



Subjective well-being and the measurement of quality in healthcare



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ABSTRACT

Quality continues to be placed at the heart of discussions about healthcare. This raises important questions about precisely what quality care is, and how it should be measured. An overall measure of subjective well-being (SWB) that assesses and joins up different stages of the treatment process, and the different people affected, could potentially be used to capture the full impact of quality care throughout the entire treatment process. This article presents a temporal model through which SWB links all stages in the treatment and care process, thus allowing the overall quality of care to be determined and valued according to its direct effect on people's lives. Drawing on existing medical and behavioural studies, we populate this model with evidence that demonstrates how SWB is affected at different points along the patient pathway. SWB is shown to have an effect on outcomes at all stages of the treatment experience and improved health and quality outcomes are shown to consistently enhance SWB. Furthermore, SWB measures are shown to be a suitable method to value the impact of healthcare on the families and carers of patients and, in this way, can join up health outcomes to show wider effects of treatment on patients' lives. Measuring an individual's SWB throughout his or her treatment experience can enable a full appraisal of the quality of care that they receive. This will facilitate service improvements at the micro level and help value treatments for resource allocation purposes at the macro level.

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Introduction

Concerns about the quality of healthcare have existed for almost as long as healthcare itself, but there is now a renewed vigour at making quality the organising principle (Darzi, 2008; Department of Health, 2010a; Hurtado, Swift, & Corrigan, 2001). This quality movement has its roots in initiatives first discussed over a decade ago (Coye & Detmer, 1998) and continues to be at the forefront of the healthcare agenda in developed countries. Measuring for quality improvement in healthcare has inherent benefits in terms of individual and population health improvement, evaluation and enhancement of treatments, and appraisal and valuation of services (Berwick, James, & Coyle, 2003).

Despite enthusiasm and acknowledgement for the need to measure quality, there is as yet no clear consensus on how this can be achieved (Mayer, Chow, Vale, & Athanasiou, 2009). Part of the problem is that quality means different things to each of the many stakeholders in healthcare (Chilgren, 2008). The chief concerns of a patient may surround accessibility and familiarity; a physician may

place more emphasis on cancer excision margins and evidence-based practise; a manager might place premiums on cost effectiveness and service delivery initiatives.

There have been significant efforts to encapsulate the important facets of care contributing to a quality service into a template from which to consider care pathways (Donabedian, 1966; Hurtado et al., 2001; Maxwell, 1984; Schiff & Rucker, 2001; Sitzia & Wood, 1997), but creating successful policy initiatives on the back of this work has had variable results (Davies, Powell, & Rushmer, 2007; Valderas et al., 2008). Progress has been made at strategic levels in many countries with the implementation of national quality programs (Agency for Healthcare Research and Quality, 2008; Australian Commission on Safety and Quality in Health Care, 2008; Department of Health, 2008) but continued efforts are required before a culture of quality becomes pervasive.

Hurtado (Hurtado et al., 2001, p. 232) defines quality as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" but such broad definitions can have limited direct applications. A more useful definition of quality considers it to be measured over six domains (Leatherman & Sutherland, 2003), effectiveness, access and timeliness, capacity, safety, patient centeredness, and equity. Within each of these domains it is possible to measure different elements, and so from this a picture of the quality of care within a service can

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be outlined. The main criticism of many measures used to assess these domains is that there is too great an emphasis on easy to capture throughput or process measures, such as staffing levels of infection rates. These can be poor proxies for many attributes of care quality (Mayer et al., 2009). There is a consistent lack of focus on the patient, with many of these measures, and the impact that the quality of care has on individuals and their families is only given attention in one of these domains. This does not seem right.

Patient reported outcome measures (PROMs) elicit the patient's evaluation of their condition in the context of a given healthcare intervention or treatment (Browne et al., 2007; Valderas et al., 2008). PROMs go some way towards involving the patient in assessing the quality of their care, but are focused only on specific conditions and can fail to capture the global impact of the healthcare intervention on the patient's life as a whole. This represents a deficiency in the current methodology of quality outcome measurement. A further criticism, and a major motivation for this paper, is that current outcome measurement largely ignores the experiences of patients before and during their treatment, which are often the times that are associated with the most pain and suffering.

