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Preferences, needs and QALYs

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Abstract

Quality Adjusted Life Years (QALYs) have become a household word among health economists. Their use as a means of comparing the value of health programmes and medical interventions has stirred up controversy in the medical profession and the academic community. In this paper, I argue that QALY analysis does not adequately take into account the differentiated nature of the health state values it measures. Specifically, it does not distinguish between needs and preferences with respect to its valuation of health states. I defend the view that needs and preferences are clearly distinguishable, and that the concept of needs cannot be dispensed with, as many health economists suggest. It is argued that the scale along which health states are measured in QALY analysis is not a continuous interval scale, but one which concerns two distinctly different value dimensions. Measuring the values of health state intervals may reveal the weighting attached to the different value dimensions.

A traditional feature of 19th century classical economics was that it categorised commodities into two distinct groups: necessaries and luxuries. Necessaries are considered those commodities required for sustaining life, while luxuries are those commodities that do not serve the purpose of subsistence, but rather, serve to satisfy higher order wants. This distinction between necessaries and luxuries was criticised by Alfred Marshall, who based his criticism on the difficulty of establishing whether a commodity belonged to the category necessaries or luxuries.[1]

The so-called marginalists before Marshall, starting with Jevons and Menger in the 1870s, argued that a hierarchical ordering of wants could be established, but that whether the term needs or wants was used was immaterial. Despite this, implicit distinctions between needs and wants in terms of their differing nature were made by the marginalists. Jevons, for instance, suggested that "the necessaries [needs] of life are so few and simple that a man is soon satisfied in regard to these, and desires to extend his range of enjoyment".[2] The suggestion here is that the fulfilment of needs, however few and of marginal importance to economic analysis, is a prerequisite to having desires satisfied. In addition, there is the implicit suggestion that needs and wants are distinguishable on account of their nature, with one being indispensable to life, the other not.

Further on in his book, Jevons explained the "law of variation of utility", utility being something measured by and defined as "the addition made to a person's happiness".[3] He used the example of the consumption of quantities of food, where the utility of the first increment of food is infinite since the first increment is "indispensable to life".[4] The utilities of further increments of food become definable and determinate at a certain point, and diminish with every additional increment. Clearly, Jevons's initial conflation of needs and wants, is unravelled in his explanation of diminishing (marginal) utility. A similar thing happens in Menger's *Principles of Economics*.[5] In this book, Menger, like Jevons, initially suggested that there are "needs of *different kinds*" that can be satisfied and that each need can be satisfied "*more or less* [completely]".[6] The terms, needs and wants, are used interchangeably in the text, indicating that Menger did not see a reason to distinguish sharply the two concepts. Nevertheless, throughout his analysis of how goods get value there are allusions to the fact that man has certain *basic needs* which differ in nature from wants, and that the former are to be analysed separately from the latter.

Modern mainstream economists' charges against the concept of needs include its alleged ambiguity, its indeterminacy and its subjectivity or value-ladenness.[7] Putting needs into practice, as opposed to preferences, as part of social policy, is considered to be an arbitrary, paternalistic business, not in line with the economist's espoused professional objectivity. Contemporary economists assert that everything that is done with needs can be done with preferences, using conventional indifference curve analysis. If, indeed, someone feels that he or she needs something desperately, this will show up as a

Key words

Quality Adjusted Life Years; needs; preferences; quality of life.

very intense preference. One possible way to show this is to define degrees of intensity of preferences in terms of elasticity of demand. Those goods for which there is inelastic demand are intensely preferred goods. Other goods have more elastic demand and preferences for them will tend to be less intense. But here, as above in the case of the marginalists, we are left with a sense that although the differences are supposedly only ones of degree, at a deeper level they appear to be founded on differences in kind. Perfectly inelastic goods, for instance, would appear to have a different (ontological) character from goods that are elastic. Goods that are perfectly inelastic would seem to fit the description of necessities or needs, whereas elastic goods would appear to fit the label of preferred goods or items desired but not required.

