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Cite this as: *BMJ* 2020;370:m2982

<http://dx.doi.org/10.1136/bmj.m2982>

Published: 28 July 2020

# Behavioural, environmental, social, and systems interventions against covid-19

These critical interventions should be top not bottom of the covid-19 research agenda

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Covid-19 has shown the vital importance of human behaviours such as social distancing in controlling pandemics.<sup>1,2</sup> The absence of a cure and an effective vaccine has meant that the world has thus far been reliant on changing behaviours to prevent virus transmission. Behaviour is also crucial to the success of public health measures such as test, trace, and isolate and to effective clinical management of cases. If an effective vaccine is developed, behaviour will be crucial to its success because low uptake could be a big problem.<sup>3</sup>

The director general of the World Health Organization recognised the importance of behaviour in comments made on 29 June 2020, in which he stated: “Every individual must understand that they are not helpless—there are things everyone should do to protect themselves and others. Your health is in your hands. That includes physical distancing, hand hygiene, covering coughs, staying home if you feel sick, wearing masks when appropriate, and only sharing information from reliable sources.”<sup>4</sup>

Behaviours are embedded in complex systems involving individuals, groups, and communities operating in diverse physical and social environments. Large scale behaviour change of the kind required to suppress pandemics requires behavioural, environmental, social, and systems interventions. When these have been applied in areas such as tobacco control, they have had considerable success, saving hundreds of thousands of lives each year across the globe.<sup>5</sup>

These interventions need to be informed by a scientific understanding of the complex processes that influence behaviour. Common sense understanding is not enough and can often lead to interventions that are at best wasteful and at worst counterproductive. In tobacco control an infamous example was acceptance of the common sense idea that “low tar” cigarettes meant low risk.<sup>6</sup> This was based on a failure to recognise that smoking is primarily a means of ingesting nicotine and that smokers would increase the intensity with which they smoked low tar products to obtain their desired level of nicotine intake.

There are many more such examples in behavioural science, and they are beginning to emerge in the handling of the covid-19 pandemic. For example, the common sense idea of “behavioural fatigue” and concern that locking down too early may lead to widespread non-adherence later, was invoked in the UK for justification of the catastrophic delay of strict social distancing measures in the UK.<sup>7</sup> Behavioural

fatigue was an ill-defined new term that had no basis in behavioural science.

## Imbalance

Failure to recognise the importance of behavioural, environmental, social, and systems research in tackling global health problems is widespread. For non-communicable diseases such as cancer, behaviours contribute to more than 40% of the incidence<sup>8</sup> but behavioural prevention accounts for less than 5% of the research budget.<sup>9</sup> In the case of covid-19, the almost total dominance of clinical research over behavioural is illustrated by the fact that a recent search found 975 registered and 46 reported drug trials but only six registered and one reported behavioural, environmental, social, or systems intervention trial (<https://www.bessi.net.au/>).

The imbalance in resources devoted to clinical versus behavioural intervention research is further compounded by a huge geographical imbalance. Thus 90% of covid-19 research is being conducted in countries that have around 10% of the world’s population, with most in high income countries.<sup>10</sup>

To get maximum benefit from large scale investment in behavioural research to tackle pandemics it is crucial to have a coordinated programme that can identify and address research gaps and priorities. This requires adoption of appropriate methods and frameworks that capture the hierarchy of actors in the system from individual to community to population<sup>11</sup> and the full range of interventions that can be effective.<sup>12</sup> Advances in the application of artificial intelligence to behavioural science can help with this.<sup>13 14</sup>

We currently have little evidence on the effectiveness of behavioural, environmental, social, and systems interventions to tackle covid-19 in different geographical and social contexts or on their mechanisms of action (processes of change).<sup>15</sup> For example, there is almost no relevant evidence on how to promote adherence to behaviours such as distancing from other people and households, hand cleansing, effective use of face coverings, and avoiding touching one’s eyes, nose, or mouth with contaminated hands. Yet these behaviours are absolutely crucial in suppressing transmission, particularly when governments decide that “lockdowns” are not sustainable.

In summary, we urgently need a major coordinated programme of research to develop and evaluate behavioural, environmental, social, and systems interventions (see <https://www.bessi.net.au/> for

information about the emerging BESSI collaboration) that will be effective and viable in tackling the covid-19 and future pandemics. Success in other areas of behaviour change shows that this kind of enterprise can be highly effective and cost effective. It will require research funders, government, and policy makers to recognise the importance of this work and allocate appropriate resources to it, and will require researchers to collaborate across a range of disciplines and countries with varying resources and to deliver their findings efficiently to policy makers.

Competing interests: We have read and understood BMJ policy on declaration of interests and declare we are unpaid directors of the Unlocking Behaviour Change Community Interest Company.

Provenance and peer review: Commissioned; not externally peer reviewed.

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