

Public health communication should be more transparent

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Standfirst: An analysis of 2,500 public health claims reveals that organizations rarely communicate uncertainties around the benefits of behavioural change. To be ethical, public health communication should be accurate and transparent.

Adopting healthy behaviours and discarding unhealthy ones has costs. These costs can include saying no to pleasures such as consuming alcoholic drinks and large meals. Healthy behaviours such as exercising, breastfeeding, and preparing home-cooked meals are also time consuming. Despite the benefits of some health behaviours, people differ in how much of their time and resources they wish to spend engaging in such activities. People can sometimes trade their health for other things they value, and these may include fulfilling family obligations, nurturing personal relationships, pursuing professional accomplishment, and participating in religious rituals. Scientific research can help people to make decisions about how to balance health and other values¹.

Requirements for ethical public health communication

In clinical contexts, regulations mandate that healthcare workers inform patients of the benefits and any 'material' risks of a procedure, as well as reasonable alternative treatments.² Shared decision making is the benchmark for ethical medical care: care teams support patients in making decisions that reflect patients' values. This model can be

contrasted with paternalistic decision making, where patients have little or no input into their health decisions, and isolated decision making, where patients take sole responsibility.

Despite a long debate over whether public health communicators' role is to persuade or to inform³, the ethics of public health communication has received less attention than its clinical counterpart. We suggest that ethical public health communication should follow two minimal requirements.

First, public health communication should provide information about the magnitude of the expected benefits and harms that result from behaviour change. Communicating magnitude is important because only by understanding the size of the expected benefit can people weigh the benefits to health against other values. Transparent communication of scientific research means making a good faith attempt to help people understand the actual benefits of the behaviour change. This typically involves, for example, using absolute risks rather than relative risks, and central estimates or ranges rather than upper bounds of the benefit⁴.

Second, public health communication should be transparent about the scientific robustness of these magnitudes. Understanding how behavioural change influences long-term health is often difficult, and our estimates about its benefits and harms come with broad uncertainty ranges. Communicators should disclose such uncertainty. The public and policy makers should know which claims are tentative and which are more certain, and it is not the role of science communicators to influence decisions by deemphasising uncertainty.

Clear and good-faith communication of magnitude and certainty should be uncontroversial requirements for public health communication.

Most public health information is not transparent

We examined 2,506 claims about the effects of health behaviour change made online by governments, charities, and for-profit organisations. We collected this set of claims by searching ten health areas (Fig. 1) using Google search, and then examining all claims in the websites within the first page of search returns. The detailed methods, dataset, and analysis syntax are available on OSF⁵.

These websites are an important way that organisations such as the NHS, CDC and health care providers interact with the public and communicate health information. 45% of the webpages belong to governmental organisations (NHS, CDC) or the WHO. The remainder were private companies (19%), charities (15%), professional and research organisations (13%) or private health care providers (8%). Whether or not private companies are engaging

in public health promotion is debatable, but their prominence in web search results suggests that they are an important source of information for people seeking guidance on disease prevention. Charities or non-profits also include industry-funded organisations. While the exact findings would be different if we used different search terms or searched on a different day, the general patterns would likely not.

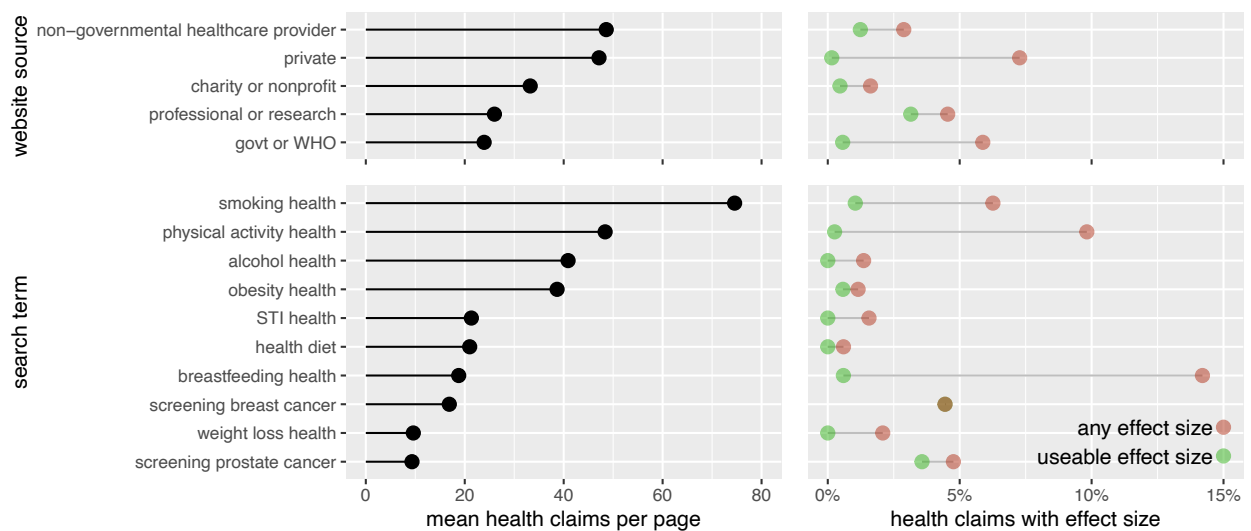


Figure 1: Health claims are common, but effect sizes are rare. The two panels on the left show that webpages include many claims about the effects of behaviour on health outcomes. The panels on the right show only a small proportion of these claims include an effect size. Green dots show proportion of claims with a central estimate of absolute effect sizes. Red dots show the proportion of claims with any effect size, including less informative relative risks and upper-bound estimates. The top panels split the data by the kind of organisation who created the website while the bottom panels split by the search terms we used to find the websites.

