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INTERVENTION RESEARCH FROM A PLACE-BASED PERSPECTIVE

Allison M. Williams

Although intervention design, implementation and evaluation are central to public-health research and practice, intervention research has and continues to be conducted by a wide range of health-focused disciplines, ranging from nursing to health geography. Whether at a population level (e.g., nation, province/state) or at a targeted population (e.g., a specific employee group in a small enterprise), intervention research is recognized as an applied form of research aimed at improving health and well-being through intentional activities – whether policies or programs, for example. As a scientific endeavor, intervention research involves the use of a range of research methods to produce knowledge about policy and program interventions that operate both within and outside of the health sector and have the potential to impact health (Canadian Institute for Health Information, 2014). As Hawe and Potvin (2009) note, health interventions act upon health to positively alter an established course, be it absolute health burden, inequality or inequity.

Using a rich and diverse set of methodologies, including a range of qualitative, quantitative, geographic information systems (GIS) and mixed-methods approaches in doing intervention research, health geographers pay close attention to how the characteristics of place and space – at varying scales of analysis – impact the environmental and social forces shaping people’s health. Whether through intervention research design, through implementation or through a process of formative evaluation, health geographers are well-equipped to do effective intervention research, given their methodological toolbox and unique contextual lens. Given the social-justice emphasis of our discipline, a place-based-intervention research approach is commonly employed to determine whether and how interventions improve the social location and/or “health,” broadly defined, of the vulnerable place, or place-based population, of concern. A recent collection of population-health-intervention research that uses a geographical lens (Harrington, McLafferty and Elliot, 2017) provides an illustration of the range and types of interventions that health geographers are involved in, including HIV, malaria and dengue prevention; natural experiments for preventing chronic disease and improving school health; food retail strategies to improve diet; and vacant lot redevelopment for improved community well-being. The actual interventions are similarly wide-ranging, and among the many examples are community-based initiatives such as walking groups to reduce the risk of developing various chronic diseases; the use of physical barriers such as bed nets; awareness campaigns facilitated through social media; and healthful school-nutrition policies.

Having used a geographical lens in all the various types of intervention research conducted in my career to date – whether via intervention implementation (Williams et al., 2017), evaluation (Giesbrecht, Crooks and Williams, 2010; Williams, 2010), or pre-intervention needs assessments (Williams, 1997), it is difficult to

imagine not paying attention to the relevance of contextual factors – whether they be political, economic, cultural, demographic or other place-based characteristics that clearly have a bearing on the health and well-being of any particular place or population of concern. The health of individuals, communities or populations does not exist in isolation – it is influenced by a large range of contextual factors defined by space and place. Given the growing complexity of health issues that inevitably result from an increasingly diverse and aging population, context becomes all the more important to attend to in producing positive health and well-being. Thus, health geographers involved in applied health-intervention research recognize the role of space and place in the relationship between the numerous and often overlapping social determinants of health and individual, community and population health outcomes.

Intervention research

As noted, interventions can be wide-ranging and vary in scale. For example, individual interventions that target diet or physical activity operate to change individual behavior, whereas neighborhood interventions, such as block parents or vehicle-speed-reduction campaigns, have the ability to address social or health issues at a larger scale. Unlike descriptive research (Beyer et al., 2010), intervention research focuses on determining the impact of an intervention on the population for which it has been created, such as social-networking use on HIV-related risk/protective behaviors among homeless youth (Barman-Adhikari et al., 2016).

While intervention research often focuses on the design and development of an intervention to address a particular social or health concern (Fraser and Galinsky, 2010), it can also go one step further to answer broader questions about the effect of the intervention (Hawe and Potvin, 2009). Different types of interventions can be employed, depending on the target population, the size of the target population, desired outcomes and best practices. Hawe and Potvin (2009) note that intervention research related to population health is often diverse because studies may seek to answer different questions, such as the relevancy or impact of a particular intervention, instead of simply focusing on the effects achieved within the study population. Sallis, Bauman and Pratt (1998) provide a summary of various interventions aimed to encourage physical activity through changes to the environment and to policy, as well as suggesting a model for ongoing research that targets changes within those two contexts. This is an illustrative example of the variety and breadth of interventions that can be implemented within a single area of focus, such as physical activity.

