill their rol in society	2. Allocation of a surgery should be based on a first come, first served system	20. Patients should have a voice in who gets prioritized	12. Priority should be based on the best prognosis of the patient after treatment	11. Priority should be based on how many life-years can be saved	9. Priority should be given to those treatments that generate the most overall health for the most people.	
			1. Allocation of a surgery should be based on a lottery, everyone has an equal chance to get surgery	13. Patients who are healthcare professionals should be prioritized	5. Patients with the lowest quality of life should be prioritized			
				4. Patients with the worst health status should be prioritized				

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Perspective 2 – population outcomes and contribution to society

-4	-3	-2	-1	0	1	2	3	4
2. Allocation of a surgery should be based on a first come, first served system	18. Patients who have contributed significantly in society should be prioritized	5. Patients with the lowest quality of life should be prioritized	4. Patients with the worst health status should be prioritized	6. Patients that are clinically deteriorating should be prioritized	11. Priority should be based on how many life-years can be saved	10. Priority should be based on how many lives can be saved	12. Priority should be based on the best prognosis of the patient after treatment	9. Priority should be given to those treatments that generate the most overall health for the most people.
	1. Allocation of a surgery should be based on a lottery, everyone has an equal chance to get surgery	16. Informal carers should be prioritized	14. Patients who currently have an important societal function should be prioritized	8. Patients with a healthy lifestyle should be prioritized	20. Patients should have a voice in who gets prioritized	19. Doctors should be the ones to judge which patients get priority on the basis of their medical expertise.	17. It is important when prioritizing that people can fulfill their rol in society	
			15. Patients who depend heavily on others for care should be prioritized	13. Patients who are healthcare professionals should be prioritized	7. Young patients should be prioritized (in comparison to older patients)			
				3. Patients with the greated need for treatment should be prioritized				