

Are they the same? Disentangling the concepts of implementation science research and population scale-up

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Key points

- There is often confusion between the concepts of implementation science and real-world scale-up of interventions
- While there is some overlap between the two concepts, there are also differences in relation to their origins, drivers, research methods and implications for practice

Abstract

A new discipline, implementation science, has emerged in recent years. This has resulted in confusion between what 'implementation science' is and how it differs from real-world scale-up of health interventions. While there is considerable overlap, in this perspective, we seek to highlight some of the differences between these two concepts in relation to their origin, drivers, research methods and implications for population impact and practice. We recognise that implementation science generates new information on optimal methods and strategies to facilitate the uptake of evidence-based practices. This new knowledge can be used as part of any scaling-up endeavour. However, real-world scale-up is influenced to a much greater extent by political and strategic needs and key actors and generally requires the support of governments or large agencies that can fund population-level scale-up. Furthermore, scale-up often occurs in the absence of any evidence of effectiveness. Therefore, while implementation science and scale-up both ultimately aim to facilitate the uptake of interventions to improve population health, their immediate intentions differ, and these distinctions are worth highlighting for policymakers and researchers.

Key points (continued)

- Implementation science focuses primarily on generating optimal methods and strategies for implementation, while real-world scale-up is influenced by political and strategic contexts. These distinctions are worth highlighting to advance the field

Introduction

A key goal in public health is to promote health and prevent disease in the population. Successful public health interventions delivered at a population level include vaccination programs¹, tobacco control initiatives² and food labelling policies.³ Despite a plethora of rigorously tested and efficacious interventions to address public health issues, these are seldom delivered to whole populations.⁴ The challenge of translating effective interventions into routine public health practice at the population level has plagued academics and policymakers for decades. In this perspective, we discuss the role of 'implementation science' in the context of efforts to 'scale-up' public health interventions.⁵ Our aim is to differentiate scale-up from implementation science for both policymakers and researchers.

What is implementation science?

Implementation science is defined as the "scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services".⁶ The discipline grew out of the need to translate research into health policy and practice so that it can yield benefits to patients and reduce the time for translation to occur.⁷ This new discipline has given rise to a branch of researchers known as 'implementation scientists', who seek to understand implementation processes and context and develop and test different strategies to improve the implementation of evidence-based interventions.⁸ This includes research to explore the mechanisms of implementation and the barriers or facilitators that influence the implementation process.⁸ Implementation science has, to date, improved the uptake of clinical and public health interventions across a variety of settings.⁹

How does scale-up differ from implementation science?

Scale-up, by contrast, is part of the implementation process that supports population-based public health practice. It is defined as "deliberate efforts to increase

the impact of successfully tested health interventions to benefit more people and to foster policy and program development on a lasting basis".¹⁰ Scale-up is a process defined by an operational goal to achieve broader health impact and is typically undertaken by policymakers and practitioners, rather than researchers or scientists. As public health interventions cannot successfully be scaled up without implementation, the application of implementation science can assist scale-up efforts of health policymakers or practitioners. However, it is crucial to delineate the substantial differences in the origins, methods and drivers of implementation science compared to scale-up.

Firstly, the population-wide or large-scale delivery of health programs is not a defining feature of implementation science. Its key concepts, frameworks and models do not provide explicit guidance regarding how scale-up to whole populations could best be achieved, nor do they emphasise factors that may facilitate or impede scale-up specifically.¹¹

Indeed, implementation science efforts to rigorously test implementation strategies (for example, training, reminders, audit and feedback) are not typically undertaken with large sample sizes or at the population level.¹² Implementation science trials (for example, implementation or hybrid trials) are mostly researcher-driven, primarily designed to generate new knowledge, underpinned by theoretical frameworks and conducted with a small number of health services, schools, or other organisational units.¹³ In this context, the knowledge generated from such trials provides evidence about the impact of different implementation strategies. However, the generalisability of this knowledge is often limited and may not apply to diverse contexts when entire populations are targeted as part of a scale-up process. This remains an area for more concerted conceptual and empirical development within the implementation science field.¹⁴