Measures of health related quality of life (HRQoL) are increasingly being used to measure the benefits of treatments and interventions. The most widely used are the EQ5D, SF-12 and SF-36 metrics and are often used alongside PROMs to measure the benefits of treatment for both individual patients and more widely for resource allocation decisions (Dolan, 1997; Giacomini, 2005). They are designed to pick up changes in certain health related domains that are deemed important, however these domains may not necessarily be the right ones, meaning that these measures may fail to pick up the real impact of healthcare in the experience of patient's lives (Dolan, Lee, King, & Metcalfe, 2009).

The role of traditional health metrics in safeguarding and standardising patient care is undisputed, yet central goals of making the patient feel better for longer can be easily lost in a world of national targets and healthcare league tables. This is true for both patients and health care professionals, who can feel confused and ambivalent about initiatives intended to drive up quality for a number of reasons (Haslam, Keenan, Dean, & Bardsley, 2008). What is needed is a method and a measure to join up the experiences that patients and their families and carers have during all their interactions with health services.

Subjective well-being (SWB) is a measure of the overall 'wellness' of an individual, and as such has the potential to be used as this global marker for how treatments affect people in the experience of their lives. SWB is 'a broad category of phenomena that includes people's emotional responses, domain satisfactions (e.g. health, work, social relationships), and global judgements of life satisfaction' (Diener, Suh, Lucas, & Smith, 1999) which correlate predictably with many objective circumstances (Lyubomirsky, King, & Diener, 2005). A detailed discussion of the origins of the origins and roots of wellbeing are well described elsewhere (Dolan, Peasgood, & White, 2008), but it is useful to briefly describe the different uses of SWB in a policy setting. There are three principle accounts of wellbeing (Dolan, Layard, & Metcalfe, 2011b) that have been considered for policy purposes. The "objective list" account was argued by Sen (Sen, 1999) supports the use of a list of human needs and rights that are required for individuals to flourish. Addressing such rights such as housing, education and minimum wages has been the foundation for many government policies. The second, the "Preference satisfaction" account, is often likened to the economist's view of wellbeing, where the maximisation of an individual's wants or desires is held as the marker of wellbeing. For this reason income, or gross domestic product as a proxy for income, is used as a surrogate marker for SWB because income has

been perceived at a policy level to enable preferences to be satisfied. Criticisms abound for this account due to our innate ability to "miswant" and act against our better judgement.

The third account of wellbeing is SWB, and its consideration as such has led to its increased popularity as a tool in policy circles. Recent refinements of the meaning of SWB have been in considering SWB in terms of three categories: evaluations (e.g. life satisfaction), experiences (e.g. happiness yesterday), and a eudomonic domain (e.g. worthwhileness of life) (Dolan, Layard, & Metcalfe, 2011a). Together these paint a full picture of the SWB of an individual, and include the traditional notions of overall life satisfaction that are most commonly associated with SWB measures as well as picking up the mental state account of SWB that has its roots in the Benthamite view of wellbeing. The inclusion of a "worthwhileness" account is also something that has particular relevance to the health setting, where people often make judgements regarding the purposefulness of their lives. Considerations regarding measuring SWB are discussed later in the paper.

In various guises, SWB has had a long tradition in healthcare (Bowling, 1997; Fitzpatrick et al., 1992; Gill, 1984) and is increasingly being considered as a suitable metric for policy analysis (Dolan et al., 2011a; Dolan & White, 2007; van Praag, Frijters, & Ferrer-i-Carbonell, 2003). There is a robust positive association between physical health states and SWB (Pressman & Cohen, 2005), which strongly supports its application in the field of health outcomes. In its most frequently measured form, SWB can be measured by asking individuals about their overall life (or domain) satisfaction either in an interview or self completed measure.

There is presently inadequate overall appraisal of the impact of healthcare on patients' lives as a whole, and as such there are clear motivations for exploring the associations between patient experience and SWB. In the current state of play PROMs are mainly used at a micro level to evaluate new treatments or as part of limited service appraisals, and for most conditions they are not routinely used in clinical practise. Measures of HRQoL, on the other hand, are primarily used to guide resource allocation and technology appraisal decisions, having a more macro role in existing practise. In this respect, more needs to be done to join-up PROMs at the micro level with HRQoL measures at the macro level, and we suggest that measures of SWB provide one way of doing this.

SWB measures allow for generalisability across conditions and treatments, across patients and non-patients, and over time in ways that existing measures, designed for different purposes, do not. The "currency" of SWB also allows us to place health conditions and healthcare in their appropriate context, without focussing respondents' attention on the things we as researchers or practitioners think they should focus on. Measures of SWB have great potential to provide data on the 'epidemiology of experience' in different clinical areas, and as such hold considerable promise as measures of what really matters to those experiencing healthcare.

