



# A Call for Interdisciplinary Collaboration to Promote Musculoskeletal Health: The Creation of the International Musculoskeletal Mental and Social Health Consortium (I-MESH)

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## Abstract

Despite increasing recognition of psychosocial factors in musculoskeletal conditions, its impact on reducing the global toll of musculoskeletal symptoms has been only incremental. It is time to bring together clinicians and researchers with heterogeneous backgrounds, unified by a commitment to reduce the global impact of musculoskeletal illness by addressing mental and social health factors. In 2020, we initiated the International Musculoskeletal Mental and Social Health Consortium. Our current key priority areas are: (1) Develop best practices for uniform terminology, (2) Understand barriers to mental and social health care for musculoskeletal conditions, (3) Develop clinical and research resources. The purpose of this paper is to render a call to interdisciplinary collaboration on the psychological aspects of musculoskeletal health. We believe this international interdisciplinary collaboration is pivotal to the advancement of the biopsychosocial model of musculoskeletal care and has the potential to improve the health of individuals with musculoskeletal conditions globally.

**Keywords** Musculoskeletal · Biopsychosocial · Psychosocial · Mental health

Conditions affecting nerves, joints, bones, muscles, tendons, and ligaments and are the leading global cause of years lived with disability (“Musculoskeletal Conditions,” n.d.). The most common Musculoskeletal symptoms (MSKs) are pain and limitations in function including ability to work and meaningfully fulfill social roles, with negative consequences for individual mental well-being (USBJI, 2016). In the US, an estimate of 127 million Americans seek care annually

for a musculoskeletal condition, and these disorders cost an estimate of \$213 billion in annual treatment, care, and lost wages (USBJI, 2016). MSKs are prevalent across the life course, and their prevalence and impact is expected to rise as people live longer (Briggs et al., 2019). MSKs co-occur with other noncommunicable diseases (e.g., diabetes, obesity) further increasing burden on individuals and society (Simões et al., 2018).

Over the past century, we have categorized musculoskeletal disorders, identified biological and structural changes (e.g., objective pathophysiology and physical impairment), and made progress in determining the ability of medications, injections, and surgeries to alter the natural course of a disease (disease-modification) or alleviate symptoms (palliation) (Haldeman et al., 2012). For example, disease-modifying medications have transformed rheumatoid arthritis and greatly reduced operative treatment. Advances in technology have led to impactful surgical procedures such as hip and knee arthroplasty and improved fixation of fractures (Ochi et al., 2014; Schwartz et al., 2020).

There is also an increasing appreciation for the mental and social factors (e.g., emotional, psychological and social wellbeing) associated with variations in symptom intensity

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and magnitude of activity tolerance (i.e., *capability*) for a given pathology (Buscemi et al., 2017; Menzel, 2007; Szeverenyi et al., 2018; Vranceanu et al., 2009). More recently, we have learned that many medical treatments intended to address pathology (e.g., medications, injections, and surgeries) can also be harmful, particularly in the context of social and mental health concerns. Prominent examples are the epidemic of opioid misuse, overdose, and death related to over-prescription of opioids and the so-called “failed back surgery syndrome” (Crofford, 2010; Orhurhu et al., 2018; Rhon et al., 2020). For people who have difficulties coping with their persistent MSK pain, such as chronic non-specific low back pain and unremitting pain following total knee replacement, we have developed evidence-based psychological interventions (Ho et al., 2020; Lumley & Schubiner, 2019; Silva Guerrero et al., 2018; Whale et al., 2019) and have learned that it is more effective to target the *accommodation of pain* along with willingness to engage in activities of daily living regardless of level of pain, rather than to focus on pain alleviation (Evans et al., 2014; Hughes et al., 2017; McCracken, 2005; Talaei-Khoei et al., 2017a, 2017b). For example, individuals suffering from painful degenerative age-related conditions (e.g., arthritis) who have challenges coping, would benefit from interventions focused on helping them accommodate their pain (Evans et al., 2014; Scott et al., 2017). There is also evidence for comprehensive interdisciplinary musculoskeletal care programs with psychological components as viable options to improve MSKs and related conditions (e.g., opioid misuse) (Crouch et al., 2020; Kurklinsky et al., 2016).