Intervention research is truly one of the most practical approaches to research, often following a logical trajectory of pre-testing, intervention implementation and post-testing, to ultimately test whether a policy or program improves health in some capacity. Riley et al. (2015) concisely summarize how intervention research specific to population health differs from other fields, such as implementation science, evaluation and clinical epidemiology. The development of a set of competencies to guide the emerging field of population-health-intervention research was recently achieved in 2015. Through extensive consultation and literature reviews, Riley et al. (2015) identified 25 key competencies as preliminary principles of the field (p. 855). Among these principles, there is an emphasis on collaborating with interdisciplinary stakeholders and the “central role of contextual influences on interventions” (p. 855). Hawe and Potvin (2009) also outline a diverse set of skills that is needed by those engaged with intervention research. These competencies have yet to be adapted to provide a relevant set of guidelines specific to population-health interventions that employ a place-based approach and present a ready opportunity.

Furthermore, the application of mapping technology, such as GIS, continues to be employed to determine appropriate areas to for intervention implementation, whether defined by population characteristics (i.e., indices of vulnerability) or by disease rates. Examples of the use of GIS are many, including the identification of areas where there is a greater need for cancer-screening interventions for South Asians (Lofters, Gozdyra and Lobb, 2013) or diabetes-prevention programs (Gesler et al., 2004). Thus, health geographers’ wide-ranging toolbox of techniques, from mixed-method approaches through to GIS, provide us with the

skills and resources needed to best understand the contextual factors influencing health outcomes and to appropriately apply this knowledge to the interventions in order to positively impact health.

Employing a place-based approach to intervention research

Among the many substantive issues addressed in intervention research, a place-based approach has been used to address social and health inequities that affect a wide range of health concerns, including maternal and child health (Storey-Kuyl, Bekemeier and Conley, 2015); physical activity for seniors (Rosenberg et al., 2009); social support for informal caregivers (Duggleby et al., 2007); self-management of chronic disease (Lopez et al., 2017); targeted knowledge mobilization strategies for public health education (Giesbrecht et al., 2009; Williams et al., 2008); nutrition and physical activity in middle schools (Dzewaltowski, Estabrooks and Johnston, 2002); school-based health (Leatherdale, 2017; Vine, 2017); social isolation among parents in neighborhoods with high rates of poverty (Bess and Doykos, 2014); malaria control (Janko and Emch, 2017); racial discrimination among Indigenous and immigrant communities (Ferdinand, Paradies and Kelaher, 2013); dengue control (Dickin, 2017); and HIV/AIDS prevention (Lewis, 2017). Researchers involved in the field of population-health intervention are also actively engaged in the evaluation of large-scale place-based interventions in areas such as maternal and child health (Pies et al., 2016) and obesity levels in minority populations (Liao et al., 2016), to name a few. The diversity of health interventions using a place-based approach certainly highlights that consideration of place is increasingly important in efforts aimed to improve health.

With respect to place and its influence on both individual and population health, the unique aspects of living in either a rural or an urban community are important considerations for interventions designed to address complex health inequities. For example, research has compared the experiences between urban and rural family caregivers, noting that location can account for differences in access to and use of health-care or respite services and should be considered when designing or implementing targeted interventions (Brazil et al., 2013, 2014). This is highly important in order to utilize existing assets and to meet specific needs of those for whom interventions are being designed.

To illustrate, a Living with Hope program was designed for Canadian female caregivers living in rural Alberta and rural Saskatchewan as an intervention to improve levels of hope and overall quality of life (Duggleby et al., 2007). Recognizing that the caregiving experience is different for rural-dwelling caregivers compared to urban-dwelling caregivers, the researchers designed an intervention that could be self-administered by participants (Duggleby et al., 2007). This style of intervention was effective in significantly impacting health outcomes and found to be appropriate for rural caregivers, who are often unable to leave their home for lengthy periods of time while caring for their dependent(s) (Duggleby et al., 2013). This illustrates that the contextual factors of place operate in tailoring the design of health interventions, further promoting participation and successful health outcomes.

Nutrition and access to healthy foods is both a social and a health issue that is increasingly being addressed from a place-based perspective when developing interventions. These interventions directly relate to the obesity epidemic while also impacting broader health issues, such as diabetes and cardiovascular disease. Complex social issues, such as food insecurity (Minaker, Mah and Cook, 2017), can be isolated in neighborhoods characterized by low socioeconomic status and are often more prevalent in vulnerable populations that are geographically concentrated. Minaker, Mah and Cook (2017) suggest that effective programs are based on behavior-change theory and include a range of interventions in the area of healthy food retail, such as healthy corner stores, equipped with “display shelving, refrigerator units, store reorganization and novel process flows, to be able to provide perishable, nutritious foods (e.g., fruits and vegetables)” (p. 159) that are reasonably priced. Such interventions ideally require collaborative participation from community stakeholders in multiple sectors of concern; hence the development of a place-based partnership approach

(Burstein and Tolley, 2011; Riley et al., 2017). Understanding that social determinants typically vary across space and time and that opportunities for collaborative partnerships are often place-specific and based on any one community's assets, a context-specific place-based approach highlights the importance of a geographical perspective in conducting intervention research.