The magnitude of the benefit of health behaviours was rarely presented using absolute risks. Only 24 claims about the effects of behaviour change (1% of the total) were accompanied by an absolute risk estimate of how much benefit or harm one might expect to experience if one changed behaviour (Fig. 1), whereas 84% of the pages with health claims included no absolute effect sizes whatsoever. Relative risks, which are uninterpretable without additional information and which typically lead to overestimation of benefits⁴, were about five times more common than absolute risks, with 102 examples. Taxpayer-funded websites such as the NHS and the CDC were no more likely to include effect sizes than for-profit organisations or charities.

Rather than communicating the expected size of benefit, the webpages often communicated long lists of negative health outcomes associated (causally or otherwise) with a failure to change one's behaviour. For example, the webpages on obesity included 177 distinct claims about the consequences of obesity for one's health. Although the effects of lifestyle changes are notoriously difficult to assess, scientific uncertainty was mentioned in 30% of webpages and just 3% of claims were qualified with the degree of scientific uncertainty.

The harms and benefits of behaviour change were described in quite different ways. The level of scientific uncertainty was more often remarked upon when describing harms of a behaviour change (11% of claims) than when describing the benefits (3%). Similarly, when the benefits of behaviour change were described, 16% employed absolute risks while 84% used relative risks, whereas in the seven cases where the sizes of harms were described, absolute risks (71%) dominated relative risks (16%). This effect size finding is consistent with other studies⁶, though given the small number of harms we would be cautious about its interpretation.

Use of upper or lower bounds rather than central estimates or ranges was common, with 28% of effect size claims being presented in this form (for example, “[Exercise] can reduce your risk of major illnesses, such as heart disease, stroke, type 2 diabetes and cancer by up to 50%”⁷). Upper (or lower) estimates cannot be used to assess expected value of behaviour change: they provide information only about the most extreme and perhaps unlikely outcome.

Such methods of communicating both uncertainty and magnitude risks misleading the reader. Communicators may be doing this unwittingly, perhaps because of misleading communication strategies introduced “upstream” in the primary research literature.

[Please insert figure 1 about here.]

A more transparent path forward

Organisations should make a good faith attempt to communicate the expected health effects to readers. They should describe these effects in easily understandable terms and using broadly relevant metrics, such as life expectancy or healthy life expectancy. This need not be complex: communicating messages such as “*If you do X you can expect to live an additional Y months*” will allow people to make informed trade-offs between the things that they value.

One might argue that communicators may choose to exclude effect sizes in their efforts to balance concise clarity and strict accuracy. Perhaps a desire to keep things simple and avoid overwhelming people with too much information (particularly numerical) lies behind the patterns we have identified in public health communication. If that is the case, it is unclear why communicators provide such long lists of the potential benefits/harms of behaviour change. Moreover, a concern to keep things simple would not explain the inclusion of opaque methods of presenting magnitude (i.e., relative risks), nor the use of mismatched framing (where benefits are reported as relative risks and harms as absolute risks). Numerical harm and benefit information and uncertainty can be presented in a transparent way less likely to mislead people⁸. Fact boxes – which present evidence based harm/benefit information in the form of absolute risk frequencies and sometimes use diagrams in order to help depict this information – have been shown to support successful health information transmission⁹.

Another objection to clear communication of benefits is that it may demotivate people from making beneficial changes if the magnitude of benefits seems small. Such paternalism might be justified if there was good reason to think that people routinely make decisions against their own interests which, upon reflection, they would not make. In clinical medicine, however, people are allowed to make 'bad' decisions, so long as they have capacity and meet basic criteria for understanding and communicating the decision. The same should be true of broader health-related decisions: instead of attempting to inflate the apparent benefits, communicators should make clear why such benefits are meaningful.

Communicating clear and unbiased information on how behavioural changes will influence life expectancy is not trivial. In some cases, the effects of these changes on patient-relevant outcomes have not been assessed. Often, it will be difficult to provide an estimate of the causal effect of a behaviour change based on correlational studies or trials with small and non-representative samples. Yet if the scientific community is unsure about the causal effects, there is an ethical obligation to communicate this uncertainty to the public: "*The effects of doing Y appear positive, adding Y months to life expectancy. However, the research in this area is ongoing and we would not be surprised if benefits were as low as Y1 or as high as Y2*". Such estimates might be extrapolated from existing studies (as occurs in the Quality Adjusted Life Year calculations that inform NHS spending), from polls of experts, or from forecasting tournaments. It would be a mistake to consider such estimates unscientific: they usefully distil research while retaining uncertainty and facilitating accountability.

There is a risk of persistent exaggeration of benefits eroding confidence in public health messages, particularly when personal observations provide contradictory evidence¹⁰. The research and public health community's capacity to respond to future health challenges depends, in part, on commanding the trust of the broader population. Such trust is more likely to persist if institutions show that they are trustworthy, and for this they must be transparent, competent and reliable¹¹. Frank assessment of what individuals can and can't do to change their health expectations might encourage people to consider supporting alternative policies like changes to the built environment or taxation. We believe, however, that there are good ethical reasons to strive for clarity independently of these potential consequences. We have suggested that one important step in the project of producing ethically defensible public health communication is ensuring it is legible and useful.

Competing Interests

The authors declare no competing interests.

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