While this progress has helped millions of people, its impact on reducing the global toll of persistent, troubling symptoms that motivate people to limit engagement in activities of daily living has been only incremental. This is true across medical illness. There are four main reasons for this. *First*, medical doctors and patients alike may be overly focused on eliminating rather than accommodating symptoms (Roditi & Robinson, 2011). Many musculoskeletal symptoms and their impact on activity level and engagement in life could be mitigated through healthy lifestyle factors including attention to sleep, diet, exercise, and good mental and social health. For example, diet, exercise, and sleep alleviate pain and improve capability in people with knee osteoarthritis (Messier, 2010; Vitiello et al., 2014), and exercise does the same for people with back pain (Gordon & Bloxham, 2016). While diet, sleep and exercise are more widely acknowledged, developing good habits for mental and social health merits more earnest consideration.

*Second*, when symptoms first develop, clinicians may often use outdated biomedical frameworks that focuses solely on identifying the biological underpinnings of disease without also anticipating and prioritizing assessment and conversations around the role of mental and social aspects of symptoms

and illness (Farooq et al., 2005; Gatchel & Schultz, 2014; Vranceanu et al., 2017). This is in spite of mounting evidence supporting the pivotal role of mental and social health factors in: (1) the onset of musculoskeletal conditions (Andreucci et al., 2020; Nahit et al., 2003), (2) the outcomes of medical procedures including surgeries (Simon et al., 2020; Vranceanu et al., 2010), (3) the development of persistent, troubling symptoms after acute injuries (e.g., fractures; Vranceanu et al., 2014); and (4) the impaired ability to accommodate symptoms from age-related changes (Niekel et al., 2009; Talaei-Khoei et al., 2017a, 2017b). By missing opportunities to prioritize assessment and treatment of mental and social factors early in treatment, we may contribute to the development of persistent troubling symptoms by medicalizing age-appropriate changes in the body (e.g., aging joints and tendons) or performing tests without clear hypotheses, often in low probability scenarios, and overemphasizing incidental findings that are not associated with symptoms (Belanger et al., 2015; Cheng et al., 2020; Darlow et al., 2017). Further, we inadvertently encourage patients to continue searching for an elusive pathophysiology and cure and becoming invested in the unhelpful and usually unattainable goal of becoming symptom free (Bernstein et al., 2019). This intense focus on symptoms comes at the expense of being engaged in one’s life and directly reinforces symptoms and disability (Malfliet et al., 2019). In the current system, mental and social health are often addressed as a last resort (Vranceanu et al., 2017) after multiple unhelpful medical tests and procedures, when people are conditioned to expect a cure or quick fix, their mental and social health has further deteriorated, the iatrogenic impacts such as the development of somatic symptoms and trauma and stress-related disorders have occurred, and psychosocial interventions are thus more resource intensive and less effective (Farooq et al., 2005; Wegener et al., 2017).

*Third*, although we have made strides with regard to mental and social health awareness, the stigma associated with mental and social health persists (Corrigan & Watson, 2002; Vranceanu et al., 2009). As a culture, we continue to view mental and social health concerns as flaws that need to be hidden, rather than universal human characteristics related to biology and circumstances, and amenable to change. As clinicians, we are often uncomfortable discussing these issues with our patients, and may inadvertently reinforce this stigma (A. M. Vranceanu et al., 2017; Zale et al., 2018). We find it easier to care for the body and often think that acknowledging or even caring for the mind is not our role (Dy et al., 2020).

*Fourth*, and perhaps most important, we are working in silos as clinicians and researchers, psychologists/psychiatrists, orthopedic surgeons, physical/occupational therapists, and others (Ernstzen et al., 2016). We stand to benefit from interdisciplinary collaborations. From cross-pollination between disciplines and also between clinicians intimately involved with patient care and researchers working

on optimizing evidence-based interventions and practices (Gereau et al., 2014; Patel et al., 2016; Peppin et al., 2015). Through collaboration and education across disciplines we can also reduce systemic barriers that hinder incorporation of mental and social health within medical care including challenges identifying trained providers, and a reimbursement model that disproportionally rewards biomedical approaches (Kotecha & Sites, 2013).

