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Chronic pain and mental health: integrated solutions for global problems

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Abstract

Chronic pain is the leading cause of years lived with disability globally. Populations in low- and middle-income countries bear a disproportionate burden of chronic pain because of greater exposure to road injuries, interpersonal and political violence, unregulated manual labor and limited access to healthcare. Lessons from the field of global mental health can provide a foundation to begin tackling the global burden of pain. These lessons include the use of task-sharing of front-line psychosocial care to non-specialized health workers; a transdiagnostic approach; use of syndemic models incorporating social determinants and co-morbidities; incorporating cultural idioms of distress, the symbolic meaning of pain, and traditional healing practices; and a person-centered approach emphasizing the embedded nature of an individual in her/his family, context and culture. The implications of this evidence for chronic pain management are manifold, for example: using transdiagnostic psychosocial interventions delivered by non-specialist, non-physician health workers as the first step; personalized medicine approaches based on good practice principles of chronic disease management; and concurrently addressing the social determinants often associated with pain syndromes. Taken together, these principles should be used to design intervention platforms that can address the burden of chronic pain, while reducing risks of over-utilization of opioid medications, globally.

Introduction

"The greatest evil is physical pain," stated St. Augustine of Hippo. Throughout history, the lives of countless people have been afflicted by chronic pain resulting from a variety of etiologies. Today, chronic pain remains a global public health problem with vast unmet needs for relief [27]. Globally, low back pain is the leading cause of years lived with disability (YLDs) accounting for 57.6 million YLDs annually, migraine is second (45.1 million YLDs), neck pain is sixth (28.9 million YLDs), and other musculoskeletal disorders is seventh (28.9 million YLDs) [32]. A meta-analysis of chronic and persistent pain in low-

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and middle-income countries (LMIC) including 119 studies (47,133 individuals) demonstrated pooled prevalence rates among the general population of 42% for headaches, 34% for unspecified chronic pain, 25% for musculoskeletal pain, and 21% for low back pain; further, rates are considerably higher for elderly populations [37].

Risk factors for chronic pain include injuries caused by motor vehicle collisions, unregulated manual labor, obstetric complications, and exposure to violence such as gender-based violence and political conflict. All of these risk factors are disproportionately experienced by populations in LMIC [30]. There are more than 100 million road injuries requiring medical attention per year, and while the rates have decreased by more than 15% globally since 1990, the rates increased in West Africa by 29% and southern Africa by 35% [30]. Ninety percent of disability adjusted life years (DALYs) lost from road traffic injuries occurs in LMIC [1]. Similarly, interpersonal violence-related injuries decreased globally by 19% in the past two decades but increased by 50% in southern Africa and the Pacific Islands [30].

Unfortunately, health care services to address pain are grossly inadequate in LMIC where the majority of persons with chronic pain lack access to a regular supply of appropriate medications and other services [48]. Although improving access to medication is vital, multidisciplinary and multidimensional approaches demonstrate better outcomes than medication alone [13; 68; 74]. Therefore, it is important to consider the role of psychosocial interventions, which are especially important because psychological distress is one of the prime mediators of the relationship between chronic pain and disability [46]. Psychosocial interventions are an important part of multidisciplinary care and a potential alternative to medication depending on the severity and nature of pain [15; 23; 84; 85].

Global mental health innovations in psychosocial interventions

The field of global mental health is concerned with reducing disparities in access to evidence-based mental health care and mental health outcomes within and between populations. A key thrust of the field has been to design and deliver psychosocial interventions to address these disparities.

Psychosocial interventions for pain

While psychosocial interventions have been primarily tested for mental health problems, there is suggestive evidence for a range of psychological interventions for chronic pain in high-income countries (HIC) [53]. Among adults, there are moderate benefits immediately after treatment for pain, disability, and mood, with benefits to mood sustained at follow-up, when compared in waitlist conditions [84]. Other interventions such as behavioral activation, lack evidence as described in the same review. Among children and adolescents, psychological interventions are beneficial for headache and associated disability but comparable benefits are not observed for other varieties of pain [23].

Regarding high quality guidelines for the management of pain, the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration recommends education promoting self-management and multimodal rehabilitation that include physical and psychological interventions (e.g., cognitive/behavioral approaches and exercise) for patients with high

levels of disability or significant distress associated with chronic low back pain [85]. For chronic pain, the Italian Consensus Conference on Pain in Rehabilitation gives mindfulness interventions a Grade A recommendation; group and individual cognitive behavioral therapy (CBT) receive a Grade B recommendation; and specifically, for chronic musculoskeletal pain, group CBT receives a Grade A and individual receives a Group B [13]. Interpersonal psychotherapy (IPT) enhances social support and reduces depression among women living with chronic pelvic pain; however, the direct benefits of IPT on chronic pain have not been demonstrated [69]. Taken together, the current literature demonstrates the promise of specific psychological interventions for different categories of pain, as well as highlighting limited impacts on some outcomes and areas that need further investigation.

