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WP 2006: 18

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Price: NOK 50

ISSN 0805-505X
ISBN 82-8062-174-1
This report is also available at:
www.cmi.no/publications

Indexing terms
Tanzania
Priority setting
Equity
Stated preferences
Group deliberation

Project title
UiB/HALOS: Priority setting in global health (Nfr)

Project number
25015

Contents

Introduction

In health care systems worldwide, the need for health care exceeds available resources. Priority setting is both inevitable and crucial for most effectively achieving social objectives in relation to health (Ham and Coulter, 2000) . This is especially so in low income countries where resources are extraordinarily scarce. Priority setting can be defined as the process of determining the allocation of health care resources between competing programmes. Broadly understood, a health programme is a structured set of interventions aimed at the improvement of health. The evaluation of programmes can be guided by several principles, and can be implicit or explicit.

The idea of health outcome maximisation has been prominent as a guiding principle, at least in the theory of priority setting (Ham and Coulter, 2000). According to this principle, resources should be allocated across programmes so as to maximise the health outcomes generated (Tan-Torres Edejer et al., 2003). The use of cost-effectiveness analysis is often motivated by this principle.

Lately, there has been growing concern in the literature as to how health programme outcomes are being and should be distributed (Wagstaff, 1991; Culyer and Wagstaff, 1993; Kamm, 1993; Daniels, 1994; Nord et al., 1995; Norheim, 1996; Lindholm et al., 1997; Olsen, 1997; Williams, 1997; Dolan, 1998; Cookson, 1999; Nord, 1999; Brock, 2002; Sen, 2002; Bleichrodt, 2005; Richardson, 2005). It has been suggested that in allocating resources we should not only care about the sum total of outcomes, but also about outcome distribution. The maximisation of aggregate health is not necessarily consistent with the maximisation of social value and may conflict with fairness.

The debate about the maximisation and distribution of health outcomes has been confined primarily to the Western world. This is particularly the case for empirical studies of people's preferences. Few have focused on outcome distribution and distributional preferences in low income countries. In a review of empirical studies looking at people's preferences in health outcome maximisation, only one of 64 studies was conducted outside Europe, North America and Australia (Dolan et al., 2005). This rather narrow focus may concur with a view that, in settings of extreme resource scarcity, emphasis should be put on health outcome maximisation rather than on distribution. One might, for instance, think that societies where life expectancy is 45 years or less can only afford an exclusive focus on raising population health as high as possible. The focus on outcome maximisation in policy and practice can be exemplified by the WHO's CHOICE project. While WHO acknowledges that there are other goals besides health maximisation (Tan-Torres Edejer et al., 2003), the explicit objective of this project is to provide "evidence for deciding on the interventions and programmes which maximize health for the available resources" (WHO-CHOICE website).

The few studies we are aware of which were conducted in low income settings suggest that various stakeholders do consider distribution important relative to health maximisation. Data from Ghana and Uganda indicate that health professionals consider severity of disease and/or age along with cost effectiveness to be the main criteria for priority setting (Kapiriri et al., 2004; Kapiriri and Norheim, 2004; Baltussen et al., 2006). However, these studies only consider part of people's preferences on outcome distribution. Firstly, they do not show patterns of preferences tested over a broader range of severity or age. Baltussen et al. show people's preferences across two levels only, for patients below 15 years of age and patients 15 years and older, for example (Baltussen et al., 2006). Two studies by Kapiriri et al. present people's preferences for age and/or severity as general criteria, but do not show how their preferences vary across different levels of age and/or severity (Kapiriri et al., 2004; Kapiriri and Norheim, 2004). Secondly, the studies do not elicit the relationship between people's preferences for specific programme characteristics and their reasons for these preferences. Thirdly, the preferences elicited in the studies are expressed through self-administered questionnaires and not through a deliberative process. Finally, these studies are limited in number and are restricted to the specific contexts of Ghana and Uganda. For these reasons and others, we still have considerable gaps in our knowledge of how decision-makers and the public in low income countries think about the distribution of health care.

This study aims to explore distributional preferences among health planners in Tanzania. In this paper, we present data on how the health planners in Tanzania ranked hypothetical health programmes which differed in terms of the initial life expectancy of the target groups. We also present the reasons these health planners think should be most important in the prioritisation of health programmes. We discuss the character of the health planners' distributional preferences and the perceived importance of these relative to concerns for health maximisation.