In practical terms measures of SWB have direct relevance when considering all aspects that contribute to the overall quality of a service. Whilst they cannot and should not replace key health metrics such as reoperation rate or mortality rates, there is a role for them at every stage when considering other contributing determinants of quality care. In this way the overall aim of having a positive impact on the health of patients does not get lost or denigrated by the array of other, sometimes less tangible markers of performance. It is also the case that initiatives that improve performance in other domains such as reductions in nosocomial infections, will have a direct positive impact on the SWB of patients through reductions in complications and hospital length of stay, for example.

In line with these considerations, we propose a new definition of quality in terms of *the impact of an experience of healthcare on a*

patient's SWB. There are three key concepts of importance in this definition of quality: experience, healthcare and SWB; and the rest of this article is devoted to defining, illustrating and discussing these concepts, their relationships and their application.

In the second section, we present a temporal model that joins up the key issues of healthcare experience and SWB, which can be applied to any episode of care. Each consecutive phase of the model is then discussed in turn alongside evidence and rationale for using SWB as a measure to determine the impact of healthcare on the lives of patients and their carers. In the third section, we discuss how to use SWB as a global measure of quality in clinical practice and we outline practical methods to enable adoption of our approach to valuing the patient experience. In the final section, we conclude by summarising the key messages in this paper.

A temporal model of patient experience

The three key concepts of patient experience, healthcare and SWB are joined up together in our temporal model set out in Fig. 1.

Healthcare can be considered as a series of discrete episodes of care, each of which has three stages – pre-treatment, treatment, and post-treatment. *Pre-treatment* refers to the time before healthcare is accessed. *Treatment* is a broad term that encompasses therapy (e.g. speech therapy, cognitive behavioural therapy, physiotherapy etc), surgical procedures, and medical and pharmacological treatments. *Post-treatment* is when treatment is evaluated and follow-up takes place. The model set out in Fig. 1 relates an individual's experiences with these stages of their interaction with healthcare services. Each stage is naturally fluid with overlapping interfaces, and in this respect the adoption of a universal marker of quality that can be measured along the whole pathway of care is particularly suitable.

The model is flexible in that as well as considering more traditional episodes of care, populations with chronic conditions can also be considered. For such individuals, the pre-treatment phase represents times when their condition was well controlled (e.g. between exacerbations of chronic obstructive airways disease, or a remission of multiple sclerosis), the treatment phase would be when services are accessed for a flare up and post treatment when they are recovering from this episode.

Paying attention to what patients experience as they receive health and engage with healthcare seems obvious, but this simple notion is often overlooked when significance is attached to so many other more easily measurable, and often more complicated, parameters. The “patient experience” represents the patient's account

of all factors that have contributed to their care including expectations, hotel factors, agency interaction (interpersonal factors) and clinical outcomes. These patient experiences will be in relation to individual pathways of care, and will be considered in terms of the temporal model. The central argument is that high quality care will have a positive impact on SWB throughout the patient experience.

During the pre-treatment phase the individual will have expectations about the care that they are due to receive and the standards that this treatment should meet. They may be apprehensive regarding their symptoms or unknown diagnoses, or concerned about possible outcomes in relation to screening populations. They will also experience various symptoms and form beliefs about the nature of their health condition. The treatment phase gives rise to immediate clinical results (e.g. resection of a tumour), which can be objectively assessed, or subjectively measured, using PROMs for example. In addition, the individual will be constantly evaluating the quality of the care that they receive against their expectations and this is integral to their patient experience. The post-treatment experience will naturally be affected by the success of the treatment (e.g. treatment for a stroke), and again this can be measured objectively by healthcare professionals (e.g. blood pressure treatment) and subjectively by the individual. Importantly, the individual will make an evaluative judgement in this post-treatment phase regarding their overall care. This will inform on the overall satisfaction and the remembered experience will go on to affect future episodes of care. The model serves as a template from which to consider any patient pathway, and as such the post-treatment experience from a given episode of healthcare will feed into the pre-treatment experience of the next episode. Patients with chronic illnesses, for example, will pass back into a remission or maintenance phase, which would feed into the next pre treatment phase ahead of their next episode of treatment.