Global research on psychosocial interventions

Unfortunately, research examining use of psychological interventions for treatment and management of pain among adults and children in LMIC is nearly non-existent. Among recent systematic reviews of psychological and other non-pharmacological interventions for pain, the majority include no studies conducted in LMIC for adults [33; 52], and there is similar gap in the evidence for pain among children and adolescents [23]. In one Cochrane review of 42 studies of psychological therapies to manage chronic pain among adults [84], the authors identified only two LMIC studies: one from India using biofeedback for fibromyalgia [2] and one pilot randomized controlled trial (RCT) from Brazil comparing client-centered and exercise therapy for chronic low back pain [51]. In a review of 19 studies for chronic musculoskeletal pain, only one study was conducted in an LMIC: arthritis self-management in Hong Kong, which showed promising results [21]. There is also very limited evidence for interventions that address pain associated with cultural practices; for example, a recent systematic review of treatment for pain associated with female genital mutilation found no intervention trials [24]. Even studies employing cultural practices that originated in non-Western countries, such as tai chi, yoga, and mindfulness, have lacked RCTs in LMIC evaluating these practices [15]. Therefore, the gap between the overwhelming burden of disease attributable to pain in LMIC and the lack of research to develop evidence-based care highlights the crucial need for research on prevention and treatment of pain in these settings.

On the other hand, the field of global mental health has witnessed a flourishing of intervention and implementation research to address mental health problems in diverse LMIC. This has led to the generation of substantial evidence that is now being used to inform national mental health policies, practice, and government investment in mental health care. The growth of psychological intervention research in LMIC could offer an important opportunity for addressing the global burden of chronic pain. A central aspect of psychological interventions in global mental health is their delivery in a “task-sharing” framework. Task-sharing refers to the use of non-specialist providers, such as community health workers, lay volunteers, teachers, nongovernmental organization staff, and peers to deliver interventions that would typically require a clinical psychologist, clinical social worker, or psychiatrist in HIC. Such interventions are typically delivered in routine health care or community platforms. Task-sharing with non-specialists has been both feasible and effective for treating psychological distress and disorders [76; 79], and psychological

treatments delivered by non-specialists have an effect size comparable to psychological interventions delivered by specialists in HIC [76].

As examples of this body of evidence, positive results have been observed with interventions based on cognitive-behavior therapy and behavioral activation: “Thinking Healthy Program” in Pakistan [71] and “Healthy Activity Program” in India [66]; problem-solving therapies: “Problem Management Plus” in Pakistan and Kenya [12; 70]; enhancing social support: IPT in Uganda [7; 57] and the “Friendship Bench” in Zimbabwe [14]; motivational interviewing: “Counseling for Alcohol Problems” in India [58], trauma-focused psychotherapies: cognitive processing therapy in the Democratic Republic of Congo [4]; and common elements treatment approaches (CETA) that include elements of cognitive behavioral therapy, trauma-related care, and other evidence-based practices [8; 9; 56; 82]. Although the evidence in support of such interventions to address chronic pain is limited (as noted earlier), given the cultural acceptability, feasibility of delivery by non-specialists, and clinical effectiveness of these therapies, their role in pain management in LMIC should be evaluated.

Echoing the efforts in LMIC, a promising recent development has been the modification of group CBT and group educational interventions for low literacy populations with chronic pain seeking care in low-resource health facilities in the United States [78]. This trial examined delivery in low-income clinics and demonstrated benefits of both CBT and group education on pain outcomes. Moreover, the group education intervention alone, which would require minimal training, actually led to longer sustained gains in pain related outcomes. These findings are entirely consistent with the global mental health evidence base.

Transdiagnostic approaches to the psychological treatment for pain

Transdiagnostic approaches are increasingly being used for psychological interventions in global mental health [9]. The principle of transdiagnostic approaches is that diverse diagnostic phenotypes have similar mechanisms and benefit from similar treatment elements [25; 28; 47; 61]. Such transdiagnostic approaches work by targeting mechanisms that are common across conditions, such as avoidant coping, emotion dysregulation, sleep problems, or demoralization [6; 25; 29]. Another advantage of most transdiagnostic approaches is that they eschew the use of full ‘packages’ of psychological interventions such as CBT or IPT, in favor of ‘elements’ or ‘components’ such as activation (for mood problems), exposure and relaxation (for anxiety), and motivational enhancement (for addictive behaviors). These are easier to scale up because elements are easier to learn than entire packages. Once a provider learns how to deliver a parsimonious set of elements, they can apply it to a range of presentations by matching the element to the dominant clinical concern, typically defined by the patient [9; 82]. Therefore, transdiagnostic approaches are advantageous when training non-specialist health workers who are able to deliver an intervention without the need for a specific diagnosis or having competency in different packages of care for specific disorders.