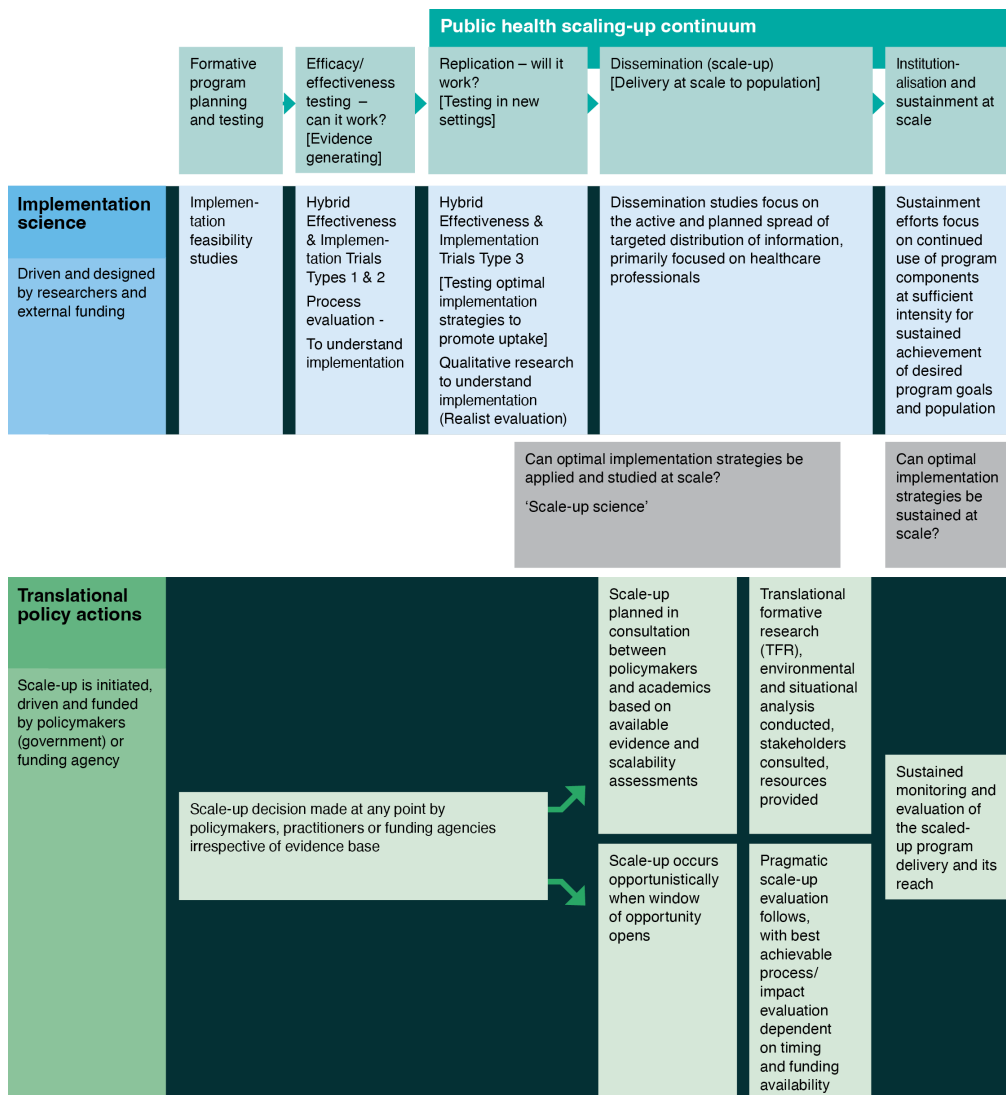
Scale-up, on the other hand, primarily seeks to enhance the delivery of "successfully tested health intervention".¹⁰ Although the definition of scale-up implies that the intervention should be effective, in practice, this is not always the case.¹⁵ Some public health interventions delivered at scale have not been preceded by any efficacy or effectiveness testing.¹⁵ The scale-up of an intervention where the efficacy is unknown can in part be explained by the drivers of the scale-up process.¹⁶ This is because it is governments, non-government agencies and/or the private sector that most likely have the means and resources to scale up interventions to the whole-

population level¹⁷, and they may not always engage in testing the effectiveness of interventions prior to scale-up.

