

OUTCOME MEASUREMENT IN ECONOMIC EVALUATIONS AND THE ROLE OF THE CAPABILITY APPROACH: A REVIEW OF THE LITERATURE

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Introduction

In a healthcare system with a limited budget and competing demands, there is a growing need for economic evidence to guide decision making, regarding funding of appropriate health technologies. In order to facilitate the comparison of different interventions (life saving and life enhancing) across different areas (for example oncology, cardiology and orthopaedics) a common generic outcome measure is required. One such measure is the quality adjusted life year (QALY) [1]. The QALY combines both mortality and morbidity measures of health by weighting a year of life by the quality of life (that is utility) experienced. This quality adjustment can be undertaken by employing a range of techniques or instruments, but generally in the UK (and the rest of Europe) the EQ-5D (a five dimension questionnaire) is used [2], or more recently utility values have been extracted from the SF-36, using the SF-6D [3]. Once estimated QALYs can be compared to costs in the form of an incremental cost effectiveness ratio (ICER), comparisons across interventions can be made, thereby informing decisions as to whether an intervention can be considered value-for-money.

QALYs (and suggested superior alternatives, such as the healthy year equivalent (HYEs) [4] and the saved young life equivalent (SAVE) [5]) are not without their critics. One of the limitations is that they focus solely to health outcomes [6;7], and there is often a need to evaluate interventions that seek to improve an individual's quality of life beyond health. For example (complex) public health interventions seek to impact on broader aspects of quality of life, not just health, but also non-health outcomes such as empowerment, participation, housing and crime. QALYs will measure some of these benefits, but are likely to

underestimate the true benefit, and thereby fair poorly when comparisons are made between public health interventions and health care interventions [8].

An alternative approach to valuing outcomes, which would overcome this bias, and potentially capture all benefits (both health and non-health) is the contingent valuation method. Contingent valuation is a means by which outcomes are valued in monetary terms. The most common approach to eliciting monetary valuations is to use the willingness-to-pay (WTP) approach [9]. In its simplest form, individuals are asked how much they would be willing to pay to obtain the benefit of an intervention. If this monetary valuation is greater than the cost of providing the intervention, then a cost-benefit analysis (CBA) would suggest that the intervention is worthwhile. There are a number of practical and methodological problems with the CV approach, in particular there is a strong relationship between income and WTP, whereby those on low income provide low valuations. In the context of evaluating public health intervention this could be problematic, as most interventions are targeted at deprived individuals, such that the use of WTP could undervalue the true benefit.

Sen's capability approach [10;11] could provide a possible solution to the limitations discussed above, in that it expands the evaluation space to consider whether a programme enhances an individual's capability. While there is much (theoretical) discussion of the application of the 'capability approach' within the health economics (including economic evaluation) literature, there are few applications of the approach. This literature first reviews the approach as put forward by Sen and his supporters, before providing a discussion of the theoretical literature within the health economics/economic evaluation domain. Finally there is a short discussion of the applied approaches to measuring so-called capability sets.

The Capability Approach

The capability approach, as put forward by Sen [10;11], suggests that wellbeing should be measured not according to what individuals actually do (functionings) but what they can do (capabilities).

"*Functionings* represent parts of the state of a person - in particular the various things that he or she manages to do or be in leading a life. The *capability* of a person reflects the alternative combinations of functionings the person can achieve, and from which he or she can choose one collection. The approach is based on a view of living as a combination of various 'doings and beings', with

quality of life to be assessed in terms of the capability to achieve valuable functionings.” (p.31) [11]

Comim [12] neatly described the approach as “a framework for evaluating and assessing social arrangements, standards of living, inequality, poverty, justice, quality of life or wellbeing” (p.4). Of importance is the evaluation space; it diverges from narrow utility space, which is concerned with the pleasure obtained from the consumption on goods and services, and instead encapsulates an informational space, where evaluative judgements occur according to an individual’s freedom. Therefore, Sen’s approach is based on value judgements, which ultimately relate to an individual’s capability set, in this sense it can be described as ‘extra-welfarist’.

The capability framework for evaluation is based on two distinctions, that between a person’s agency goals and their own wellbeing, and that between achievement (functioning) and the freedom to achieve (capabilities). Arguably one of the limitations of the approach is that “Sen has not specified how the various value judgments that inhere in his approach and are required in order for its practical use (whether at the micro or macro level) are to be made” (p.3) [13], as he believes that value selection and discrimination are an intrinsic part of the approach. Nussbaum [14], however, has identified what she regards as central human capabilities, and provides a list of ten capabilities: life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one’s environment. Other prescriptive lists also exist, which have varying degrees of abstraction and generalisation [15]. The existence of such lists are crucial in the evaluation of capability sets (that is the identification of freedoms) and the subsequent operationalisation of the approach (that is evaluating whether such freedoms are achievable).