Methodology

In order to elicit the values and preferences of health planners in Tanzania, we employed a deliberative group method. This method resembles the so-called nominal group technique in important respects (Delbecq et al., 1975). The participants alternate between group discussion and individual responses to a questionnaire. The eight sessions in this study each lasted for about two hours and involved 5 to 16 participants, giving a total of 63 participants.

Our sampling of respondents was strategic. The inclusion criterion was regular involvement in health planning at regional or district level. The participants were selected by regional or district medical officers. Many participants were members of Council Health Management Teams (CHMTs). Health planners are expected to be well informed about policies and about the implications of programme priority setting. The views they express may, therefore, better represent informed choices than those of the general public. Respondent characteristics are summarised in table 1. The sessions were conducted in August and September 2005 in the districts of Mbeya, Tukuyu, Kyela, Hai and Moshi.

We include in this paper the responses from two tasks set by the questionnaire. In the first task the respondents were asked to rank five different health programmes. Participants were told that all the programmes would increase the life expectancy of the patients involved by 15 years, that all the programmes affected the same number of people, and that their costs were equal. The programmes differed only in that they affected target groups with different initial life expectancies. Life expectancy was here understood as expected age of death. The average initial life expectancies for the five target groups were 0, 15, 30, 45 and 60 years, respectively. The invariability of the health benefit generated across the programmes was highlighted by a preliminary task where programmes only varied according to the size of the health benefit. This was done in order to avoid a problem pointed out by Tsuchiya et al., who suggest that respondents tend to assume that a benefit would last for a full lifetime even if they are told to suppose a fixed benefit (Tsuchiya et al., 2003). Their proposed solution is to have a preceding task where respondents are actually asked to assume variable benefit.

The target groups were characterised by their life expectancy rather than their age because we take people's lifetime prospects to be what ultimately matters for distributional considerations. This is in line with recent theoretical contributions about justice and health care distribution (Brock, 2003; Kamm, 1993). The sources of the life expectancy differentials were not specified in the questionnaire. Nor were the patients' lifetime prospects or benefits from programme implementation described in terms of morbidity or quality of life. Longevity and morbidity plausibly trigger different normative considerations. Empirical studies have also shown that people do indeed think differently about life quantity and life quality (Dolan and Tsuchiya, 2005; Nord, 2005). In addition, if we had incorporated descriptions of past and/or future quality of life, this would have complicated the tasks.

The second of the two tasks included in this study concerned reasons for the prioritisation of health programmes. The respondents were asked firstly to suggest and then individually to select and rank the three reasons that they thought should be most important in prioritising health programmes.

Between the two individual tasks included in this study, the respondents were presented with four related tasks, each followed by group discussion. In these intervening tasks, the participants were asked to prioritise health programmes that differed according to both the initial life expectancy of the patients and average life-years benefit per patient. The results of these tasks are not reported here, but the subsequent group discussions are relevant to the tasks described in this paper. In each of the four group discussions, the moderators asked every participant what reasons they thought should be most important for health programme prioritisation in general. The respondents were asked to formulate reasons as principles and the moderator suggested a categorisation based on the results of four pilot studies. All the answers were written on a blackboard and after everyone had responded, the moderators encouraged discussion and debate about the principles. Participants were asked to select from the whole list of reasons proposed during the four group deliberations. They were then asked to rank the three they considered most important. After the final round of deliberation, participants were given time to reconsider all their answers and make changes if they wanted to.

Analysis

Descriptive statistics were employed to analyse responses from both tasks. Each respondent's ranking of health programmes was characterised by a score from 1 to 5, i.e. an individual Borda score, where 5 represented the most preferred alternative. For each health programme, we then calculated the proportion of respondents who gave the programme a particular rank. The individual scores were also summarised to produce aggregate Borda scores for each programme. Similar procedures were used to characterise the elicited reasons. Our method implies that rank scores are treated as if they represent cardinal numbers.

Average Borda scores for each of the health programmes were further used to express graphically the average ranking of the programmes. Since the graph illustrating this pattern is based on ordinal data we can only infer that one point on the graph is above or below another, not the absolute level of any point or the absolute difference between any two points.

The proportions of respondents with certain programme ranking patterns were calculated. This was also done within each set of respondents who ranked a particular reason as most important.

We used Chi-square tests for independence to test for any association between individual ranking of programmes or reasons and respondent characteristics. A significance level of 5 per cent was used throughout.

