

Strengthening Public Health in Portugal: The Value of Behavioural Science

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Reforçar a Saúde Pública em Portugal: O Contributo da Ciência Comportamental

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Behaviour change is pivotal for tackling the most pressing global public health challenges and for achieving the UN Sustainable Development Goals [1]. Improving chronic disease management and prevention, addressing the climate crisis, reducing antimicrobial resistance, promoting mental health, and preparing for future pandemics, all require a scientific understanding of behaviour at both individual and societal levels.

Health outcomes depend not only on medical care and environment but largely on individual and collective behaviours. Behavioural risk factors such as

tobacco use, unhealthy diets, physical inactivity, and excessive alcohol consumption are major drivers of noncommunicable diseases, such as cardiovascular diseases, cancers, and diabetes [2]. These diseases account for more than 70% of global deaths annually, with deaths attributable to behavioural factors continuing to rise [3].

Behaviour also plays a crucial role in preventing and managing epidemics. The COVID-19 pandemic highlighted the importance of behavioural, non-pharmacological measures, such as wearing masks, hand hygiene, and vaccination uptake for pandemic control and mitigation [4]. Moreover, human actions directly influence the development and spread of drug-resistant microbes. Inappropriate antibiotic use by individuals and in healthcare settings, inadequate infection prevention practices, and policies affecting antibiotic use all drive antimicrobial resistance [5].

For mental health, a recent meta-analysis of 81 studies showed that unhealthy behaviours such as poor sleep, diet, substance abuse, and social isolation can trigger or worsen symptoms of depression, anxiety, and psychological distress [6]. Conversely, positive health behaviours such as exercise [7], meditation practice [8, 9], and social participation [10] contribute to mental well-being.

Further, climate change and sustainability issues have been increasingly recognized as challenges that can only be solved through multidisciplinary approaches. Energy consumption [11], the use of renewable energy sources [12], water conservation [13], and sustainable food consumption [14, 15] are all crucial behaviours for achieving climate goals.

While traditional public health strategies for addressing behavioural challenges have often relied on increasing knowledge and raising awareness, these approaches show limited effects and tend to overlook the broader factors that shape how people act in their daily lives [16]. One popular, more recent behavioural approach is “nudging,” which refers to “...*any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives.*” ([17] p. 6). Given its widespread adoption, there is a tendency to apply nudging as a default solution across diverse behavioural challenges. While nudging can be valuable in specific contexts, it predominantly focuses on individual cognitive limitations and personal decision-making processes [18]. Addressing complex public health challenges through behaviour change approaches requires a comprehensive analysis of the multifaceted nature of human behaviour and its broader contextual influences, followed by appropriately tailored interventions. By integrating principles from behavioural science, we can contribute to more effective policies and practices, and health communication, ultimately leading to a healthier and more sustainable society and planet.

Behavioural science is a multidisciplinary field, anchored in psychology that provides a systematic way of understanding decision-making, as well as individual and community behavioural adoption and maintenance in real-world contexts. It constitutes a corpus of rigorous scientific methods and knowledge for understanding the behavioural underpinnings of major societal problems, including their environmental, social, and psychological influences, and how to bring about change through behaviour change interventions, including digital health solutions.

Behaviour change interventions are any interventions aimed at influencing human behaviour, and can involve the use of products, services, activities, and policies [19]. Effective, equitable, and sustainable behaviour change interventions require a rigorous, scientifically driven approach. Behavioural science research has made substantial advances over the past two decades in three core, interrelated areas that are fundamental to this endeavour.

First, researchers have developed, refined, and adapted theories that explain and predict behaviour by specifying why, when, and how behaviours occur or fail to occur [20]. These theories identify sources of influence that can be targeted to alter behaviours and provide guidance for intervention design [21]. When theory is systematically applied during the design, implementation, and evaluation of behaviour change interventions, it enables the identification of what needs to change (i.e., the barriers and facilitators affecting behaviour), determine how change can be achieved, and provide a robust approach for understanding how and why interventions succeed or fail, and how they can be improved [22].