Measuring the patient experience over the three phases of treatment is a new direction in care quality appraisal. In order to achieve this, a global measure such as SWB is needed that can reflect the impact that treatments have on an individual's life as a whole, and can join up these experiences over the stages of treatment. The model postulates that the experience during any phase of treatment will have a bearing on SWB. High quality care will have a greater positive impact on the patient experience and thereby on SWB, than poor care at all stages of the treatment experience. This is central to the positioning of SWB as an overall marker of quality.

Next, we discuss in turn the three stages of healthcare as set out in our model, demonstrating the mutual relationships between

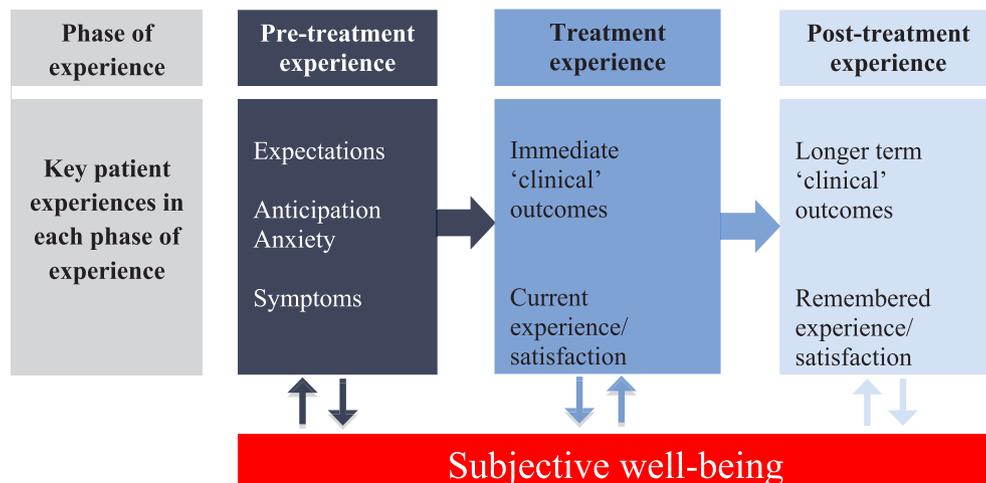


Fig. 1. The temporal model of patient experience. Measures of SWB will be asked at each stage of experience, and asked ahead of any other questions so as to avoid focusing affects.

patient experience and SWB. A wealth of evidence is presented that populates our model of patient experience, including studies that use established measures of SWB, and also those that use determinants of different aspects of SWB (e.g. positive affect and optimism) as proxies for SWB. Examples from the social science, medical and psychology literature are described, which are of clear relevance and importance to clinicians, policy makers and patients. This paper is not intended to be a systematic review of SWB literature, nor does it seek to explore every domain that could influence the patient experience. It does, however, present a simple model (Fig. 1) through which to approach the concept of patient experiences and examines how and why this can be measured using SWB metrics to appraise the quality of care.

Pre-treatment experience and SWB

Factors such as underlying health state, self-perceptions of health and daily activities all come to bear during the pre-treatment experience. Despite the impact that this initial stage of experience has on an individual's SWB, existing markers of care quality rarely assess this. We present evidence about this relationship.

Specific health conditions such as myocardial infarction and stroke reduce SWB (Shields & Wheatley Price, 2005) and the rapidity of onset of symptoms heralds the archetypal negative health state seen in the pre-treatment phase. Individuals with more chronic conditions also experience reduced SWB as they re-present with exacerbations of their illness, and will cyclically pass through the pre-treatment phase of the experience model.

Severe health problems that interfere with daily functioning can substantially lower SWB. For example, Verbrugge (Verbrugge, Reoma, & Gruber-Baldini, 1994) found that the SWB of people with serious chronic illnesses, such as congestive heart failure, declined over one year. Not surprisingly, illnesses that restrict activities and cause pain can lower SWB. Patients with fibromyalgia and rheumatoid arthritis for example show more depression and anxiety, and lower SWB than control subjects (Celiker & Borman, 2001). In addition, psychiatric disorders almost always cause low SWB (Packer, Husted, Cohen, & Tomlinson, 1997). People with depression, anxiety disorders, or schizophrenia tend to have low SWB (Koivumaa-Honkanen, Honkanen, Antikainen, Hintikka, & Viinamaki, 1999), which also holds for bipolar disorder (Arnold, Witzeman, Swank, McElroy, & Keck, 2000).

