Llunio Lleoedd
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Shaping Places
for Well-being in Wales

Design phase

Application of a complex systems approaches within the context of public health

Rapid evidence review: plain English summary

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Purpose of Document:

This is a plain English summary of a rapid evidence review which identifies published and grey literature relating to the effectiveness of systems approaches in public health.

Key messages

- There is some evidence to suggest tools such as system mapping are useful in helping people and organisations to look at the relationships between elements in the system, their role and to identify points in the system for change
- Evidence is limited regarding the most effective components and added value of systems approaches due to a lack of comparative studies and real-world evaluations of the approach
- Several barriers limit the adoption of systems approaches to public health issues among practitioners and researchers.

What are systems approaches?

Systems thinking and practice is based on a range of several theories, methods or tools (1). In public health it involves thinking about the bigger picture by focusing on how different elements such as risk and protective factors, people, organisations, policy interventions, and services interconnect and influence each other to produce both intended and unintended outcomes (2). It aims to help make sense of and address issues such as reducing health inequalities and tackling climate emergency which comprise of complex systems and involve multiple perspectives on the nature of the issue, its causes and how to change it. Complex systems involve many interconnected elements, act in non-linear ways and are unpredictable.

What did the review aim to find out?

The focus of the rapid review was to find out what is known about the effectiveness of systems approaches in public health. The review also examined the types of public health problems systems approaches are most suitable for, their effectiveness in different contexts, enablers and barriers to using them and gaps in the evidence.

What did we do?

We searched for peer reviewed and grey literature and used recommended reading from systems experts and Public Health Wales Evidence Service which was then citation tracked. The literature base was narrowed down to 26 of the most relevant publications explicitly referencing elements of systems thinking approaches and tools. The findings were made up of evidence from seven reviews.

Findings

Approaches that appear to be valuable

The lack of comparative evidence and evaluation make it difficult to draw conclusions regarding the most effective approaches in systems thinking (4). Much of the literature identified in the reviews looks at where and how systems approaches are used, rather than their effectiveness.

Systems approaches are most widely used in public health in the fields of physical activity, healthy eating and obesity prevention and tobacco control (5) (6). There is some evidence to suggest this has led to positive health outcomes (6), although this is limited in terms of the significance of effects and the quality of evidence is weak.

Within the literature, the most widely reported systems thinking methods and tools are systems mapping, followed by social network analysis and concept mapping.

Enablers and barriers to adopting systems approaches

Barriers:

- Lack of understanding of what systems thinking and practice is, due to unfamiliar, inconsistent, and confusing terminology (9) (6)
- Scepticism and lack of trust in the added value of systems approaches due to a lack of evidence relating to their outcomes and benefits (5) (9)
- Challenges in terms of stakeholder engagement and the participatory process due to resources and finances (5)
- Perceptions that approaches are too difficult to apply in practice and require specialist skills (9)
- Structural factors, resources and funding mechanisms tend to favour and value more traditional methods preventing wider adoption of systems approaches (3)

Enablers and facilitators:

- Leadership buy-in and active engagement of all partners and stakeholders (6) (5)
- Appropriate and strong partnerships that support building relationships between researchers, practitioners, policy makers and affected communities (3)
- Sufficient engagement and involvement of the community in identifying their needs (6)
- Consistency in language, terminology and taxonomy (6) (3)
- Improved synthesis and building the evidence base to demonstrate the added value of systems approaches (3)
- Access to sufficient and relevant financial support and resources (6)
- Building a community and network of people and organisations interested in systems approaches (3)

Gaps in our knowledge and consideration of counterfactual evidence

Despite the growing literature base, public health researchers and practitioners are not currently engaging with the full range of theories, methods and tools used in systems thinking and practice (7) (10). The literature is currently dominated by descriptive approaches, commentaries and calls for action, while real world application and evaluation of systems approaches is less common (9) (7). As a result, there is a lack of understanding of the effectiveness of interventions or policy decisions made using the theories, methods, and tools from systems thinking and practice (5). Furthermore, there is relatively little analysis of the most effective components of systems approaches, with success currently being defined only by the presence of systems thinking, rather than the utility of this practice (7).

More consideration is needed in terms of synthesis and production of comparative studies and counterfactual scenarios applying systems approaches and mainstream approaches to the same public health issue (5). In the absence of this kind of research, it is currently difficult to evaluate the added value of systems thinking to public health (4) (5) (11).

Other learning

It is possible to categorise interventions into different stages of systems thinking and practice. For example: theorising, prediction (modelling), intervention development, process evaluation and impact evaluation (9) (10). It is also possible to apply systems thinking in terms of the domains of the policy process, for example in problem identification, policy analysis, strategy and policy development, policy enactment, and policy implementation (5). The separation of systems thinking applications into stages seems to be a helpful method for categorising or classifying applications, which may otherwise be difficult or confusing to situate and present.

It may also be useful to consider evaluating the effectiveness of systems approaches in terms of more immediate impacts such as changes in the behaviour of the system of interest or the people or organisations in that system rather than focusing on long-term improvements in health and well-being outcomes.

Limitations

Due to time constraints, the literature included in the rapid review is not exhaustive and is only an indication of key evidence.

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