Scale-up decisions and processes may also be driven by the vagaries of politics, policy priorities and economic climates, particularly where an evidence-based intervention or approach to scale-up is not available.¹⁸ Scale-up should, where possible, use evidence, foster consultation with relevant stakeholders, and engage the commissioning agency to co-adapt the intervention, scale-up approach and evaluation to prepare for scale-up.¹⁹ However, because the process of scale-up is often opportunistic, reactive or dependant on policy opportunities such as the ‘scale-up window’^{16,18} – a window of opportunity much like the policy window – scale-up can occur quickly if there is an acute policy priority. This was the case during the COVID-19 pandemic, which elicited the rapid scale-up of public health initiatives.²⁰ Such circumstances leave little time to theorise or to adhere to best practice implementation processes or strategies, as these require rigorous, time-consuming testing as preferred by implementation science.

Scale-up, has long been driven and influenced by individual actors or political goals, sometimes at the expense of evidence-based interventions or tested approaches to scale-up^{16,18} (Figure 1). Optimal evidence-generating methods and research designs (such as randomised controlled trials or implementation trials) frequently used in implementation science rarely accommodate such short timelines and are less flexible to respond to changes in politics or scale-up processes. There has been recent recognition of this need for rapid implementation in implementation science literature, where the fast-tracking of some interventions needs to occur despite the lack of an evidence base.²¹ But the literature to date, stops short of defining timeframes for what ‘rapid’ means and contends that from an implementation science perspective, this is still largely unknown.²²

Figure 1. Stages of scale-up and implementation: where they fit in public health program evaluation



Scale-up and implementation science evaluation approaches

The absence of empirically supported approaches to scale-up may reduce the likelihood of successfully scaling up programs to reach a broader population. Even effective interventions may have reduced impact when delivered at scale.²³ Therefore, to study scale-up, researchers generally rely upon pragmatic evaluation approaches.¹¹ Pragmatic evaluators must decide whether to focus on implementation scale-up (process) or impact (outcomes) evaluation. They must also negotiate with funders and stakeholders to adopt the best and most feasible research methods for different circumstances. Given that scale-up of public health programs is relatively rare, the premise may be that some process (or impact) evaluation data are preferable to no data at all. Alternate methods, including retrospective evaluations, natural experiments, or qualitative case studies, might also be used.

This contrasts with planned rigorous research methods (guided by well-conceived frameworks) used to test implementation strategies through a variety of methods such as 'Hybrid Type 1–3 trials' (See Figure 1), which are still, in essence, implementation science studies where implementation scientists retain control over the design, delivery and timing and are largely funded through research grants. Evidence derived from implementation science and its well-tested implementation strategies can inform, improve or optimise scale-up processes. For example, implementation theories, strategies and determinant frameworks (see Supplementary Table 1, available from: figshare.com/articles/journal_contribution/Supplementary_Material_PHRP/26103649) are useful to support the implementation of interventions at the local level.

If the scale-up of public health programs was able to be conducted in a manner similar to that adopted for most implementation trials. In that case, it is likely that the scale-up process and its evaluation may well contain many features of implementation science. However, this occurs rarely, as scale-up is often unplanned and/or required in a short timeframe. As such, the study of scale-up requires a varied set of pragmatic context-specific research and evaluation methods and measures with less emphasis on bespoke or theory-driven research designs. Thus, we call for a more structured approach to support researchers in evaluating the unique range of actors and processes (for example, adaptation and implementation strategies) that are necessary for scale-up to proceed and succeed.

Conclusion

There is clearly an overlap between implementation science and scale-up. However, in this perspective, we also delineate differences between these two concepts

to enable shared and/or specific research methods to be developed. Evaluating scale-up that truly influences population-level health requires implementation scientists to be flexible, pragmatic, and rapidly adapt to different contexts and delivery systems. As the timeframe in which policymakers decide about the scale-up of interventions often does not accommodate the time researchers need to fully test and consider evidence-based approaches, scale-up often requires pragmatic evaluation approaches. We recognise that over a longer timeframe, implementation science could study program delivery at a true population level and utilise appropriate research methods. As we design studies that use better methods, tools and measures to investigate population scale-up, the study of scale-up may move towards becoming a 'science'. However, studying scale-up in real-world situations will require flexible evaluation methods that are co-developed with key government and community partners so that scale-up efforts can achieve population health improvement in real-time.

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None declared.

Author contributions

KL and AB led the conceptual development and writing of the manuscript. All authors contributed to developing the content and refining the manuscript. All authors have reviewed and approved the manuscript for submission.

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