Basic needs

As was mentioned above, one of the charges levelled against needs by economists concerns its cultural and context-dependent value-ladenness. At one point in time, a good might be considered a luxury, something preferred but not needed. At some later point in time that same good might come to be considered a need. Goods like refrigerators and televisions come to mind. Surely, this charge has merit in certain instances. However, if we restrict our definition and application of the concept of needs to basic needs (as will be done below) required for sustaining life, then, I believe, this charge is left rather harmless.

Those who suggest that needs are distinguishable from preferences or wants assert that needs are irreducible, and that they therefore may not be conflated with preferences. It does seem that certain basic needs fit this description, basic needs being those needs requisite for sustaining life. One such need which appears to be a legitimate candidate is medical care, particularly in its relation to prolonging life. Here, a patient's *basic* needs are considered to be directly related to *required* courses of action without which a patient ceases to be functional. Being functional would, of course, include survival, though not necessarily every form of survival. On the contrary, a patient's preferences may encompass expressions of personal preference unrelated to considerations of survival or subsistence.[8]

Needs also seem to have a more "objective" character than preferences. Although they are not value-neutral as Willard[9] rightly argues, one can tell in a reasonably objective way what they are and how they can be satisfied. Certainly in the case of an unconscious patient whose preferences we cannot determine, one can, on medical grounds, determine rather objectively which basic needs the patient has.

Arguably, a societal consensus on basic needs is easier to achieve than one on preferences. It would seem reasonable to suggest as Braybrooke does,[10] that drawing up lists of satisfiable basic needs which deserve society's first priority is a comparatively easier task than drawing up lists of satisfiable individual preferences. Evidently, in contrast to preferences, "we already know a fair amount about the needs common and permanent among economic agents. They are specified in life science's findings about minimal levels of sustenance, the limits on life-sustaining climate and weather, and the other variables on which persistence and evolutionary fitness of *homo sapiens* depend". Furthermore, "in many cases we know at least in principle how and in what units to measure [needs]".[11]

It can also be said that needs, drawn up by society on a consensus basis, seem to make a more compelling claim on us than preferences. Despite the fact that economists tend to oppose the normative use of needs, it seems that in outlining and carrying out social welfare policy, use of needs is unavoidable. How else do we explain proposals put forward by sensible policy-makers (some of whom are economists) with regard to the establishment of minimum wages, basic welfare, food stamps, etc, other than by reference to needs.

This is not to say that needs must always supersede the preferences of individuals. Surely there are cases in which preferences exist which disregard needs. As the early institutionalist economist Veblen astutely observed: "No class of society, not even the most abjectly poor, foregoes all customary conspicuous consumption".... "[even] the last items of this category of consumption are not given up except under stress of direst necessity".[12]

Indeed, there is no contradiction between a person having a set of needs and him preferring not to have any of them met. Consequently, charges against policies based on needs concerning their alleged heavy-handedness and restriction of personal freedom are not valid so long as allowances are made for the disregarding of needs by those individuals who prefer to do so.

Infinite regress

One opponent of the concept of needs, Willard,[9] states that needs are not valuable in themselves, but a means to "something else considered to be valuable".[13] To establish a need is to establish a means to something else considered to be valuable. Hence, to say that one needs food is to say that food is needed in order to survive. The problem with this instrumentalist reasoning is that it runs into an inescapable infinite regress. Accepting for the moment that the need for food is not valuable in itself, but only a means to something else, namely, survival, one is left without an explanation for why most living creatures express an apparent *need to survive*. I believe that it is useful to distinguish in this regard between instrumental needs such as medical care and food, and non-instrumental needs such as

survival. The former are the needs Willard is talking about, while the latter are a special category of needs which are valuable not as a means to something else, but valuable *in themselves*. In the case of a patient in danger of losing his or her life, the medical attention given as an instrumental need serves the purpose of satisfying a non-instrumental need, namely survival. Perhaps Willard would counter the suggestion that survival is a non-instrumental need by saying that it is an instrumental means to procreate. But, the question would then loom, why does there appear to be an evident primarily non-instrumental need to procreate? Surely, needs to survive and procreate are not primarily means to something else. It seems reasonable to suggest that survival and procreation as needs constitute things to be valued for their own sake.