Table 1: Respondent characteristics

Category	Relative frequency (%)
Sex	
Male	71
Female	29
Age	
≤45	47
≥46	53
Dependants (median=3)	
Children	95
No children	5

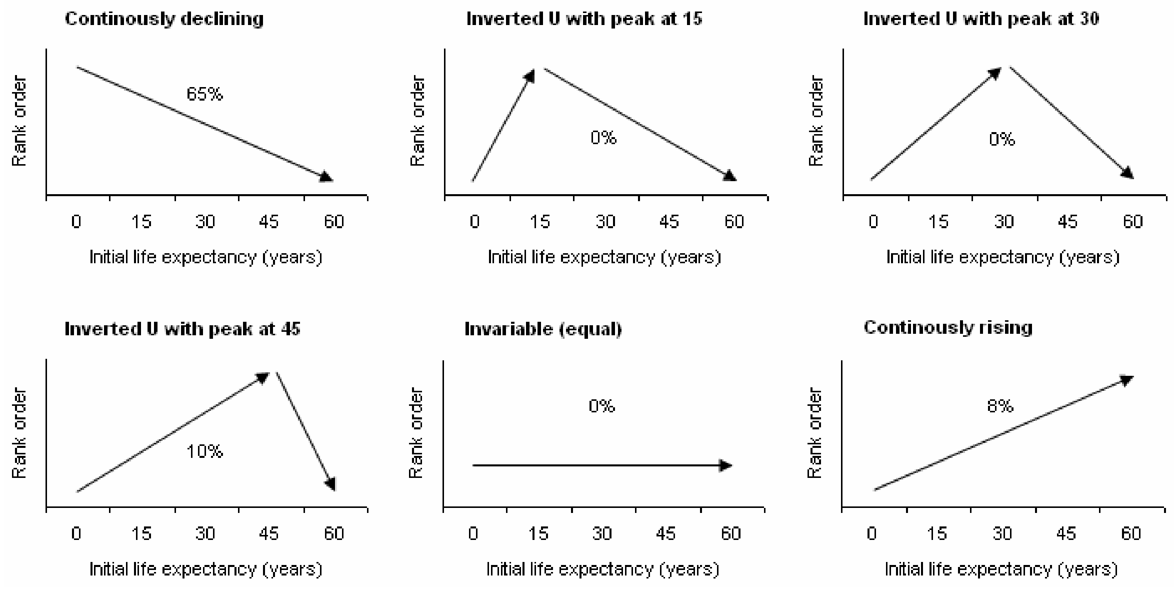
n=63, of which characteristics missing for 5

Findings

There are two main findings in this study. Firstly, we found a high proportion of respondents, 65 per cent, who expressed a continuously declining programme ranking pattern (figure 1). This pattern implies that, with any two programmes, the one treating patients with the lowest initial life expectancy is consistently considered the more important. Secondly, we found a high proportion of respondents, 43 per cent, who considered “affect those with least life expectancy” the most important reason in priority setting (table 3).

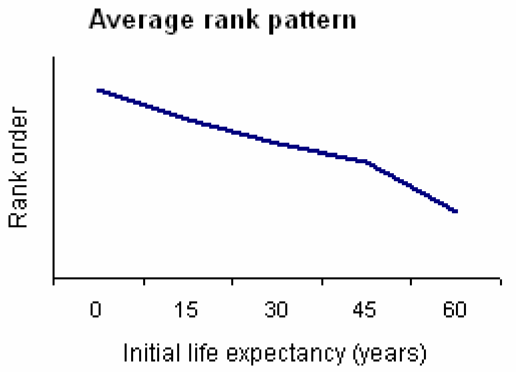
The most frequent individual ranking patterns, together with some others much discussed in the literature, are shown in figure 2. By far the most frequent pattern was the continuously declining pattern. The second most frequent pattern was one resembling an inverted U with a peak at life expectancy of 45 years. Ten per cent of the participants showed this pattern. No respondents had a pattern assigning equal importance to all the programmes. No respondent had an inverted U pattern with peak at 15 or 30 years. Eight per cent had a continuously rising ranking pattern. This pattern implies that, with any two programmes, the one treating patients with the highest initial life expectancy is consistently considered the most important.

Figure 1. Selection of individual ranking patterns. Relative number of respondents in percent.