In 2020, in consideration of the aforementioned factors contributing to the unmet needs of patients with musculoskeletal conditions, we initiated the International Musculoskeletal Mental and Social Health Consortium to bring together clinicians and researchers with heterogeneous interests, expertise, years of experience and work settings, unified by a commitment to reduce the global impact of musculoskeletal illness by addressing mental and social health factors along with the pathophysiology. Thus far, the group has 40 members from organizations and universities within the USA (Massachusetts, California, Texas, Kentucky, Pennsylvania, North Carolina, Tennessee) and internationally (Canada, England, The Netherlands, and Australia). Professions include orthopedic surgeons, physical and occupational therapists, athletic trainers, clinical psychologists, social workers, epidemiologists, and strategists with varied expertise (e.g., clinicians and researchers) and levels of training from fellow to full professor. The enthusiasm for this initiative from diverse stakeholders in MSK care underscores the global importance of this multidisciplinary collaboration.

In our early meetings, using a consensus-based decision-making approach, we identified key priorities for I-MESH:

### **Review Terminology/Language and Develop Best Practices for Uniform Terminology**

There is currently an overall lack of clarity in terminology regarding constructs related to musculoskeletal health. Clinicians and researchers from different disciplines may often use different terms to address the same construct or use the same term to address different constructs. For example, the word “function” might imply motion and grip strength to a hand surgeon, a timed Jebsen test to a hand therapist, and ability to accomplish daily tasks to a psychologist or social worker. Important terms like disability, physical impairment, and physical function are often used interchangeably, but have different definitions (Greenberg et al., 2020). As a consequence, our patients may hear different messages from different providers, and our research papers may provide unclear or misleading conclusions because we do not clearly define our terms. Creating a nomenclature of uniform terminology for addressing different constructs and facets related to musculoskeletal health can help improve patient care and communication across disciplines, and also advance our science (De

Muinck Keizer et al., 2017; Halpern et al., 2001; Malik et al., 2018). I-MESH is currently using Delphi methods to reach a consensus on common terminology for common constructs related to musculoskeletal health (Hasson et al., 2000). And we anticipate this terminology may continue to evolve.

### **Understand Barriers (Patient, Provider and Systemic) to Mental and Social Health Care for MSK**

Although biopsychosocial models of care are superior to biomedical care in the management of illness including MSKs, incorporation of mental and social factors within the care of patients with MSKs has been slow (Vranceanu et al., 2017). This shortcoming has been echoed by experts in other areas of medicine (Chubak et al., 2012; Pudalov et al., 2018) which could reflect logistical barriers such as unavailability of psychological care services in MSK health-care settings (Castillo et al., 2016), and lack of trained mental health providers familiar with nuances of psychosocial factors in the context of comorbid MSK conditions (Pontone et al., 2019; Possis et al., 2016). Additionally, quantitative and survey research has documented that the majority of providers involved in MSK care are not comfortable discussing the psychosocial factors, or referring their patients for psychosocial care, and many feel that such referrals are outside of their training and skill repertoire (Wegener et al., 2017). Those who are interested in making referrals note challenges finding trained psychologists or social workers or face complex barriers to making timely referrals (e.g., long wait times, language barriers, time intensive paperwork) (Ehde et al., 2014; Vranceanu et al., 2019). Qualitative studies with stakeholders involved in MSK care may provide a more nuanced understanding of these factors (Briggs et al., 2019), but are currently lacking. With funding from the National Institute for Complementary and Integrative Health (NCCIH) (Vranceanu, 2021) and in direct alignment with this I-MESH goal, we are now conducting a large qualitative study with geographically diverse MSK providers across USA so that we can better understand barriers and facilitators to implementation of psychosocial care with the goal of developing solutions and prototypes for how to efficiently and effectively design biopsychosocial MSK models that allow for prioritizing mental and social factors just as much as physical health factors.