Economics imperialism

Willard's strictly instrumentalist reasoning has no room for non-instrumental needs. Needs do not even figure as real entities in his account. He maintains that only those terms which can be connected to observable facts are referential. Since, according to Willard, needs are not facts, it does not make sense to think of them as referential: "An attempt to discover human needs is as fundamentally misguided as would be an attempt to discover human rights".[14] However, one could offer a realist interpretation of needs to counter Willard's argument. People may by nature be endowed with a hierarchy of needs, some of which, the basic needs, demand attention only after the others have been met.[15]

As an economist, I am interested in examining the various areas of application of economic analysis outside the realm of economics. One particular area where so-called "economics imperialism" has successfully made inroads is medical care. Health economists have been involved in health care decision-making for well over three decades. One of the most controversial items to come out of the health economist's toolkit is the Quality Adjusted Life Year (QALY): a measure of health benefits to patients in terms of life expectancy following medical treatment adjusted for quality of life, usually measured in terms of degrees of disability and levels of distress.[16–19] The QALY's origins can be traced back to three decades of interdisciplinary research among operations researchers, clinicians, psychologists and health economists. Upon its inception, the QALY took on a role as a potentially useful tool in cost-effectiveness studies. It was this latter role that distinguished QALYs from other health-related quality of life measures (HRQLs). HRQLs had been around for quite some time (starting perhaps with the 1948 Karnofsky index) before the advent of QALYs.[20] Unlike QALYs, which are almost invariably used as a cost-effectiveness instrument, HRQLs are used as evaluative instruments for judging the effectiveness of medical treatment on patients' quality of life *independent* of cost considerations.

A QALY can be divided into two parts; a life expectancy part (which will not be discussed in this paper), and a quality of life component to which this paper is directed. The latter component is called the quality of life adjustment factor. This factor constitutes a health state preference measure. One common method used to determine the quality of life adjustment factor is the category-rating method. Respondents to a questionnaire designed by QALY analysts are asked to rate various health states on a so-called category-rating scale. Respondents can be patients, doctors, nurses, or even non-patients from the general public who volunteer to participate in a QALY questionnaire. Health states are described to respondents in terms of a number of levels and degrees of physical, mental and social functioning. So, for instance, being on a kidney dialysis machine is described as entailing certain levels and degrees of physical, mental and social functioning which the respondent evaluates.

The quality of life scores on the category-rating scale are usually transformed for each health state onto a scale from zero (state of death) to one (state of normal health). The arbitrary setting of the scale values zero and one, death and normal health respectively, is commonplace. However, occasionally, the states of death and normal health are also ranked and measured on the scale. The "index for the quality of life can have a value between one for the best health state [as perceived by the respondent] and zero, or even a negative value, for the worst health state".[21] Empirical studies suggest serious difficulties pertaining to the valuation of extremely bad health states, those health states which might be valued worse than death, death itself, and states just above death. Similarly, respondents (particularly sick patients) seem to have trouble pinpointing or even imagining the state of normal health on the scale.[22 23]

Bare minimum

Separate from this issue, there is reason to be somewhat sceptical about the significance of the quality of life component in valuing life. Evidently, the importance of quality of life improvements compared to extending survival duration may be somewhat exaggerated by the researchers.[24] Moreover, researchers working with quality of life measurements have found that people appear to want to prolong their lives whatever the quality of life as long as there is a bare minimum quality of life. An extensive study of patients with previous intensive care unit experience[25] demonstrated that these patients tend to exhibit "extreme willingness to undergo intensive care regardless of their age, functional status, perceived quality of life, hypothetical

life expectancy, or the nature of their previous intensive care unit experience . . . [i]t appears that regardless of health-related disability or perceived quality of life"[26] patients choose survival, because they attach greater relative value to survival than quality of life.

