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Supporting strong families and capable communities through cross-national research

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Background Mental and behavioral ill-health are growing global problems and while there are promising evidence-based approaches aimed at reducing their impact, availability of services varies greatly, not only across nations, but also between urban, regional, and remote locations. Rural areas face accessibility and acceptability challenges related to mental health services that are similar to barriers experienced in developing countries. Initiatives to address mental health challenges in under-served rural areas can inform global mental health strategies.

Methods Using a public health approach, we illustrate how innovations in rural communities build community capacity and capability in areas that are currently, and are likely to remain, under-served by specialist mental health services. We provide examples of initiatives and key principles of action from three locations in Nebraska, United States of American and New South Wales, Australia to highlight similarities of context and practice.

Results While each of the initiatives was developed independently, there are striking similarities across them. Similarities in initiatives include: a) recognition that solutions developed in urban settings are not necessarily the most effective in under-served rural areas, b) engagement of community members is needed to ensure acceptance of initiatives in target communities, c) each initiative involved community members acting on their own behalf with an emphasis on prevention and early intervention, and d) research is a key aspect that informs practice and has local relevance. Commonalities of contexts and environments may have played an important role in the similarities.

Conclusions Linking initiatives within and between countries can expand local, national, and global reach and impacts. If we are to meet lofty global goals related to health and wellbeing, cross-national collaborations are needed to share resources, expand expertise, and stimulate ideas necessary to develop and enhance local and global initiatives. High-income country partnerships addressing mental health in under-served areas, such as rural communities, can play a vital role in contributing to global mental health solutions.

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GLOBAL CHALLENGES OF MENTAL HEALTH

Poor mental health is a global concern. Mental ill-health is the leading cause of disability worldwide, accounting for 175.3 million Years Lost to Disability (YLD) (*1*). Depression accounts for more YLDs worldwide than any other single condition in any disease category (*1*). Mental health conditions alone are less likely than other conditions to result in premature death. However, when years of life lost to premature death are combined with years lost due to disability (referred to as Disability-Adjusted Life Years or DALYs), mental health conditions rank fifth worldwide in DALYs among all disease categories, accounting for 7.4% of the total disease burden. Mental health ranks behind cardiovascular disease, common infectious disorders, neonatal disorders, and cancer, but are more debilitating than musculoskeletal disorders (including pain disorders), non-communicable diseases such as cirrhosis, HIV/AIDS and tuberculosis, and diabetes and endocrine diseases.

Although DALY is considered the best measure of total disease burden, it underestimates the full impact of the burden of mental health problems. For example, conditions such as depression, anxiety, and substance abuse are often comorbid with physical health problems in other categories, especially chronic conditions such as cardiovascular disease, diabetes, cancer, and obesity (*2*, *3*). This comorbidity masks the full impact of mental health problems, exacerbates physical health problems, and complicates treatment of both (*4*).

The burden of mental health problems also extends beyond the patient to family members and other loved ones. Across nations and cultures, family members and loved ones report emotional, cognitive and relational distress associated with the challenges of living with and caring for a family member with a mental health condition (*5*, *6*). Despite the impact of mental health on families, treatments rarely address the burden experienced by family members.

Disparities in Mental Health Care. There are huge disparities worldwide in access to mental health care. The density of psychiatrists serving a population is the best indicator of human resources available for mental health (*7*). More than 45% of the world's population has less than one psychiatrist per 100,000 people (*8*). In 2011, the United States (USA) alone had more psychiatrists than India and China combined (*8*), which together include more than one-third of the world's population. High-income countries have an average of 6.6 psychiatrists per 100,000 people, compared to 0.5 in low- and lower-middle income countries (*9*). The stark disparities in the mental health workforce between developed and developing countries are used to draw much needed mental health attention to middle- and low-income countries (*10*).

