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HEALTH AND WELLBEING

Identifying causal effects

Hans Czap and Marie Briguglio

Introduction

Maintaining and improving people's health constitutes one of the United Nations' Sustainable Development Goals, and, in many countries, it is an important public-sector goal accorded hefty budgets (United Nations, n.d.). This chapter questions whether actions or strategies designed to improve or protect health also improve wellbeing, and if so, to what extent.

The OECD's Better Life Index (OECD, n.d.), the European Union's Quality of Life dashboard (Eurostat, n.d.), and wellbeing metrics of various countries (e.g., Canada, New Zealand, and Bhutan) all include indicator/s of health as an intrinsic part of their wellbeing assessment. Such indicators include Life (or Healthy life) expectancy and self-perceived health and others like prevalence of disease, Body Mass Index, and lifestyle habits (e.g., smoking cigarettes, consuming fruit/vegetables, or performing physical activity). If wellbeing is measured by such objective indicators" then changes in health *by definition* lead to changes in wellbeing, *ceteris paribus*. Indeed there is a tendency to use the terms "wellbeing" and "health" interchangeably (Dalingwater, 2019). For instance, the World Health Organization (WHO) defines health as a "state of complete physical, mental and social wellbeing" (WHO, 1946, p. 1). This presents what Bognar (2008) argues is a problem of inseparability; defining health and wellbeing as distinct concepts is an important first step to assessing the impacts of the former on the latter.

It is important to note that there is a vast and established medical literature on health-related quality of life (or HRQoL). These studies are not included in this review as they do not typically assess Subjective Wellbeing (SWB) directly, but rather capture the subjective elements associated with physical conditions (e.g., perceived limits to physical and social functioning, role impairment, pain). Though

there are intuitive reasons to assume that such conditions (together with possible indirect impacts on relationships, one's identity, and finances) may adversely impact SWB, the literature on this, and related interventions (the main focus of this chapter), is less developed. Indeed it is only the past decade or so that healthcare has started to involve psychometric questions about *positive* states of mind (as opposed to, say, common questions about depression), providing the data needed to generate an evidence base (Helliwell, 2019).

Meanwhile, some consensus has emerged on the notion that subjective wellbeing entails three components – evaluative, hedonic, and eudemonic (Steptoe et al., 2015). Assessment of the impact of health-related factors and related interventions on these outcomes presents some challenges: (1) responses on health and wellbeing, typically drawn from surveys, may be transient, strategic, or hard to compare across cultures (Bache et al., 2016); (2) reverse causality makes it challenging to assess effects – health outcomes impact SWB, but SWB itself impacts health outcomes; (3) health impacts education, work, productivity, wealth, and social relations (OECD, n.d.), all of which are determinants of wellbeing in their own right – thus measuring the impact of health on wellbeing with *ceteris paribus* assumptions can result in underestimated impacts, and studies often use the terms “happiness” and “life-satisfaction” interchangeably though the impact of health on these subjective wellbeing outcomes will vary depending on the measure under consideration (Ngamaba et al., 2017).

Evidence of the relationship between health and wellbeing

While numerous studies conclude that health and wellbeing are positively linked, much of the work is correlational. For instance, Shields and Wheatley Price (2005) use cross-sectional data to show that muscular-arthritis-rheumatism, stomach problems, and respiratory system problems are significantly and negatively associated with psychological wellbeing. Lobos et al. (2015) use survey data from Chile to show that the number of unhealthy days is correlated with happiness. Mahon et al. (2005) focus on clinical health among middle school students, finding a positive correlation between happiness and clinical health. Selim (2008) finds a positive correlation between both life satisfaction and happiness and *perceived* health, as opposed to objective measures of health. Using cross-sectional data for Latin America, Graham et al. (2011) note that anxiety and pain have stronger effects on life satisfaction than physical ailments and that the magnitude is large in comparison to income effects. Correlational studies also consistently indicate a significant negative relationship between addictions and wellbeing (e.g., Booker et al., 2015).

A central concern when assessing the impact of health and health interventions on SWB is the possibility of reverse causality. Indeed there is strong evidence that wellbeing is itself associated with many beneficial outcomes – including health (Kansky & Diener, 2017), immune system response, pain tolerance (Howell et al., 2007), recovery and survival in physically ill patients (Lamers et al., 2012), and

life expectancy (Diener & Chan, 2011). To account for reverse causality it is necessary to step away from correlational studies to methods such as experiments, randomized control trials (RCTs), and the use of data which is longitudinal.