Most of the criticism by bioethicists of the use of QALYs in health policy focuses on a utilitarian principle which would maximise QALYs as the cost benefit standard does, without regard to the distribution of benefits to the various parties affected. Lockwood[27] suggests that there are potential dilemmas posed by a possible conflict arising between what he sees as the "QALYs principle of maximisation of perceived *benefits*" and the principle "to each according to his *needs*". Although I think Lockwood is right to point this out, I believe that this type of criticism is often misplaced and based on a number of misconceptions regarding QALYs. QALY analysis is not necessarily linked to a maximisation principle such as the one Lockwood is describing. In fact, as Culyer[28] points out, it is quite possible to use QALYs in accordance with a wide range of distributional principles, including utilitarianism and egalitarianism.[29] This said, I do think that the QALY approach's neglect of needs is a serious flaw which can, in certain instances, be potentially detrimental to the interests of certain groups of patients. It is my view that the issue of *what* QALY analysis measures, in particular what the quality of life adjustment factor measures, is one that should be examined before one can constructively discuss distributional principles. If QALYs are to be distributed, then there should be agreement that the QALY outcome is the "right" outcome to distribute. If our conception of a health care system is founded on fulfilling basic needs to everyone as far as this is possible, as a prerequisite to satisfying higher order needs and preferences, then we will require a measure of medical benefits expressed in terms of those needs. Likewise, if our conception of a health care system is based on satisfying preferences without prioritising basic needs, then we will require an outcome expressed in terms of those preferences. Without taking a view on the matter of which conception of a health care system is the "right" one, I want to investigate whether QALY analysis is adequate in measuring (basic) needs, if the latter is what is desired by policy-makers, clinicians, etc.

Deliberate conflation

As was stated above, the QALYs approach measures benefits yielded by medical treatment. The measurement of the quality adjustment factor is based, however, solely on patients' *preferences*. It appears not to take into account (nor to measure) patients' basic needs. The reason for this seems to stem from a rather deliberate conflation of needs and preferences by health economists. It is assumed by the economist that the health state preferences automatically take needs into account since preferences and needs belong to the same category. As a result, a clear specification of what a need is and what a preference is, is judged unnecessary. Although it is undeniable that preferences can and do take needs into account under many circumstances, it seems improbable that all needs at all times are taken account of in a person's preference structure.

In my view, it would also seem that the relationship between preferences and benefits on the one hand, and needs and benefits on the other, is of a different nature. Conferring benefits through treatment, benefits based on health state preferences, presumably satisfies these preferences. However, the relationship between needs and benefits is substantially different. While fulfilling a need does confer a "potential benefit",[30] the reverse proposition is not necessarily the case; conferring a benefit does not necessarily satisfy a need.

Hypothetical example

I hope that the following hypothetical example will help to make this clear. Say we are comparing a health programme which saves lives with a programme which improves quality of life. Specifically, let us suppose that we are comparing, in terms of QALYs, the benefits of a kidney dialysis programme to the benefits of a cosmetic surgery programme. Suppose that groups of patients belonging to the two programmes have the same average life expectancy following appropriate treatment. With treatment the average quality adjustment factor for the kidney patients is found to be 0·3, while the cosmetic surgery patients' average is 0·7. Without treatment the kidney patients die; death's quality of life adjustment factor is zero. While without treatment, the cosmetic surgery patients have an average quality of life adjustment factor of 0·4. A calculation of net QALYs reveals that both programmes have equal net QALYs. Now assume that costs are equal for both programmes, which results in equal costs-per-QALYs. And assume further that there is only sufficient funding for one of the programmes. Because costs-per-QALY are equal, do we (may we?) conclude that we are *indifferent* between allocating funds to treat either the cosmetic surgery or the kidney patients?

I suggest that we are *not* (may not be?) indifferent because we are dealing with two fundamentally different kinds of health care programmes; the first of which involves the *basic need* to survive, while the second involves preferences distinguishable from the latter basic need. Satisfying the basic needs of the kidney patients is seen here as a necessary condition of survival, while satisfying the preferences of the cosmetic surgery patients is not a similarly necessary condition. Since, in all probability, the medical

profession ethos would prescribe the prevention of death as a first priority before satisfying the preferences of patients which are unrelated to survival, it is very likely that funds in this hypothetical case would be allocated to treat the kidney patients.