There are also huge disparities within developed countries. These within-country disparities often parallel the high-income to middle- and low-income country disparities that are the focus of so much attention in the global mental health literature. Australia and the USA are prime examples of developed countries with a wealth of resources concentrated in urban and suburban areas and resource poverty in rural and some inner city areas. Country-level data reveal that Australia has 9.2 psychiatrists per 100,000 people and the United States has 12.4 (8), ratios that are among the highest in the world. However, a closer look reveals that mental health resources are not evenly distributed in these developed countries, especially in rural areas. In the USA, roughly one-third of the population, more than 106 million people, live in areas without enough mental health providers to meet the estimated need (*11*). Most of these shortage areas are rural communities. Non-metro areas of the USA average less one-third the number of psychiatrists per 100,000 people than metro areas, and 51% of counties have no resident psychiatrist (*12*). Within-country disparities are similar in Australia where slightly over 88% of the psychiatrists work in major cities, with 15.8 full-time psychiatrists per 100,000 people in major cities compared to 5.6 in inner regional, 4.3 in outer regional, and 2.1 in remote and very remote regions (*13*).

The challenge of providing mental health care in rural communities

Rural residents experience many complex challenges that affect mental and behavioral health. Barriers to adequate mental health care include the shortage of health-care professionals noted above. However, there is a complex interplay between real and perceived barriers to care that render simple solutions, such as increasing the numbers of providers, difficult to achieve and not sufficient to improve mental health outcomes (*14*).

Tangible barriers to mental health services in rural communities include the availability of health-care providers, wait lists for treatment, affordability of care, distance to providers, inflexible work schedules, inadequate insurance coverage, and limits to technology (*15*-*17*). Subjective barriers are often more difficult to overcome, because they are often related to the stigmatization of mental and behavioral health problems and mental health care. Moreover, subjective/attitudinal barriers are associated with fewer contacts with health services (*18*). These barriers include concerns about privacy and confidentiality, acceptability of service providers, and concerns that family, community, or employer may be judgmental or unsupportive (*17*). In developing solutions to disparities in mental health care provision and use, it is just as important to address acceptability of care as it is to address the more tangible barriers to care (*14*, *19*).

Adequate solutions to improve mental health outcomes will include those that address both tangible and subjective barriers to care. To do this, solutions must be tailored to fit within the target community and must match the existing resources. Sustainable solutions must be culturally sensitive and flexible in both how and where interventions are delivered (*20*). Solutions should increase both access to care delivered by trained professionals to those who have mental and behavioral health problems, and provide accurate information and support for those who are at risk and/or who are affected by mental and behavioral health problems. Efforts should therefore address intervention, prevention, and recovery. A diversity of strategies that are sensitive to the cultural mores of the community and that build capacity within the community itself should be employed (*21*, *22*).

METHODS

A public health approach

Because of the importance of community engagement and strategy diversity that focuses on both prevention and early intervention, a public health approach is an appropriate way of addressing mental health disparities (*23*). Public health refers to the coordination of science, policy, and practice for preventing disease, prolonging life, and promoting health through organized community effort (*24*). Public health approaches promote, protect, and improve health by identifying problems and then developing universal and targeted strategies to facilitate change at the community level. Public health approaches are multidisciplinary, coordinated, and community-based. While care of those with health problems is an important part of public health, prevention is at its core. A public health approach to prevention and early intervention refers to a coordinated service systems response to move whole populations toward healthy norms and lower risk factors while offering targeted responses to those at higher risk (*25*).

Coordinated multidisciplinary efforts

Often, attempts to address even complex health challenges are discipline-based and uncoordinated. They rely on an individual or a group of individuals who have similar expertise. Even those within a discipline fail to coordinate with one another, let alone with other disciplines. The result is a collection of parallel approaches to common health challenges, each addressing one part of the problem, and sometimes in ways that compete or conflict. The reality is that complex health challenges require multidisciplinary effort and coordination. Without coordination, inefficiencies occur that reduce the effectiveness and impact of single interventions, let alone the whole. Public health approaches emphasize the whole and how each effort contributes to the whole. This includes the contributions and potential contributions of trained professionals and others, such as community members and professionals without apparent expertise in the health-related professions. A key principle of public health is collaboration with a wide variety of contributors, which shifts services from the silo mentality to a more interconnected, coordinated, and effective approach to change (*26*).

Community engaged efforts

Our experience working across multiple rural communities in multiple countries suggests that rural residents are often acutely aware of the challenges to mental health in their communities, but are distrustful of mental health providers and skeptical of mental health treatments. This distrust and skepticism is most likely the result of stigma. Effective efforts to engage community members (both trained professionals and others) to improve mental health outcomes builds a partnership between visiting professionals and community members that breaks down this distrust and skepticism. Successful community engagement is sensitive to the cultural norms and existing expertise, whether professional or otherwise, within each community. Respecting the rights of individuals in the community, valuing all voices in public discourse, and obtaining community consent prior to implementation are fundamental to ensuring community-level investment in a local public health approach (*26*).