Binder and Coad (2013) alleviate concerns of causality by using a matching design and panel data from the UK, finding that more hospital days, health appointments, and serious accidents in the prior year consistently had a negative impact on life satisfaction. They note that impacts vary substantially by different conditions, with most physical impairments having a relatively low negative impact on wellbeing. Hegarty et al. (2016) focus on arthritis and fatigue. Using panel data, they establish a causal link going from arthritis to fatigue to happiness and frustration. Dolan (2011) provides some evidence that mental health is a determinant of life satisfaction (and more so than physical health) using a micro two-period fixed effects model. Anxiety, one of the main indicators of mental health, is similarly found to have a strong causal impact on life satisfaction, albeit less important than alcohol and drug abuse (Binder & Coad, 2013). Other studies focus on the relationship between wellbeing and *perceived* health. In an early study, Brief et al. (1993) establish a causal effect by using longitudinal and cross-sectional data. They find no direct effect of objective health on life satisfaction but note that the impact on SWB occurs through the subjective interpretation of health, which, in turn, may depend on personality traits like neuroticism.

Adaptation to new life conditions is one reason why the association between objective physical health (as assessed by a healthcare professional) and wellbeing may be relatively weak (Diener & Seligman, 2004). But evidence on hedonic adaptation is mixed. An early study by Brickman et al. (1978) find strong adaptation of individuals to life-altering accidents, yet Oswald and Powdthavee (2008) find a rate of hedonic adaptation of between 30% and 50%, depending on the degree of disability. Patients with chronic diseases and pain adapt more slowly or not at all (Smith & Wallston, 1992). More recent work by Stöckel et al. (2023) employs fixed effects models to explore longitudinal changes in self-assessed health and life satisfaction around the onset of disability, finding that large decreases in subjective health and quality of life attenuate over time (especially in life satisfaction), but results are heterogeneous. Bussière et al. (2021) estimate panel fixed-effects models, finding that aging increases the importance of health for both eudemonic and experienced wellbeing but the association between health and life satisfaction weakens with age (except for individuals aged 80 and older). On this basis, they caution against the use of the various forms of SWB interchangeably in public policy analysis and economic evaluations of healthcare. In turn, using wellbeing adjusted life years (otherwise known as “WELLBYS”) is one way for health policy to take account of health impacts on wellbeing over time (Frijters et al., 2024).

Finally, there is evidence that there is heterogeneity in the impact of health on wellbeing outcomes. For instance, Shields and Wheatley Price (2005) note that the wellbeing of males was most strongly correlated with heart attack or stroke problems, migraine, and epilepsy, while the wellbeing of females was predominantly

associated with hypertension and blood pressure problems. Binder and Coad (2013) establish that personality characteristics are important factors to consider. For example extroverts are more negatively affected by anxiety disorders, and neurotic individuals are more strongly affected by disability.

Evidence of the effects of interventions on wellbeing

Public policy can affect public health in a variety of ways, ranging from improved medical access, all the way to safety regulations to reduce the number of life-changing accidents, and environmental policy. To date, there is relatively little research on the effects of health policy and interventions on wellbeing.¹

One area of intervention pertains to health insurance. In 1995 the Taiwanese government introduced a National Health Insurance that provided healthcare coverage to all citizens. Using a difference-in-difference approach, Liao et al. (2012) find that this significantly increased life satisfaction among the elderly, especially that of elderly women. In 2007, Massachusetts also implemented a healthcare reform that mandated health insurance coverage for all residents, with studies finding that this significantly increased overall life satisfaction (Kim & Koh, 2022). In 2008, Oregon (United States) put in place a lottery that provided Medicaid for low-income adults. This constituted a natural experiment that allowed researchers to establish that healthcare access, health, and wellbeing increased after the first year for those who obtained healthcare through the program (Finkelstein et al., 2012), though research conducted two years later found that the wellbeing gains had disappeared (Baicker et al., 2013). Similarly, research investigating the impact of the Affordable Care Act (2010) paints a mixed picture of the wellbeing effects, resulting in increased accessibility and affordability, but mixed effects on wellbeing. Kim and Koh (2022) see a significant increase in subjective wellbeing among low-income adults in this programme, whereas Kobayashi et al. (2019) find no statistically significant impact.²

Another broad area of intervention pertains to expenditure on healthcare services. Kotakorpi and Laamanen (2010) find that increased spending on public healthcare services in Finland leads to higher individual life satisfaction. This impact is heterogeneous across income and political orientation groups, with middle-income individuals deriving higher satisfaction than either low- or high-income individuals and right-wing beliefs being associated with lower benefits from primary healthcare spending but greater benefits from special healthcare.