The average ranking pattern (based on Borda scores) declines continuously from a life expectancy of zero years (figure 2). We see that a programme's ranking decreases with increasing initial life expectancy of the target group. It is important to note that the average rank pattern is based on ordinal data and must be interpreted with caution. The pattern in Figure 2 is used only to illustrate whether or not a programme is ranked as more important than another, not how much more important it is.

Figure 2



How the respondents more specifically ranked the health programmes is shown in Table 2. The programme affecting patients with an initial life expectancy of zero years is most frequently ranked highest.

Table 2: Results from ranking of health programmes

Life expectancy	Relative number of respondents (%)					Borda score (%)
	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	
0	**79**	2	0	3	16	28
15	0	**73**	13	14	0	24
30	0	13	**77**	10	0	20
45	13	11	6	**67**	3	18
60	8	2	5	5	**81**	10

Modal rank is in bold

Six principles constitute all but one of the reasons stated as among the three most important (table 2).Three of the six reasons are clearly dominant. Of these three, the reason labelled "affect those with least life expectancy" was ranked highest most frequently (43 percent of the respondents) and received 36 percent of the total Borda score. The two reasons labelled "affect those most important for family/society" and "yield most life-years" received 27 and 26 per cent of the total Borda score respectively.

Table 3: Results from ranking of reasons

Reason	Relative number of respondents (%)			Borda score (%)
	Rank 1	Rank 2	Rank 3	
Affect those with least life expectancy	**43**	**36**	17	**36**
Affect those most important for family/society	21	**36**	28	27
Yield most life-years	29	14	**41**	26
Affect those most at risk	6	11	2	7
Affect those that benefit most relative to initial status	2	2	6	2
Affect teenagers	0	2	5	1
Other reasons	0	0	2	0

Modal rank is in bold

The relationships between programme ranking pattern and reason ranked most important are shown in Table 4. For each reason the proportion of respondents giving that reason as the most important while also showing certain ranking patterns is presented.

Table 4: Relative frequency of ranking patterns for each reason

			Programme ranking pattern Relative number of respondents (%)			
		N (63)	Continuously declining	Inverted U with peak at 45	Continuously rising	Other
Reason ranked most important	Affect those with least life expectancy	27	78	0	7	15
	Affect those most important for family/society	13	46	31	8	15
	Yield most health benefit	18	56	11	11	22
	Affect those most at risk	4	75	0	0	25
	Affect those that benefit most relative to initial status	1	100	0	0	0
	Affect teenagers	0	0	0	0	0
	Other reasons	0	0	0	0	0

Neither gender nor age of respondent showed any significant association with individual responses. Whether having children or not was significantly associated with the responses could not be established because of the limited sample size and the fact that only 5 per cent of the respondents had no children. The programme ranking patterns were dichotomised into those which continuously declined and those which did not. The reasons ranked most important were dichotomised into "affect those with least life expectancy" and other reasons. The association between these two variables did not reach significance.

Discussion

The findings in this study provide important clues about the distributional concerns in our sample of health planners. Firstly, the findings suggest that the health planners are indeed concerned about the distribution of health programme outcomes, not only the total sum. In this study, health outcome is understood in terms of life-years. Neutrality towards the distribution of outcomes would be expected if health outcome maximisation was the exclusive concern. The very fact that no respondent ranked the programmes equally despite equal aggregate outcomes indicates that the health planners are not indifferent to the distribution of outcomes across life expectancy.

That distribution of life-years mattered to the health planners was also suggested by the reasons they gave. The reason “affect those with least life expectancy” was considered most important by a larger number of respondents than the reason “yield most life-years”. The reason “affect those most important for family/society” was ranked highest slightly less frequently than “yield most life-years”, but had a higher Borda score. These findings indicate not only that outcome distribution matters if the sum total is invariable, but also that distribution matters relative to the objective of maximising health outcomes. More than 70 per cent of the respondents ranked the reason “yield most life-years” second or lower in terms of importance.

In addition to indicating that distribution matters in general, the findings in this study more specifically suggest the character of the preferred distribution. Almost two thirds of the respondents expressed a continuously declining ranking pattern. This implies that the lower the initial life expectancy of the patient, the more important the programme is, everything else being equal.

The predominant pattern of preference is consistent with concerns that the older a person is, the lower the quality of an additional life-year. While this is a plausible underlying concern for preferences found at the upper extreme of the life expectancy range, this appears less so for the other parts of the range. Furthermore, none of the reasons elicited in this study express such a concern directly (Table 3). The perceived importance of diminishing marginal quality of life-years might, of course, have been expressed indirectly through other reasons. However, if this really was a major concern, we might expect to have found a reason calling for priority to be given to programmes for people who would gain additional life-years with the highest quality.