A portfolio of both prevention and intervention strategies

One of the problems with the specialist approach to complex health challenges is that prevention efforts are under-emphasized. Yet, universal prevention strategies have the greatest potential for improving health outcomes at population levels. We have found that community engagement facilitates both an emphasis on universal prevention and a greater acceptance of targeted professional intervention. This facilitates a diverse, coordinated portfolio of strategies for addressing the complexity of mental and behavioral health needs/problems within these communities (*21*). Through community engagement, community members are enlisted in prevention strategies that raise local awareness, build community capacity, and result in unique local solutions.

Practical examples

Work is being done all around the world to address mental health disparities. A global public health approach would suggest that coordination is needed at the global as well as the local levels. The World Health Organization (*27*), in recognizing the global scope and impact of mental health problems, has called for a comprehensive, coordinated, community-based approach to address this problem. The first step to doing so is to become aware of community-engaged efforts that are occurring throughout the world.

We present our examples of coordinated community-engaged efforts from rural areas of two high-income countries: Australia and the USA. While it is important to address mental health disparities in underdeveloped countries, a comprehensive approach to global mental health must also take into consideration the resource disparities that exist in high-income countries. Solutions developed in these areas can inform global strategies. In developing local solutions, mental health practitioners, researchers, policy specialists, and scholars can learn from what is being done in diverse country contexts that parallel their own. Cross-national mental health collaborations are also important so that expertise and experience can be shared to more effectively address these complex problems.

RESULTS

Nebraska, USA

Nebraska is a state located in the middle of the USA in an area called the Great Plains. By federal government standards, only 5 of the 93 counties in the state have enough mental health care providers to meet local mental health care needs (*11*). Many of these counties, especially in the most remote areas of the state, have so few mental health care resources that on paper they parallel the resource poverty that exists in economically underdeveloped countries. To overcome these disparities, faculty members at the University of Nebraska-Lincoln (UNL) have developed an approach to addressing mental health disparities in rural communities that includes a) developing local capacity to deliver low intensity interventions, b) making

professional mental health care available in these communities through videoconferencing, and c) collaborating with local medical and mental health care providers.

Expanding local capacity to deliver low intensity interventions

We have found that the first step to increasing local capacity to address mental health disparities is to identify individuals within the target community who have mental health care expertise, address mental health issues as part of their jobs, or are touched by mental health problems and motivated to advocate for improved mental health outcomes. These people include mental health and medical providers, teachers and school counselors, school and hospital administrators, law enforcement personnel, district attorneys, mental health patients and there family members, and others. The university faculty members bring these people together to identify local perceptions of the problem and the extent to which there are local resources. The faculty members attempt to get an exhaustive list of local resources since solutions and their implementation often come from the most unconventional of sources. For example, by creating a list of local resources we were able to tap into local businesses and agencies that supported the implementation of local solutions. Their participation not only provided social credibility to the cause, but also led to financial contributions that made interventions possible at a larger scale.

Emerging from this group is a small number of individuals (usually 3-5) who are particularly motivated to address mental health disparities in the community. These individuals are identified as mental health *champions*, and meet regularly and work closely with the university faculty members in assessing community needs and developing and implementing local solutions. Local solutions often take the form of (a) addressing stigma and discrimination through universal education about mental health, (b) improving access to existing mental health resources by maintaining and publishing lists of these resources, (c) improving referrals by developing referral protocols, and (d) ensuring that any targeted interventions or research addresses the impact of mental health on families, couples, and relationships. These local champions also work with the faculty members to create local initiatives and shift low-intensity mental health care tasks traditionally performed by professional care providers to people living within the community, representing a form of task shifting (*28*).

Using technology to improve mental health

The university faculty members are mental health care professionals and part of a graduate-level mental health care training program. Through this training program, tele-mental health care is made available to rural communities. Graduate student mental health care trainees supervised by university faculty provide care services. In this way, mental health care is delivered through videoconferencing at low cost to rural residents who would not otherwise have these services available to them. Tele-mental health is provided in rural medical clinics, which ensures safety and improves the acceptability of services.