An individual's SWB during the pre-treatment experience has been shown in numerous studies to have a considerable bearing upon the effectiveness of treatment as shown by a range of outcome measures. Marmot (Marmot, 2003) demonstrated the association of low overall SWB with poor general health, and reported correlations of approximately 0.60 between low SWB and subjective poor health in the Whitehall samples British civil servants. Such low SWB also influences pain and, importantly, whether people seek treatment for pain. People with low SWB have a more difficult time coping with pain than people who have a higher SWB, and retrospectively overestimate their previously experienced levels of pain (Keefe et al., 2001). In terms of mental health, Diener (Diener & Seligman, 2002) found that the happiest people showed very low levels of symptoms of mental illness.

Pre-treatment experience is rarely measured when assessing quality of care, but it is important to patients, has an impact on their health outcome, and is a key determinant of their SWB. It will also become more important as increased population screening for conditions mean that a large proportion of the population will exist in this pre treatment phase. Clinicians, commissioners and policy makers should not neglect it, especially as the patient may spend a long period of time in this phase of care, particularly when considered from a lifetime perspective.

Treatment experience and SWB

Healthcare interventions and treatments aim to make people better for longer by improving their health, and in doing so improve their SWB. The exception to this is of course palliative care. Regardless of the specialty, however, the treatment experience in itself will impact on SWB, where an individual will receive their care, investigations and undergo procedures. Surprisingly, a patient's experiences during treatment, as well as the relationships between patients and carers during this period, are not routinely measured, despite their inherent importance, and these issues are examined in this section.

There is considerable evidence that our SWB is improved by effective medical treatment, and numerous studies demonstrate that SWB improves when healthcare interventions effectively reduce symptoms. For example, the reduction in joint inflammation seen in arthritis patients following successful treatment is accompanied by a lessening in levels of anxiety and depression (Evers, Kraaimaat, Geenen, & Bijlsma, 1997). Psychological functions such as cognitive, emotional, and SWB also usually improve during hospital stay (Verbrugge et al., 1994), but interestingly, physical and social functions improve less quickly and on occasions even diminish, probably due to deconditioning and extensive assistance during hospitalisation.

Clinical outcomes are traditionally collected at the end of a patient's treatment, and as such are considered in the next section. It must be clearly stated, however, that these clinical outcomes are currently taken as proxies for the quality and effectiveness of care that a patient experiences, and that these affect and are related to SWB in a whole host of ways.

In the palliative care of terminally ill patients, an individual's treatment experience is in itself the most important outcome. There is a wealth of literature on how different symptoms influence SWB in palliative care, (e.g. (Chang, Janjan, Jain, & Chau, 2006; Lorenz et al., 2008; Ventafridda, De Conno, Ripamonti, Gamba, & Tamburini, 1990)) and these studies illustrate a key point in the application of SWB as a measure for the overall quality of care that is not limited to the palliative care setting. Whilst each individual performance measure (e.g. pain relief) is important, in terms of appraising the overall quality of care, the chosen metric must be one that cannot be easily skewed by a simple adjustment of resources to meet targets (so called "gaming"). In this way SWB measurement can be seen to be a useful tool in health policy as it serves not only to evaluate a given service, but can be used to compare performance across different providers.

The mechanism that the treatment experience impacts on the welfare of the patient's family and carer(s) is being increasingly recognised as an important issue, particularly for those with chronic conditions (Carers UK, 2008). Traditionally the views of carers have been taken into account informally, which can be effective in some straightforward situations, for example adapting home access, however lack of greater carer involvement can have a negative impact on the patient's, and potentially the carer's, SWB. Treatments that involve the patient and their carers have been shown to promote SWB of both parties. For example, programmes treating alcohol misuse that involved the patient's spouse led to gradual improvements in abstinence, as well as higher reports of SWB and lower rates of marital separation (McCrary, Stout, Noel, Abrams, & Nelson, 1991).

In social healthcare programmes, there is also a strong normative case to be made for the valuation of carers' SWB when considering the funding of care. The improved collective SWB of the carer and patient as a result of interventions could be considered a strong enough reason to endorse therapies despite high cost. Evidencing these carer and wider benefits of treatment is likely to

also feature within the new value based pricing arrangement for new pharmaceuticals (Department of Health, 2010b).