The preference pattern implying that the lower the initial life expectancy of the patients, the more important the programme, is also consistent with a concern for equity in the distribution of health outcomes. According to such a concern for equity, the ethically relevant value of each unit of health benefit is higher the lower the initial health status of the beneficiary. In this study, the unit of health benefit was life-years and initial health was understood in terms of initial life expectancy. That the health planners assigned importance to equity appears to be supported by the reasons they gave. Most frequently ranked highest was “affect those with least-life expectancy”. A particular concern for those with lower lifetime health prospects is compatible with a well-known and more general ethical notion, what ethicists call “prioritarianism” (Brock, 2002; Parfit, 1995).

A principle of equality in lifetime health prospects can be seen as an underlying justification for prioritarianism. One version of such a principle can be formulated as follows: “Each citizen should have the same lifetime health prospects as everyone else in society - within the constraints of what is medically possible”.

The preferences elicited in this study might also conform to the core idea of the so-called fair innings argument, that we are all *entitled* to some normal span of life. This idea does itself have a certain affinity to the principle of equality in lifetime health prospects. The correspondence between our results and the fair innings argument as formulated by Alan Williams is, however, uncertain (Williams, 1997). Williams’s fair innings argument assigned lower weight to life-years (or QALYs) gained after a certain age (“three score and ten”), but said nothing about the relative weights assigned to other ages. For this we need something like what Tuschiya labels “the relative fair innings argument” (Tsuchiya, 2000). That everyone is entitled to a normal span of life, a “fair innings”, is still the guiding idea. The relative version, however, need not have any specific cut-off point or threshold. According to this version, the younger could have priority over the older over the entire age range. A relative version accords with our general findings.

Not all the individual responses fit equally well into the picture portrayed here. Eight per cent of the respondents had a continuously rising ranking pattern. This implies that the higher the initial life expectancy of the patients, the more important the programme is, everything else being equal. It is, of course, hard to assess whether this maxim properly expresses these respondents' "real" preferences. The fact that two out of five, or 40 per cent of these, at the same time considered "affect those with least life expectancy" as the most important reason might undermine this. On the other hand, both the sample size and the size of the sub-group in question were small. The limited sample size might explain why we did not find significant association between the continuously declining ranking pattern and "affect those with least life expectancy" as the most important reason. Table 4 does indicate, however, a trend in the association between the two variables.

This study is explorative in several ways. To our knowledge, it is the first of its kind to look at preferences in health programme outcome distribution across life expectancy in a context of extreme resource scarcity. In particular, it does this over a range of life expectancies. In contrast to many studies on distributional concerns which only use questionnaires or telephone interviews, this study used a deliberative group method (Dolan et al., 2005). The study also focused directly on the distribution of outcomes generated by health programmes, rather than on preferences for various distributions of health in society. This study elicits preferences related to pure health inequality, rather than health inequalities across groups with differing socioeconomic status. If pure inequalities in health are understood as important in themselves, this is a worthwhile task. In any case, the methodology can easily be modified to elicit preferences for inequality across other sets of characteristics.

The peculiar combination of features in this study makes it difficult to find comparisons. The context of Tanzania with extreme resource scarcity, the focus on life expectancy, the group deliberation, and the direct focus on programme outcomes are all central features of this study. Most studies eliciting preferences for health programme outcome distribution have focused on the age of the patients rather than their initial life expectancy. Most of the studies on public preferences for health programme outcome distribution across age suggest that people value health programme outcomes favouring the young more than those favouring the old (Dolan et al., 2005). This was also found in an explorative study in Ghana where interventions targeting young people were found more likely to be preferred among a group of people involved in health care decision making (Baltussen et al., 2006). In a study by Bleichrodt et al. in the Netherlands, the public evaluated different health programmes in terms of their effect on the distribution of quality adjusted life expectancy (QALE) among the targeted cohort of patients (Bleichrodt et al., 2005). After controlling for insensitivity to group size, median data indicated a general aversion to inequality in QALE – compatible with weak egalitarian or prioritarian concerns. Although our study focuses on life expectancy, not adjusting for quality, our findings appear consistent with the results of Bleichrodt et al.