Collaborating with local providers

Collaborative care is key to the successful implementation of the model. The university faculty members develop professional relationships with local providers that are the foundation for the implementation of a collaborative care treatment in which medical and mental health care providers work “side-by-side” in providing care for patients and their families. Mental health therapists travel to the target communities once a month. It is during these visits that they meet with medical care providers, often shadowing them as they meet with patients identified as having a mental, behavioral, or relational health problem. During these visits, mental health therapists also meet with patients face-to-face and provide direction or supervision to local people who are delivering low-intensity mental health care interventions. This provides a continuity of care and professional support to local providers.

The UNL model is innovative in that it combines community engagement, local capacity building, assessment and research, tele-mental health, and collaborative care to address mental health disparities. Positive outcomes have included increases in mental health awareness, numbers of referrals and referral efficiency, health and mental health outcomes, and provider satisfaction.

New South Wales (NSW), Australia

Rural NSW has a varied geography (coastal, mountainous, expansive plains) and population distribution (large regional towns and rural and remote villages). The population density varies from just 0.15 persons per sq. km in Far West NSW to as high as 18.6 persons per sq. km on the Mid-North Coast. Providing health services across large distances to a dispersed population is challenging; access to specialist care decreases with rurality and remote populations struggle to access even generalist care. There are large disparities between rural, remote, and urban communities in mental health provision and access in Australia (*29*, *30*). Public health approaches to addressing these mental health disparities is a relatively recent policy and practice concern (*31*, *32*). The Faculty of Health and Medicine at the University of Newcastle (UON) has been at the forefront of understanding, investigating, and developing public health approaches to overcome disparities in mental health service provision and outcomes in regional, rural, and remote Australia. Two centers in the Faculty of Health at UON have been instrumental in using a public health approach to developing programs and strategies to improve mental health and wellbeing in families and communities in regional, rural, and remote NSW.

Centre for Rural and Remote Mental Health (CRRMH)

The aims of the CRRMH are to build evidence, develop strategies, and respond to the mental health needs of rural and remote communities. Working with rural communities and partners, CRRMH addresses the wellbeing of rural residents and the mental health of those in primary industries, such as miners and farmers. Three areas of work being done at the CRRMH include a) using research to develop a mental health system that better meets community needs, b) universal mental health promotion, and c) expanding the non-traditional workforce.

Using research to develop a mental health system that better meets community needs

Experience from working with under-served, rural communities has taught us that urban solutions to mental health may not be appropriate. To ensure acceptable and sensitive interventions, the CRRMH has a long history of connecting with community through partnerships to research a problem and develop a plan of action. In 2003, in response to the ongoing Millennium Drought, the CRRMH consulted with rural government and non-government stakeholders to identify areas in need of improvement (*33*). Recognizing the risks to rural farming communities, the CRRMH collaborated with NSW Farmers (the peak body representing farmers in NSW) to create the NSW Farmers blueprint for mental health. This blueprint identified pathways to good health, with 23 recommendations to improve rural mental health (*34*). Finally, a landmark longitudinal cohort study – the Australian Rural Mental Health Study was undertaken to build the evidence base and understand the mental health needs of rural and remote residents (*20*). This study found that the determinants of mental health and wellbeing in rural and remote areas were largely individual level attributes and perceptions rather than district level characteristics, thus opening the door to strategies, such as mental health promotion, to boost community connectedness and reduce social isolation.

In response to the early lessons learned at the CRRMH, the Drought Mental Health Assistance Program, which has now become Rural Adversity Mental Health Program (RAMHP), was established in 2007. The program has place-based staff throughout rural and remote NSW to bring mental health promotion, education, and linking services to the people in the communities in which they live. RAMHP now has fourteen staff distributed throughout rural NSW. Connecting to the community has been a key goal and feature of RAMHP, with

staff place-based and supported to travel across rural NSW delivering mental health promotion at community events, key agricultural events such as the annual agricultural industry field days and other opportunities. Moreover RAMHP staff link people to mental health care both directly and indirectly (through upskilling of rural community members via training). They deliver training that improves mental health literacy and highlights pathways to mental health care, giving rural people the tools to access mental health services and supports.