For example, stepped care models that match the level of individual patient needs to psychological resources would be ideal for the efficient and ethical management of MSKs (Bannuru et al., 2019; de Campos, 2017; Kongsted et al., 2020; Palylyk-Colwell & Wright, 2019; Smink et al., 2011). In these models, all new patients could be screened at first clinic appointment for psychosocial factors that are known to

impact the ability to adjust and accommodate symptoms. All patients would benefit from educational information around the interrelation among psychological, social and biological factors and normalization of the challenge of the MSK experience as part of shared decision-making about overall clinical care (Bannuru et al., 2019). Testing (X-rays, MRI), surgeries or other medical procedures should be only hypothesis driven (Smink et al., 2011). Individuals who endorse challenges with successful coping or emotional distress can be engaged in brief and easily deliverable skills interventions (e.g., live video or app-based), while those with mental health diagnoses could be referred for outpatient psychiatric care (Birnie et al., 2021). Individuals with complex social factors could be matched with social work support (Kongsted et al., 2020).

## Develop Clinical and Research Resources

Collaboration between experts from different disciplines of musculoskeletal health and clinicians and researchers is currently minimal. Interdisciplinary collaborative efforts are critical for achieving excellence in research and clinical practice related to musculoskeletal health (Gereau et al., 2014; Morshed et al., 2013; Patel et al., 2016; Pappin et al., 2015). The International Musculoskeletal Mental and Social Health Consortium aims to serve as catalyst to energize new multidisciplinary collaborations targeting prevention, and treatment of musculoskeletal illness in a scientifically informed manner. We also aim to promote clinical innovation by providing resources and facilitating transfer of knowledge across members. Examples of such efforts include developing a metadata of patients with musculoskeletal disorders which allows for more sophisticated analysis, forming working groups of experts from different disciplines to apply for funding for high impact studies, or establishing a peer support network for clinicians to get feedback on challenging cases (e.g., a listserv to post questions).

## Impact/Future Directions

The purpose of this paper is to render a call to interdisciplinary collaboration on psychological aspects of musculoskeletal health among professionals around the world. The global impact of musculoskeletal illness is increasing and our current treatment models are not fully meeting our patients' needs. We have an obligation to follow ethical principles of beneficence (promoting only good clinical care that is evidence-based and includes assessment and treatment of mental and social health factors), non-maleficence (avoiding unnecessary risks like tests, surgeries or other procedures), and justice (assuring health equity within clinical care).

Now is the time to break the silos among disciplines and work together to develop and implement science-based, comprehensive solutions that prioritize both the body and the mind. I-MESH is designed to serve as a catalyst for this agenda by providing a platform for collaboration and is open to everyone. The goal is to work together toward *excellence in research, clinical care, and training related to musculoskeletal health, so that we can improve the well-being and resilience of patients with musculoskeletal conditions globally*. The epidemiology, as well as research, training, and practice philosophies related to MSK conditions have a wide range of variations across the globe (Mody & Brooks, 2012; Safiri et al., 2021). To address this heterogeneity a combined etic-emic approach of acknowledging these differences with careful examination of regional determinants of MSK-related prevalence as well as research and practice methodologies is needed (Gardiner et al., 2020). I-MESH could serve as a hub of knowledge for experts across the globe while simultaneously evaluating the regional MSK healthcare and research needs. We welcome professionals from all over the world with various fields of expertise and backgrounds. We particularly welcome professionals from underserved regions and those from diverse cultural backgrounds who provide insight into culturally responsive practices. We also support advocacy efforts of members across the globe, which is critical to the growth of the consortium.

Future directions include addressing barriers to psychosocial care through intervention and policy change efforts such as embedding psychological services in MSK settings and establishing subspecialty training programs for MSK behavioral interventions (Sharp et al., 2018; Zdziarski-Horodyski et al., 2018), promoting effective use of technology to advance the prevention and treatment of psychosocial factors, establishing regionally/culturally informed guidelines for addressing psychosocial factors related to musculoskeletal health globally, as well as a reimbursement models that appropriately reward biopsychosocial approaches, and developing financial strength to provide funding for key areas of interest. We believe this international interdisciplinary collaboration is pivotal to the advancement of the biopsychosocial model of musculoskeletal care and has the potential to improve the health of individuals with musculoskeletal conditions globally.

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**Code Availability** Not applicable.

## Declarations

**Conflict of interest** Not applicable.

**Ethical Approval** All procedures performed were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was not applicable.

**Consent to Participate** Not applicable.

**Consent for Publication** Not applicable.

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