This evidence base complements the emerging evidence in support of transdiagnostic approaches to pain and psychological distress in treatments delivered by specialists [6; 47]. The transdiagnostic approaches mentioned above also represent an opportunity for person-centered approaches to care because it targets the primary concerns of the patient. It is easier

for a patient to understand and learn a single technique or skill, especially when that skill has been selected specifically for the her/his needs [62]. Transdiagnostic approaches also allow patients to come in seeking help for pain but also receive care that will benefit mental health, while not having treatments labeled exclusively as psychiatric care, which can be stigmatizing.

A syndemic framework for psychosocial interventions for pain

Efforts to deliver psychological services and other interventions in global mental health have also revealed the crucial needs to address other determinants of mental health, such as poverty and income inequality, physical health problems, violence, injury, abuse, and ethnic and gender discrimination. Many of these social determinants associated with psychological and psychiatric problems also increase the risk of chronic pain [49; 50; 65]. Thus, chronic pain is associated with poverty, unemployment, lower neighborhood socioeconomic status, and literacy levels [19; 26]. Child abuse not only increases risk of adult mental disorders but is also associated with sensitization of pain pathways [59; 80]. Unemployment and poverty increase stress exposures associated with common mental disorders and also contribute to demoralization and despair, which are associated with the experience of chronic pain [20].

A conceptual model to integrate negative social determinants, chronic pain, and psychological disorders is the syndemic framework [54; 75]. Originating in medical anthropology, the concept of a syndemic refers to the interaction of two more conditions (co-morbidities) that have an overlapping or intersecting biological pathways, and these conditions are mutually influenced by social determinants [54]. Prior syndemic models have been used to explain the clustering of violence exposure, intravenous drug use, and HIV/AIDS, as well as clustering related to diabetes, depression, and migrant status [75]. Chronic pain and mental disorders could benefit tremendously from a syndemic approach because they have overlapping and complementary biological pathways, and they are clustered geographically in areas with constellations of risk factors: poverty, unemployment, high rates of manual labor, and lack of access to mental healthcare services. A syndemic approach can then be used to ensure that pain and mental disorders are addressed concurrently, another goal of person-centered care. The syndemic approach also provides evidence for why societal and economic risk factors are as central to personalized medicine as genetic and other biological profiles are.

Cultural and contextual considerations for interventions to treat pain

Another contribution from global mental health is the attention it has given to language and the idioms of distress. Cultural idioms for suffering are often grounded in the language of pain [44; 60]. *Dukha* in Nepali can reflect physical pain as well as psychological distress when referring to pain in the heart-mind [41]. Similarly, in Haitian Kreyòl, *kè fè mal* (heart that hurts) refers to emotional suffering [39]. In a review of cross-cultural qualitative studies of depression, including both HIC and LMIC, headaches and other pains were described in 36% and 34% of studies respectively [31]. The interrelationship between idioms of pain and psychological process is not limited to depression. In Bali, extreme fright followed by emotional distress is also described with idioms implying head pain [83]. In Mongolia, *yadargaa* (a fatigue related syndrome associated with psychological distress) is often

recognized through pain in the heart, chest, back, and joints [43]. While there has been less attention to culture and context for the harmful opioid use epidemic in the U.S, a notable exception is research in the Appalachian region which has demonstrated the importance of cultural models to understand treatment-seeking behavior [77].

Few cross-cultural studies have distinguished between depression manifested with pain-related complaints and depression that is co-morbid with a pain-related condition such as musculoskeletal and neuropathic injuries, and this an important area for further investigation. Attending to language is helpful to avoid misinterpretation of psychosocial distress as physical pain, which may lead to inappropriate treatments or misuse of resources [39; 42]. For example, among Latinos in the U.S., failure to adequately discuss pain misses an opportunity to discuss difficulties in emotional regulation [67]. In Haiti, misinterpretation of psychosocial idioms of pain as a purely physical problem leads to inappropriate use of medications and lack of referral to psychological and social services [39]. In all contexts, interventions that have undergone cultural adaptation focusing on language for expression of distress outperform un-adapted interventions [5; 16]. Therefore, it is crucial to use language that will facilitate participation in treatment programs while simultaneously assuring that the type of treatment is suited to the psychological, physical, and social aspects of the pain [34].