Expanding the non-traditional mental health workforce

Training of frontline staff has been a key feature of RAMHP. This provides an opportunity to increase mental health literacy and expand the population of people who are confident to link people to care pathways. This form of task shifting expands the reach of conventional health services (*28*). Staff that are on the frontline are often those who will encounter people who are not accessing services frequently or at all (such as farmers). They often have preexisting relationships with people at risk for mental and behavioral health problems, and can be taught to recognize the signs of distress and alert others to mental health care pathways. The CRRMH developed a Workplace Support Skills course and a Community Support Skills training (which is half of the workplace course). The purpose of these courses is to help people recognize distress in another person, understand the range of pathways of care, and employ practical strategies to link people to care. These courses have proved very popular and allowed for greater reach into the community.

Mental health promotion

Mental health is not solely addressed in a clinical setting. The CRRMH works to improve the wellbeing of rural people through a universal program called Act-Belong-Commit. This program, developed in Western Australia, is designed to increase mentally healthy behavior choices across communities by encouraging people to improve mental health by being involved in a wide variety of activities (*35*). This approach not only improves the reach of services, but also is less stigmatized and therefore more socially acceptable. The universal nature of these initiatives reduces the stigma for those also needing targeted services with participation often leading to a "warm referral" to a targeted service. The principles of Act-Belong-Commit were developed following community consultation, with the premise that behaviors that promote good mental health include being *active* (physically, mentally, and socially), *belonging* with other people (family, workplace, social groups) and *committing* to worthwhile activities or goals (volunteering or learning a new skill). CRRMH has piloted the program by partnering with local organizations, such as the Department of Sport and Recreation, which serve indigenous youth. This campaign has used an ambassador, in this case a former professional rugby league player with a lived experience of depression, to champion the mental health promotion messages.

Family Action Centre (FAC)

The Family Action Centre (FAC) is based at the Callaghan campus of UON in Newcastle. Newcastle is a regional city at the hub for the nine rural local government areas of the Hunter Valley. FAC family and community programs and practices address the complex and interwoven structural, community, and individual factors identified as influencing well-being (*36*). The FAC faculty are developing interventions to address mental health disparities in rural communities that include: a) working to expand local capacity by developing a mental health system that better meets the needs of the community, and b) using technology to improve mental health.

Expanding local capacity by developing a mental health system that better meets the needs of the community

A new initiative with a mental health focus led by the FAC is Strong Families-Capable Communities. This initiative is a community-based partnership in collaboration with NSW Government, Muswellbrook Shire Council, service providers, local industry and community

members. The work in Muswellbrook is closely aligned with the CREATE model (*37*), and seeks to achieve collective impact, or the commitment of a group of key community providers to the common goal of addressing, in this case, the complex problem of promoting mental health and wellbeing (*38*). Consistent with Collective Impact, this project focuses on a) ensuring the identification of specific social risk and protective factors, and b) facilitating a common agenda, a shared understanding of success, development of mutually reinforcing activities, and a commitment to continuous communication. A priority of the initiative is to form a backbone organization that supports and synergizes the efforts of community providers to achieve their goals. Through the collaborative commitment of local service providers and the support of the backbone organization, the project will address Muswellbrook's particular place-based risk and protective factors by building a sustainable community focused on its families and their strengths.

Using technology to improve mental health

The FAC is a national leader in fatherhood and wellbeing research, including innovative developments in the on-line delivery of wellbeing resources. An example of this is the expansion of a SMS4dads program of tele-mental health promotion and child development. The purpose of this program is to develop personal skill in fathers, while tracking their mental health. This has important implications as it allows the researchers to identify depression in fathers and make appropriate referrals to more specialized services. This not only improves the well-being of the father, but of the entire family. Text messages are delivered regularly to new fathers on their mobile phones in rural and remote areas. The program is now expanding this innovative tele-mental health approach to a focus on positive co-parenting and child development. This expansion translates innovative research on the importance of positive co-parenting relationships to the well-being of children into implementation and evaluation of this health promotion activity in regional NSW.

The Muswellbrook initiative has leveraged the resources from the CREATE project and now is one of the trial sites for the roll-out of a new on-line wellbeing assessment tool for children in the age range from 5 to 12-years. *Rumble's Quest* (*39*) is a 57-item valid and reliable on-line measure delivered in a video game format. Played individually, children interact through an avatar with a pet creature, Rumble, who accompanies them on the quest. Along the way, *Rumble* asks the children's avatars to report their feelings and sense of wellbeing. Four-wellbeing subscales measure attachment to school, emotional and behavioral self-regulation, social confidence and supportive relationships. The data from *Rumble's Quest* is securely stored and available to schools and other authorized health and community service agencies, either at aggregate level or, with suitable ethical and privacy protections, for individual children. Digital resources, such as SMS4dads and *Rumble's Quest* are further examples of how the reach of information and assessment capability can be extended to rural communities that are under-served by the specialist professional supports available in larger urban centers.