We also know that there is causation from SWB to health, which supports anecdotal evidence and general medical experience that happier people “do better”. Pre-existing SWB can have a sizeable role to play in the treatment experience (Carr, Gibson, & Robinson, 2001), for example Devins et al. showed that patients with end-stage renal failure were more likely to survive for 4 years or more if they were happy than if they were not (Devins et al., 1990). Further work has shown that hope was associated with increased survival time in cancer patients (Kaasa, Mastekaasa, & Lund, 1989). Overall survival is also affected by SWB, and individuals with a positive outlook on life live longer (Pitkala, Laakkonen, Strandberg, & Tilvis, 2004).

Conversely, negative emotions can often predict worse health outcomes. Work has shown that low SWB as evidenced by psychological distress has been shown to be a predictor of fatal ischaemic stroke (May et al., 2002), and that individuals are more likely to die in the next year if they have fair/poor SWB compared to excellent/good SWB (Ried, Tueth, Handberg, & Nyanteh, 2006). These studies evidence the fact that certain outcomes will be influenced by the patient, and in this respect what is effective for one group of patients may be less effective for another based upon the patients underlying SWB. Health policy initiatives should be alert to these subtleties, and target resources where the greatest losses in SWB are experienced. In practical terms this is an important consideration when measuring the SWB of our patients in our aim to measure the quality of care. What we need to ensure is that it is the changes in SWB in relation to healthcare that are measured, and that an individuals SWB is measured over time. These are discussed later in the paper.

Post-treatment experience and SWB

In the post treatment experience we should be valuing the lasting effects that treatments have on an individual, and the effects that these have in terms of the wider experience of their lives. Isolated clinical outcomes or productivity targets are often however regarded as surrogates for quality of care, and the overall objective of making the patient feel better for longer is again lost. Measuring SWB in response to treatments and interventions offers the potential to not only help appraise the quality of care associated with a particular treatment, but also to help join up the experiences from the previous stages of treatment. High quality care should have a positive impact on the SWB of patients into the future.

There is considerable evidence that effective treatments improve SWB, and generally speaking, SWB increases in the first month after treatment and then stabilises at one year post discharge (Verbrugge et al., 1994). Surgical intervention for particular disease related symptoms has also been shown to improve SWB. For example, gastric fundoplication surgery for gastro-oesophageal reflux disease improves SWB to pre-symptomatic levels and in some cases higher than pre-symptomatic levels (Nilsson, Wenner, Larsson, & Johnsson, 2004). In terms of pharmacological intervention it has been demonstrated that commonly used atypical antipsychotic drugs improve SWB in patients with schizophrenia (Naber et al., 2001; Wehmeier et al., 2007).

Variations in SWB have been shown in themselves to affect the treatment outcome, and this is an important consideration. There is convincing evidence that SWB affects post-treatment recovery and rehabilitation, and this supports other work demonstrating the association between SWB, as evidenced by positive affect, and health (Pressman & Cohen, 2005). Studies have showed that SWB predicted whether patients who had a whiplash injury were doing

paid work two years later (Heikkila, Heikkila, & Eisemann, 1998), and greater functional improvement was seen following knee surgery in patients with less anxiety and depression prior to surgery (Faller, Kirschner, & Konig, 2003).

Significantly, although there are strong positive associations between health states and SWB for patients, correlations for non-clinical populations are not as high (Brief, Butcher, George, & Link, 1993; Okun & George, 1984). This is in part because people appear to adapt over time to many illnesses, and because most people who are relatively healthy do not attend to their health unless they fall ill. When a patient returns to normal daily life, where health no longer dominates their attention, health related matters will impact less on their SWB. This is seen in a stroke rehabilitation where greatest improvements in SWB were in those who had returned to work (Vestling, Tufvesson, & Iwarsson, 2003). Such individuals' focus was more in line with their pre-stroke functioning, with increased adaptation to their stroke. Another example of this effect is in respect to individuals with paraplegia: SWB data elicited from individuals with paraplegia vary considerably depending upon whether reference is drawn to their paralysis. A duration-weighted measurement of affect will uncover that conditions such as paraplegia are not full-time states; they are experienced part-time (Kahneman & Krueger, 2006). These results suggest that the time interval between the end of the treatment experience and the point at which SWB is measured will have a bearing on the relative effect the intervention has on the SWB. A highly effective treatment, representing excellent care quality, will show an improvement in SWB initially post procedure, but at some point this will fade as the individual re-enters the non-clinical population.