The meaning of pain and expectations related to treatment are vital to consider [18; 36; 55]. Some expressions of pain may be associated with religious devotion, gender roles, social status, and military service. To express being completely free of pain may be at odds with expectations for one’s identity in these roles [40]. Pain may also have a meaning which implies a religious or spiritual infraction or calling. Whereas these observations do not imply withholding an intervention or minimizing the experience of the pain, they are important to consider in the process of identifying and measuring clinical targets. Building upon this, collaboration with religious leaders and traditional healers may be helpful to understand how best to discuss and address pain. Psychosocial interventions can also be integrated within traditional health care systems by partnering with traditional health practitioners [63], including religious healers, mindfulness practitioners, bonesetters, and other non-biomedical professionals.

Mindfulness, yoga, and tai chi have shown benefits for pain reduction in HIC [15]. Mindfulness-based approaches have been incorporated into promising strategies, such as dialectical behavior therapy, in Nepal [72; 73]. The fields of Chinese medicine, Qur’anic medicine, Tibetan medicine, and Ayurveda also have approaches to diet, activity, and use of herbal medications to manage chronic pain [17; 45; 86], with strong evidence for the benefit of acupuncture for control of neck and low back pain demonstrated in a systematic review of 75 studies [86]. Partnering with these practitioners may play a role for multidisciplinary approaches to pain treatment in global health efforts.

Harmful cultural practices in the etiology of pain, such as female genital mutilation, should also be assessed and addressed. Whereas harmful cultural practices are often highlighted in non-Western cultures, it is important to reflect upon harmful cultural beliefs and practices in Western settings too. Cultural expectations among some health care workers and patients in the United States may lead to overemphasis on eradicating pain rather than finding ways to

optimize functioning and quality of life in the presence of pain [3]: for example, cultural expectations that clinical care is successful when a pain score of '0' versus a cultural model that emphasizes quality of life and functioning over the simplistic (and often unattainable) targets of pain eradication. Similarly, cultural attitudes regarding public access to and use of firearms increase not only mortality but also firearm-related injuries that increase risk of chronic pain [38; 81]. Resistance to public health measures to curb obesity through measures such as taxation on high sugar beverages, contributes to chronic joint and other musculoskeletal pain [11].

Person-centered approaches to pain management

Global mental health care has been a pioneer in the development of person-centered approaches [22]. These innovations include the community orientation for long-term care; the integration of medication with psychological and social interventions; the engagement of family members in supporting recovery and addressing the needs of caregivers; addressing social and functional impairments in daily life beyond the specific symptoms associated with the disorder; supporting adherence and management of side-effects of medications; the deployment of non-specialists, including peers, to enhance the coverage and quality of care; digital technologies to support guided self-care and network patients; and collaborative care with case managers to address multiple morbidities [64]. Community-centered and person-centered approaches recognize that there is not a one-size-fits-all solution either for individuals or for communities. Interventions need to be designed and implemented in a way that focuses on adaptation and contextualization for the specific setting.

Personalized medicine approaches are needed not just for universal mental health coverage but for the full range of chronic conditions that include pain. This can be guided by what we have coined as the "5C approach" [64]: a Continuing or long-term plan recognizing that 'cures' are rare and the goal of care is to optimize the quality of life and health; person-Centered care focusing on what matters to the patient rather than what is the matter with the patient; Community orientation to be the primary platform for delivery of interventions, in particular those related to continuing care, engagement with families, and the broader community; Collaborative care with seamless coordination enabled by community health workers or case managers with primary care and specialist care providers to ensure quality and early 'stepping up' of the intensity of care when needed; and a Compassionate stance which instils hope, which is key to the biological mechanism of healing and a motivator for health promoting behaviors [10].

Conclusion

A significant investment of resources is needed in LMIC to enhance access to the full suite of evidence-based intervention options to address the enormous unmet needs for persons living with chronic pain. Investing in research and services in LMIC will also highlight what must be done to address the burden of chronic pain in HIC. Despite advanced health care infrastructure and a lower prevalence of risk factors in high-resource settings, the prevalence of chronic pain in some HIC is comparable to rates in LMIC. In the United States, one in three adults suffers from chronic pain [35]. Many of those Americans live in regions of the

country where political and business leaders do not prioritize mental health and affordable specialist providers are not available. This creates a context not dissimilar to LMIC. The challenges of addressing chronic pain in these regions are exacerbated by the opioid abuse crisis. For these settings, non-specialist delivery of contextually-sensitive psychological and psychosocial interventions offers one avenue to address pain and opioid misuse. Non-specialists who are familiar with local context are ideal to engage with families and communities and to integrate clinical interventions with local resources to address social determinants of chronic pain. The appropriate use of culturally-salient language would enable patients and families to buy-in to clinical interventions and social programs. Ultimately, global alliances among HIC and LMIC researchers and practitioners are a vital next step to enhance sharing of experiences in the common mission to confront the global burden of chronic pain.

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