Tackling the obesity epidemic benefits not only from a collaborative framework among professionals in both the public and private sectors, but by using a place-based approach in the design of effective interventions. Liao et al. (2016) assessed a place-based intervention that was implemented to address obesity in 14 black communities in the United States. The place-based project was unique because the planners strategically targeted unique areas of improvement that were needed in each community, instead of focusing on changing individual-level behavior. Liao et al. (2016) noted that “[established] health initiatives were based on the unique historical and cultural context of the community” (p. 1447). Recognizing the central cultural and spiritual role that churches play in black communities, in that they “reach a large and consistent group,” communities effectively established these places as spaces for health-promotion programming and asked respected clergy members to assist (Liao et al., 2016, p. 1447). Their efforts were successful due to the provision of “culturally appropriate health education” by largely respected local health workers and due to the “healthier and culturally preferable foods” offered when community members gathered at church or at programs (Liao et al., 2016, p. 1447). The authors who conducted the evaluation note that building capacity between community members was also crucial in effecting change at the community level (Liao et al., 2016). Here, a place-based approach offered a new lens through which to understand strategies to combat obesity (using the social-gathering spaces of a neighborhood) and, in so doing, influence obesity and communal spaces of support. Contextualization is increasingly important for the design of interventions so that policy-makers can effectively target appropriate and relevant factors that may play a role in health disparities in a particular place.

Limitations and future developments

Popular approaches to health-intervention research, which often focus on either elucidating the biologic mechanisms of disease or modifying individual health behaviors to improve well-being and prevent disease, may not always be sufficient to address the many health disparities influenced by space and place. Thus, health researchers, including health geographers, have looked for alternative interdisciplinary models that can integrate both social and biological factors in intervention design and uptake, recognizing the complexity of the systems within which health is often observed and researched.

Although employing a place-based approach has been successful in many cases, there still are certain limitations to the application of this perspective to health-intervention research, including those pertaining to measuring and evaluating the outcomes achieved through place-based approaches, given the many contextual factors at play (Bellefontaine and Wisener, 2011; Burstein and Tolley, 2011). Although rarely used in health geography, Shoveller et al. (2016) point to the established perception of randomized controlled trials (RCTs) as the gold standard for evaluating an intervention. Given that RCTs often aim to minimize the effects of context on the study results, they provide a stark contrast to intervention research that uses a health-geography lens, which works to understand the interplay between health and context. Shoveller et al. (2016) also found that descriptions of context within studies on population-health-intervention research were often vague, were broad in nature, and referred to different features, operating as a further limitation. Other studies have echoed the need to pay greater attention to scale, given that certain inequities are less evident when data is aggregated and differences in health between or among local communities is overlooked (Snyder et al., 2013). Given this, health geographers can continue to shed light on the contextual factors at play in both intervention practice and research.

Future developments in this field of research may seek to further understand the meaning that individuals derive from the places where they live, work and play and how these sentiments can affect health

interventions (Eyles and Williams, 2008; Gallina and Williams, 2015; Williams et al., 2010). Nowell et al.'s (2006) findings underscore that “place-based initiatives would do well to attend to issues of place identity in structuring their interventions, as neighborhoods whose residents possess a poor or diffuse sense of place identity are likely to experience particular challenges in coming together for collective planning and problem solving” (p. 42). Consequently, place-based approaches should ideally involve a collaborative framework in which various players or stakeholders can cooperate to enhance the meaning and identity that residents draw from their local areas, which can be facilitated by health geographers and other researchers. This happens best when the importance of context is acknowledged. Another area of future development includes the application of a multimethod research approach to current randomized controlled trials in order to enhance the potential applicability of findings and resulting interventions while maintaining the strength of quantitative results (Hansen and Tjornhoj-Thomsen, 2016). As noted, taking a place-based lens to the key competencies that have been determined as preliminary principles of the field (Riley et al., 2015) is a ready direction for highlighting health geography in intervention research and practice. Lastly, the use of technology, such as social media, may play a larger role in population-health interventions and be an effective tool to reach target populations, as demonstrated by Barman-Adhikari et al. (2016).

The diversity of social and health concerns impacting health would benefit from using a place-based perspective in the design of intervention solutions. Many of these issues, such as food insecurity or obesity, are complex and often rooted in place-based social, cultural, political and environmental factors that need to be recognized when developing, implementing and evaluating interventions. There is tremendous potential for health geographers to continue contributing to and influencing intervention research and practice.

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