Limitations

There are several limitations to this study. One is the exclusive use of ordinal data. The lack of cardinal data makes it difficult to assess the strength of the preferences. Another limitation is that our selection of respondents is representative neither of health planners nor of the citizens of Tanzania. Therefore, while our findings provided us with in-depth understanding of how our group of respondents thinks about the distribution of health outcomes, we are not able to generalise our findings.

There are several ways in which the preferences might have been biased by the setup of the study. The study was designed to explore the relationship between the distribution and maximisation of health programme outcomes and this was made clear to the respondents. Furthermore, the health programmes that the respondents were asked to rank differed only in regard to the initial life expectancy of the patients. This, of course, encouraged the participants to think about distribution in one particular dimension, that of life-years across initial life expectancy. Both empirical studies and ethical analyses have frequently concluded that this is only one of many dimensions in which distributional concerns are important (Dolan et al., 2005; Sen, 2002). The sole focus on a certain dimension is not so much a problem in itself. However, the use of such data may be problematic if preferences in that dimension conflict with preferences in other relevant dimensions which have not been taken into account. In any case, the respondents were permitted to give all programmes equal rank if they considered initial life expectancy not relevant for the distribution of health programme outcomes. No respondent ranked all the programmes equally.

Other possible sources of bias include those related to question framing and moderator involvement. It is also possible that the group deliberation sessions promoted conformity in responses from individuals even though we tried to counteract this by specifically addressing each and every participant during each session.

As with all assessment of people's preferences, this study presupposes that preferences exist or can be reasonably constructed during deliberation. It also presupposes that these preferences can be meaningfully elicited. By using health planners, we hoped to maximise the likelihood of these conditions being met. Health planners are expected to be more informed about the issues related to this study and more ready to express those preferences. Even in this optimal case, the complexity and high level of abstraction of the tasks call for caution in interpreting the results.

Recommendations

Because of the limited amount of data, the possible biases and the lack of representativeness, the results of this study cannot directly inform health policy in Tanzania or elsewhere. This is an exploratory study intended to inform future research on distribution of health outcomes in Tanzania and other contexts of extreme resource scarcity. To be directly valuable for policy and actual priority setting, future studies need to be extended in several ways. More studies on distributional preferences for health programme outcomes must be conducted in low income countries. These studies need to involve larger samples and gradually seek to be representative of the general population

Future research should perhaps also elicit both preferences for specific programmes and the reasons given for these preferences. This would enable us to understand better the structure of people's values and preferences, and might form the basis for assessing internal validity.

In conclusion, we think this study has pointed to the need for increased attention in research and policy to the distribution of health programme outcomes, including in low income settings. An expanded procedure of the kind used in this study could be a useful way to incorporate a wide spectrum of social objectives into priority setting in health.

Acknowledgements

We would like to thank all the respondents, including respondents in the pilot studies, for their participation. We thank the Tanzania Commission for Science and Technology (COSTECH), the Ministry of Health, the National Institute for Medical Research (NIMR), and Emmanuel Makundi for their cooperation. Bjarne Robberstad, Anders Bærheim, and the members of the Priority Setting and Planning in Global Health (PSPGH) group at the University of Bergen contributed to study design. The Department of Biostatistics at the University of Washington assisted in analysis. We are grateful to all of them. This study was funded by the Research Council of Norway through the Medical Student Research Program and a young investigator's award for the project "The ethics of priority setting in global health".

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SUMMARY

Background: Maximising health as the guiding principle for resource allocation in health has been challenged by concerns about the distribution of health outcomes. There are few empirical studies which consider these potentially divergent objectives in settings of extreme resource scarcity. The aim of this study is to fill some of this knowledge gap by exploring distributional preferences among health planners in Tanzania.

Methodology: A deliberative group method was employed. Participants were health planners at district and regional level, selected by strategic sampling. The health planners alternated between group discussion and individual tasks. Respondents ranked health programmes with different target groups, and selected and ranked the reasons they thought should be given most importance in priority setting.

Findings: A majority consistently assigned higher rankings to programmes where the initial life expectancy of the target group was lower. A high proportion of respondents considered "affect those with least life expectancy" to be the most important reason in priority setting.

Conclusion: Distribution of health outcomes, in terms of life-years, matters. Specifically, the lower the initial life expectancy of the target group, the more important the programme is considered. Such preferences are compatible, within the sphere of health, with what ethicists call "prioritarianism".

ISSN 0804-3639
ISBN 82-8062-174-1

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