Second, the field has created and validated comprehensive frameworks that guide the systematic design, implementation, and evaluation of theory-based behaviour change interventions. The Behaviour Change Wheel [23] represents one of the most widely adopted frameworks, particularly in public health. This framework begins with a “behavioural diagnosis” – identifying the target behaviour and mapping the factors – barriers and facilitators – necessary for that behaviour to occur. The Behaviour Change Wheel proposes an integrative mode for this analysis – the COM-B model, which posits that behaviour is influenced by factors under three categories: capability (physical and psychological factors, such as knowledge), opportunity (social and physical factors, including resources and environment), and motivation (automatic and reflective factors, such as beliefs and emotions). Once these factors are identified, the Behaviour Change Wheel provides structured guidance for selecting appropriate interventions and behaviour change techniques to address barriers and facilitators (such as Education or Environmental Restructuring), while also recommending higher level societal and organizational approaches (such as Policy Guidelines).

The third area refers to the methods that are used to inform and test interventions. This encompasses both the systematic approaches for gathering evidence to inform intervention development and the rigorous evaluation methods used to assess their effectiveness. Methods such as stakeholder co-creation, focus groups, surveys, and pilot testing are crucial when developing and refining interventions. For testing effectiveness, the field employs diverse evaluation designs ranging from randomized controlled trials to pragmatic trials that assess interventions under real-world conditions [24]. These methods include advanced analytical approaches to understand mechanisms of change, and emerging

methodologies incorporate digital technologies for real-time data collection, ecological momentary assessments, machine learning algorithms for behavioural patterns, AI-driven personalized intervention delivery, and big data analytics to understand population-level behavioural trends. Digital platforms enable the collection of behavioural data through smartphones, wearables, and sensors, while artificial intelligence facilitates the development of adaptive interventions that can respond in real-time to changing behavioural patterns and contexts, and engineering-inspired approaches to identify patterns and optimize intervention components (e.g., Macro-Randomized Trials) [25]. This methodological rigor ensures that behaviour change interventions are not only theoretically grounded but also empirically validated and practically implementable across diverse populations and contexts.

The importance of behavioural science in understanding and effectively influencing complex behaviours related with health and environmental sustainability has been increasingly recognized. For example, the World Health Organization has integrated behavioural science in its programs and policies, through the creation of a Behavioural Insights Unit and established the Technical Advisory Group on Behavioural Insights for Science and Health. At the European level, the Behavioural and Cultural Insights Unit has issued the European Regional Action Framework for Behavioural and Cultural Insights for Health (2022-2027) to guide the activities of European countries in the field, and the EU Knowledge for Policy has a Competence Centre in Behavioural Insights. Further, the United Nations released a modernized UN system designed around a “Quintet of Change” – Behavioural Science, Innovation, Data, Digital, and Foresight.

In Portugal, there is also an increasing recognition of the contribution of behavioural science for public health. During the pandemic, a COVID-19 behavioural science taskforce mandated by the Portuguese government was created, to provide advice on how to incorporate the best practices in behavioural research into mitigation strategies, communication, and policies [26]. More recently, the Directorate-General of Health has also released a national strategic plan for health literacy and behavioural sciences [27], aiming to promote health, well-being, and quality of life throughout the life course through the promotion of health literacy, healthy environments, and adherence to health behaviours.

Despite these advances, behavioural science remains underutilized in public health practice. Many interventions continue to be designed without behavioural

science expertise, without employing theory and systematic approaches, and often implement strategies that lack evidence for their effectiveness. Furthermore, stakeholders often fail to clearly identify, describe, and understand behaviour change techniques and how and why they work, limiting their broader application and impact [28].

This reinforces the need for higher education institutions to develop impactful research, knowledge translation, and training in behavioural science. There are several examples of excellent behavioural sciences research centres and groups across the globe (e.g., Centre for Behaviour Change at University College London). The launch of the Behavioural Science Knowledge Centre (BE-Change) at NOVA National School of Public Health represents a milestone in establishing behavioural science in the Portuguese academic landscape [29]. The centre seeks to bridge the gap between scientific evidence and practical applications through research and innovation, training, knowledge translation and community impact, and collaborative knowledge exchange with internationally recognized excellence research centres in this field.

As public health challenges are increasingly behavioural and systemic, continuing to invest in behavioural science research, innovation, and training, while strengthening collaborations between public health experts and behavioural scientists represents a critical step towards building the evidence base and capacity to translate behavioural science into effective public health practice.

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