Psychological interventions are primarily under the purview of medical professionals as part of individual treatment. But governments can play a role by actively promoting wellbeing initiatives. This has been done in Japan as part of the Asia Health and Wellbeing Initiative (AHWIN.org) and in the UK as part of Public Health England's work. A meta-study by van Agteren et al. (2021) finds strong evidence that both mindfulness approaches and interventions based on multiple psychological interventions fare best in clinical and non-clinical

populations. The effectiveness of other interventions, such as acceptance and commitment therapy, cognitive behavioural therapy, reminiscence intervention, and positive psychological interventions, depends on the population – reinforcing the need to tailor such therapies to the context and individual.

A promising set of interventions referred to as “social prescribing” involves directing patients to engage in social activities, based on the premise that positive connections can enhance happiness. To date, the emphasis of such interventions has focused on treating illness, but there is also scope for these kinds of interventions to directly target wellbeing among patients (Helliwell, 2019). For instance, the Be-Active-Scheme in Birmingham, UK, focused on increasing gym usage among poor households in the UK by offering Gym membership for free. Both gym visits and wellbeing increased substantially as a result (Rabiee et al., 2015).

It is also important to consider that some health interventions may actually reduce wellbeing outcomes both of the target population and of others. For instance, during the COVID-19 pandemic, public health authorities may well have unduly suppressed wellbeing through strong handed lock-downs, curfews, and other restrictions (Briguglio et al., 2021). In cancer treatment, medical advances have greatly enhanced patient survival rates but at times to the detriment of SWB (Fernando, 2020). SWB varies throughout the treatment experience and measuring it can facilitate service improvements (Lee et al., 2013).

Discussion and conclusion

Improving people’s health constitutes an important public-sector goal. While health and wellbeing are closely linked, and while numerous studies have examined the effect on HRQoL, few studies have identified the causal effects (magnitude, direction, and duration) of health interventions and SWB. The studies reviewed in this chapter provide some evidence that health interventions can affect wellbeing positively albeit heterogeneously (depending on the type of health issue, how it is measured, and the type of intervention).

A pertinent question is how policy-makers could act on such evidence. Focusing on SWB offers the potential of bringing this aspect into models of health outcomes and disease monitoring (Crawshaw, 2008), and leading exponents have argued that cost-effectiveness analysis should be reformed with happiness as the outcome of interest, leading to more attention being paid to, for instance, mental health and palliative care (Helliwell, 2019). Yet consensus on government’s role in supplying public health services does not automatically extend to consensus on government’s role in interventions for wellbeing (Dalingwater, 2019). Policy-makers may need to discuss and weigh the relative importance of SWB compared to health when there are trade-offs involved – as happened during the COVID-19 pandemic.

The following five actionable points emerge:

- The impacts of health interventions on wellbeing over time should be considered as a measurable outcome – distinct from health itself.

- Given the bidirectional relationship between health and subjective wellbeing, isolating the impact of health on wellbeing needs careful design to ensure identification. Mediating and indirect effects of health on wellbeing, as well as adaptation/sensitization over time, should be considered. The various forms of SWB should not be used interchangeably in analysis.
- Policy-makers should consider the relative importance of wellbeing and physical and mental health in cost-effectiveness analysis.
- Government can actively promote effective interventions for wellbeing like health insurance, gym subscriptions, mindfulness approaches, psychological interventions, and social prescribing; SWB responds more strongly to mental health than physical health improvements.
- The impact of interventions is heterogeneous. Interventions need to be tailored to the context and individual needs. Measuring SWB throughout the treatment experience can facilitate improvements and provide the data for an evidence base of what works.

Notes

- 1 For best practice guidelines for individual practitioners for treating various mental or physical conditions, see for instance Walker et al. (2019) or What Works Wellbeing (n.d.)
- 2 To identify causal impacts they examine wellbeing before and after Medicaid in states that expanded Medicaid as opposed to those that did not.

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