It seems that in this case we are forced to step back from the deceivingly straightforward QALY calculus and invoke a meta-principle of some kind such as the principle that saving lives is judged more important than improving the quality of life of patients.

I believe that a comparison like this involves two distinct value dimensions that are characterised by category differences in kind. One of the value dimensions concerned relates to a basic need to survive, while the other does not; it relates to preferences. The implication of this sort of judgment is that the scale on which the quality of life adjustment factor is measured may *not* be represented as a *continuous equally spaced interval scale* on which there is only one value dimension.

For technical reasons, QALY analysis must assume that the transformed category-rating scale mentioned above conforms to the properties of an interval scale. It has to do this in order to ensure interpersonal comparability of preference values. A scale which exhibits interval scale properties is one on which the values attached by respondents to numerically equidistant intervals on the scale (for example, intervals {0·1, 0} and {0·3, 0·2}) are equal.[31] In other words, the value attached to a move on the scale from 0·1 to 0 is the same as the value attached to a move from 0·3 to 0·2. This is a controversial claim, but an empirically testable one. It would be interesting to discover whether in the context of the hypothetical example above, the interval {0·3, 0} is perceived of as "equivalent" to the interval {0·7, 0·4}. Is a move from a low quality of life (0·3) to death given the same weight as a move from a "good" quality of life (0·7) to a lesser quality of life (0·4)? Nord[32–34] suggests, on the basis of a number of empirical findings, that in making comparisons similar to the one above, ie, comparing programmes which save lives to programmes which improve quality of life, it is likely that different weights will be attached to the *intervals* considered. As a result, what appear to be equally spaced intervals, {0·3, 0} and {0·7, 0·4}, may turn out to be unequally valued intervals. Nord argues that because QALY analysis measures health states in isolation, it does not adequately take account of moves between health states. Placing this into the context of the hypothetical example above, it can be said that QALY analysis does not adequately assess the value of survival, that is, the severity of moving from 0·3 on the quality of life adjustment factor scale to 0.

Wiggins[35] and Lockwood[27] argue that the claim a patient has on the health care system should be a function of a patient's health needs as opposed to the amount of benefit (based on preferences in QALY analysis) that the health care system can provide. In other words, it is in order that health needs be satisfied, that we have a positive right to health care. In particular, it is in order that the basic need of being functional (which includes the basic need of survival) be satisfied, that we have a right to health care. I agree with this in principle. Moreover, I think that the satisfaction of the basic need of being functional should be given priority in health policy. However, it should be clear what demarcates being functional from being dysfunctional. The QALY approach of measuring health state preferences will not suffice for the task of finding out where the demarcation point lies. QALY analysis only tells us how people (patients, doctors, nurses, non-patients) judge health states in isolation. Perhaps continuing along the path that Nord[34 35] has set out while investigating how people evaluate *moves* from one health state to another, might assist in finding such a demarcation point. How this might work can be illustrated using the hypothetical example above. If saving the lives of the kidney patients is given more weight than an improvement in quality of life for cosmetic surgery patients – that is, if the interval {0·3, 0} is given more weight than the interval {0·7, 0·4} – then this would indicate that the health state corresponding to the quality of life adjustment factor 0.3, is functional. If, on the other hand, the interval {0·3, 0} is given less weight than the interval {0·7, 0·4}, then this would suggest the health state corresponding to the quality of life adjustment factor 0·3 is dysfunctional.

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News and notes

III World Congress of Bioethics

The III World Congress of Bioethics will be held in San Francisco, California, USA from 20–25 November this year. It is being organised by the International Association of Bioethics in conjunction with the American Association of Bioethics.

Topics include: Feminist approaches to bioethics; Studying human genetic diversity: can we do it right?, and The globalisation of bioethics: international human rights and health professionals.

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