These are important considerations when interpreting changes in SWB for clinical and non-clinical populations and are discussed in the next section. What will certainly be of great value going forward is more data surrounding the dynamics of changing SWB over time and in direct relation to clinical services.

Issues in the measurement of SWB

Having established that SWB is a key ingredient in the *definition* of quality, we need to point out its essential role in the *measurement* of quality. Only then can we integrate theory and practice into our new model of healthcare appraisal. SWB can help provide a more complete picture of the effects of healthcare by joining up the various stages of the healthcare process across people using a measure that matters to them. Furthermore, by making evaluations of overall care quality relevant to patients and part of “standard practise”, we will not only engage patients but also healthcare professionals who can feel disenfranchised from current efforts to improve quality (Haslam et al., 2008; Hogan, Basnett, & McKee, 2007).

The improvement or deterioration of an individual's life as a result of healthcare can be measured across the stages of treatment using SWB to measure the more global impacts of healthcare that other outcome measures fail to capture. Through utilising an already widely used global measure such as SWB in a systematic manner we can potentially effect a real appraisal of the quality of care associated with any clinical pathway.

Issues of adaptation are often cited as reasons against the use of SWB measures for policy purposes, and their effect on clinical populations must be carefully considered in light of recent insights (Bradford & Dolan, 2010). It is certainly true that individuals adapt to their health state and life circumstances, and an individual may for example report high levels of SWB despite having significant ill health. This is not a valid reason to disregard their use in this way (Dolan & White, 2007). In the approach advocated within this

paper, however, it is the effect on SWB over time that is being measured, or more precisely, the within-person change in SWB as a result of healthcare intervention over the duration of treatment. Adaptation to health state takes months or years, and as such is unlikely to cloud the measurement of changes in SWB over individual episodes of treatment. It will be necessary to remain vigilant for any adaptation effects however when using SWB to inform on the quality of services with long treatment phases such as rehabilitation programmes. In such situations individual elements of care with shorter duration could be evaluated separately to avoid this issue. A further method that would help verify this would be to run a comparison with a group of matched individuals not receiving treatment to investigate any adaptation over time.

Our approach to the measurement of quality is centred on a temporal model of patient experience. There are three key queries: what, how, and when do we measure? We answer these questions by referring to the three concepts defining quality: We should measure the impact of experiences on self-reported SWB during the three stages of healthcare.

Advances have been made in terms of identifying precisely what should be measured, and how. This continues to be an area of innovation (Dolan et al., 2011a; Dolan & White, 2007), for example the UK measuring National Wellbeing programme has led to firm proposals of measures and methods of large scale data collection. Measures of SWB can be readily elicited from patients and those closest to them, and can simply be done so at the different stages of treatment. This can be achieved through completing printed questionnaires, through a digital interface such as a smartphone, or in interview format. The fact that measures of SWB are well suited to collection via digital devices can only support their wider use to measure care quality.

Measuring SWB in this way will foster benefits at a micro level, where services can be adjusted to maximise the benefits conferred to patients in terms of SWB, as well as informing on the relative benefits of different treatments to enable fairer decisions to be made at the macro level. Current initiatives should focus on 'joining-up' or integrating these measures in ways that will allow us to fully represent an individual's SWB over time.

The most widely used measure of SWB are global evaluations – the overall level of satisfaction with domains of life, such as health, or life overall. Most initial attempts to capture SWB are based on such global assessments of life satisfaction (Dolan et al., 2008), which correlate predictably with many objective circumstances (Lyubomirsky et al., 2005). More recent methodological developments in the field of valuing SWB have led to efforts being centred on valuing the flow of experiences that contribute to our SWB, but that may differ from global evaluations. Working from this distinction between the experiencing and evaluating selves, Kahneman has developed a reliable method for recording the moods and feelings an individual experiences during a 24 h period – the day reconstruction method (DRM) (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). The added advantage of the DRM in terms of macro policy impact is yet to be fully realised, and the further issue of how this or similar measures can be fully integrated into the clinical environment is also yet to be convincingly tackled.

In practical terms, the existing robust framework for measuring SWB employed in other fields can be developed alongside new initiatives that seek to measure SWB in healthcare. We propose that measures of SWB should be taken over the three phases of treatment, based on the questions posed by the Office for National Statistics (Dolan et al., 2011b), see Fig. 2. This measure is of course just one of such measures but has relevance and a recent pedigree of recent use across a large population and as such is well suited. This will allow variations in the different aspects of SWB over

- Overall, how satisfied are you with your life nowadays?
- Overall, to what extent do you feel the things you do in your life are worthwhile?
- Overall, how happy did you feel yesterday?
- Overall, how anxious did you feel yesterday?