Similarities across initiatives

Each of the Nebraska and NSW initiatives were developed independently; however, there are striking similarities across them. Commonalities of contexts and environments may have played an important role in the similarities in these initiatives. For example, all three were developed in high-income countries where mental health professions are well established. In addition, all three initiatives are designed to decrease mental health disparities in under-served rural or remote areas, and are associated with major research universities that have explicit outreach missions. Initiatives developed in different contexts may not share as many similarities, but the benefit of cross-national collaboration for addressing mental health is evident by the similarity of contexts and initiatives between these two countries.

Each of these initiatives shares the following:

- Recognition that mental health solutions developed in urban areas are not necessarily the most effective solutions in rural under-served areas. Services need to be

tailored to the people who need those services rather than expecting the people who need the services to conform to the professional models developed in and appropriate for high resource locations.

- Mental health specialists engaged community members, including local professionals, to ensure that initiatives would be accepted within the target communities. In each case, the community engagement has facilitated coordination across professionals and services, the essence of a public health approach. Initiatives are also culturally sensitive and appropriate because of the centrality of community members throughout the development and implementation of the interventions.
- Each of the initiatives emphasize prevention and early intervention, and involves community members acting on their own behalf to improve individual and community-level mental health and well-being. This empowers members of the communities that may lack adequate resources with confidence that they are capable of improving the mental health and wellbeing of families in different ways than professional mental health providers.
- Research, including evaluation, is a key aspect of each of these initiatives. In each case, research informs practice and has local relevance.

Learning across contexts

Local initiatives can be improved by learning across similar contexts around the world and through the development of cross-national initiatives. To begin with, it just helps to know that others are engaged in similar efforts to reduce mental health disparities. Seeing the similarities in what is being done around the world contributes to confidence in local efforts. Seeing both similarities and differences, even subtle ones, stimulates ideas and strategies that enrich what is happening locally, and can be a catalyst for global solutions.

For example, on hearing about the initiatives in Australia, faculty members at UNL were able to expand the language they were using to describe their work. This led to a re-conceptualization of the essential elements of their approach, making it more easily transferable to other locations in USA and around the world. A similar process happened for the faculty members at the UON. On seeing similarities across the two country contexts, faculty members recognized the role of task shifting in new ways that allowed them to be intentional in their efforts to increase the mental health workforce and further develop skills in the community. Also, the Muswellbrook Council initiative, which is the most recently developed initiative of the three, is being shaped from its initial stages by what was has been done through both CRRMH and UNL.

The next steps include multi-site, cross-national research that will be both globally and locally relevant. To do this, we are identifying similar aspects of the three initiatives that can be standardized across locations. These aspects, which are low intensity interventions, will be researched for effectiveness across each of the locations to determine which interventions are transferrable across countries and contexts.

CONCLUSIONS

Limitations to our proposal are collaborative relationships are still developing, with long-term challenges and barriers to cross-national partnerships addressing mental health in under-served areas remaining unknown. In addition, commonalities between the contexts of the three locations likely resulted in similarities across initiatives. Differences in contexts need to be considered when developing partnerships. Finally, our goal for this paper is to provide a foundation and impetus for cross-national partnerships and research, with data needed to demonstrate results and adaptability across communities and countries.

Cross-national work is essential for meeting ambitious goals for global mental health set by world organizations such as the World Health Organization (*27*) and the United Nations.

For example, as part of its Sustainable Development Goals (*40*), the United Nations set objectives related to ensuring healthy lives and promoting well-being for all ages. These goals specifically reference improvements in mental health and the prevention and treatment of substance abuse. If we are to achieve these lofty goals, cross-national collaborations and partnerships are needed to extend the reach of innovative, sustainable solutions already taking place around the world. Partnerships between innovative mental health initiatives in high-income countries can play a valuable role in developing interventions for under-served areas, such as rural communities, that have similarities and implications for other resource poor areas globally.

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