The application of the approach to health economics – theoretical literature

The first insight to the significance that the capability approach might have within the health economics domain became apparent when Culyer [16] used Sen’s theory to develop his own extra-welfarist perspective to economic evaluation (which provided some justification for using QALYs). This perspective, as discussed above, is limited in that it solely focuses on health, while Sen’s capability approach is much broader. Furthermore, Culyer’s approach is largely concerned with functionings (the achievement of health states) compared with Sen’s ideas on the ability to function.

Anand has advanced the approach, first discussing the application of the approach to health care rationing and resource allocation [17;18] (including editing a special issue in *Social Science and Medicine* [19]), and more recently by attempting to operationalise the approach [20]. However, it was Cookson [21] who first explored the possibility of applying the approach to outcome measurement within economic evaluation. He suggests that there are three ways it could be used:

- (a) direct estimation and valuation of capability sets;
- (b) ‘merging’ preference-based measurements, such as willingness to pay, with capabilities;
- (c) re-interpreting the QALY approach.

Cookson dismisses the first approach as unfeasible at present, arguing that there is no agreed list of functionings, and that any movement from functionings to capabilities is problematic due to different preferences. While the second approach is also dismissed due to “the adaptive and constructed nature of individual preferences over time and under uncertainty” (p.818). Subsequently, Cookson proposes re-interpreting QALY data generated from a standardised instrument so that the re-interpreted data (the ‘capability QALY’, note others refer to this all encompassing concept as the ‘super QALY’) represents the value of an individual’s capability set. He argues that responses to questions in generic health state valuation instruments can be taken to reflect the value of an unspecified capability set, because health affects an individual’s freedom to choose non-health activities.

Anand [22] disputes two of Cookson’s conjectures, that capability measurement is not yet feasible, and that QALYs can be interpreted as a comprehensive measure of wellbeing. In particular he claims while early attempts to measure capability concluded that it was immeasurable, it is now much more feasible to measure capability (indeed the UN’s Human Development Index has its foundations within the capability approach). He identifies Nussbaum’s list of ten domains as a good starting point, and then shows that many of these are well represented by questions in the British Household Panel Survey (BHPS), a large longitudinal survey extensively used by economists and social scientists alike [20;23].

The application of the approach to (health) economics – empirical literature

The literature on capabilities, whilst extensive, remains largely conceptual. Robeyns [24] in a review of the literature noted that “despite the fact that Sen published *Commodities and*

Capabilities in 1985, the number of empirical applications is still quite limited” (pg.26). Despite this there have been some empirical applications, the majority of which relate to poverty, development, social justice or gender inequality (see [25;26]), although there are a (growing) number in the health economics field.

As discussed above, Anand has sought to operationalise the approach by assessing capabilities using secondary data. He (and colleagues) exploited data from the BHPS and estimated the relationship between wellbeing and capability [20]. They concluded that secondary data sources can provide *some* information on capability. The incompleteness led them to consider other data sources and they subsequently developed further indicators, which are aligned within Nussbaum’s list of ten capabilities [23]. These indicators were included in an internet survey, along with measures of wellbeing, and the indicators of capability were found to perform well in terms of being strong predictors of wellbeing. The drawback of their approach, however, in terms of outcome measurement is that there are over 60 indicators of capability, making its usability limited.

Coast and colleagues are also attempting to operationalise the approach; by developing an index for capability, specifically for use in the elderly [27-29]. While developing attributes for a generic quality of life measure for older people, the interpretation of in-depth qualitative interviews revealed a similarity between the resulting attributes (attachment, role, enjoyment, security and control) and Sen’s capability approach. An attempt to value these attributes and develop an index using best-worst scaling within a discrete choice framework [29], further shows the potential to operationalise the approach, despite Cookson’s reservations [21]. Their approach has many merits, especially their choice of valuation technique, but is limited in its generalisability beyond the elderly.

Within the broader area of health (but not specifically health economics), there have been a number of papers which have also attempted to estimate capability. In particular, disability would appear to readily lend itself to the capability approach [30], and there have been two attempts to estimate the additional income needed by a disabled person to reach the wellbeing of a non-disabled person [31;32].

Summary

The need to undertake economic evaluations across a wider range of interventions, which encompass both health and non-health outcomes, requires an alternative to the conventional cost per QALY gained approach. Sen's capability approach, although theoretically challenging, could provide a possible solution. This literature review has shown that if an individual's capabilities can be identified and measured, that is the approach operationalised, and subsequent research attaches values to these capabilities, then there is potential for the approach to be used to inform economic evaluations.

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