Questions on a scale of 0 to 10 where 0 is 'not at all' and 10 is 'completely'.

Fig. 2. Example SWB questions (based on the UK ONS Measuring National Wellbeing Programme (ONS, 2010)).

treatment to be determined, and the overall changes in SWB then considered as quality metrics. The use of DRM type measures to tap into more detailed aspects of SWB could then be used for targeted evaluation of certain key services worthy of closer scrutiny if needed.

The approach of measuring change in SWB is not inconsistent with the principle of QALYs as a means of comparing the effectiveness of different treatments over time (Dolan et al., 2009; Dolan, 2000; Dolan, Lee, & Peasgood, 2012). It simply varies in its practise as SWB measures will be elicited rather than health state. In fact, maintaining certain aspects of the existing QALY approach makes a lot of sense, as it ensures that the duration of benefit attributable to a given treatment or intervention is measured. After all, a key objective has to be providing a better quality of life for longer for our patients.

It is proposed that these SWB data would then form the headline indicators for the care quality of a given service, and be considered alongside other clinical determinants previously discussed, such as nosocomial infection rates or waiting time for clinical appointment. Tailoring the presentation of the SWB data, and determining which measures of SWB (evaluation, experience and eudemonic) to have a greater or lesser sway in measuring care quality are areas for future discourse and development as this methodology is taken forward.

Another area that will be refined as these methods develop will be in terms of the sensitivity of SWB measures to different aspects of care. As a greater epidemiology of experience is mapped out through careful SWB measurement of clinical populations we may uncover situations where broad measures of SWB are not sensitive to healthcare treatments or services. Such issues represent areas for careful methodological development however, rather than insurmountable obstacles to progress. The development of methodologies to support the use of SWB in such situations (e.g. more detailed SWB measurement, more detailed regression analysis, or use of DRM style data) and refining measures to be more sensitive will be interesting areas for future work.

In making judgements around improving the quality of care there will always be a risk that policy makers will direct resources to areas where the quickest and cheapest gains can be made. The global nature of SWB as a quality measure means that it is inherently robust to many of these concerns. The criticism, however, that a focus on SWB may divert resources away from addressing expensive clinical issues and towards providing a quick boost in SWB through improved parking or better accommodation, for example, is worthy of exploring. Most of us would agree that there is a balance to be achieved here, and that if there is a significant gain in SWB when parking is improved then it is worthy of consideration by local policy makers, but the provision of unnecessarily luxurious accommodation, particularly in a publicly funded healthcare system would not be as acceptable. Such decisions would, and should, be subject to citizen level preferences, and data surrounding the effects of such interventions could be readily collected in future work.

Conclusions

Existing quality measures do not adequately account for the effect that healthcare has on the patient's overall SWB, despite overwhelming evidence that good quality healthcare will positively impact on SWB. The treatment experience, as set out in this model, allows for the consideration of all aspects of the healthcare process that a patient may receive, engage in and benefit from. Isolated health metrics that examine particular facets of care are useful in shaping details of service provision and in ensuring that standards of care are met. We would not be as naïve as to propose doing away with such valuable tools. In terms of assessing the overall quality of care, however, a more global appraisal of the patient's experience needs to be taken, and this can be achieved alongside PROMs or other existing outcome measures. The effect that a health intervention has on a patient's life overall is the key indicator of quality of care, and yet this measurement does not show up in the majority of existing health metrics, particularly in the pre-treatment and treatment stages of the patient experience. High quality care can promote SWB, and it is this change in SWB in response to health care that can (and should) be taken as a true marker of care quality.

There is of course a need for further evidence in this area, and the adoption of SWB as a marker of care quality may not be necessarily straightforward. Alongside methodological challenges in valuing SWB we recognise that it has not been widely used in certain clinical populations and that there is a need to engage clinicians with such initiatives. SWB measures do, however, hold enormous promise as a means for valuing the effects of healthcare that matter to patients. Given that the aim of healthcare is that as many people as possible stay in good health for longer (Darzi, 2008), efforts should be directed to incorporate SWB evaluation into quality of care assessment and to make this subjective outcome evaluation a focus of quality metrics.

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