Strengthening health systems in low- and middle-income countries: Context and opportunities for musculoskeletal health

GLOBAL ALLIANCE FOR MUSCULOSKELETAL HEALTH

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1 INTRODUCTION

MUSCULOSKELETAL HEALTH IN LOW- AND MIDDLE-INCOME COUNTRIES

Musculoskeletal (MSK) health refers to the health of a person's locomotor system; comprising muscles, bones, joints and adjacent connective tissues. MSK health impairments include more than 150 discrete conditions (e.g. arthritis, gout, osteoporosis and fragility fractures, sarcopenia, auto-immune and rheumatic conditions), pain associated with MSK tissues/structures or presenting in MSK tissues/structures (e.g. low back pain, neck pain, fibromyalgia) and injury and trauma of the MSK system (e.g. sporting, occupational and road traffic injury and trauma).

A healthy MSK system is fundamental to people's mobility, dexterity, physical function, participation and quality of life[1]. MSK health impairments are associated with pain, disability, reduced ability to work, study and care for self and others, increased health resource utilisation and for many people, premature exit from the workforce leading to reduced retirement wealth[2,3] and increased likelihood of poverty[4,5]. These outcomes have profound impacts on a person's quality of life and on the prosperity of families and communities, particularly in low- and middle-income countries (LMICs). Critically, in LMICs, prevalent MSK conditions are associated with increased odds of poverty and catastrophic health expenditure[6–9].

MSK health impairments are relevant and impactful across the life-course. Children are affected by auto-immune, congenital, developmental and injury-related MSK conditions with substantial unmet healthcare needs in LMICs[10]. Unmet MSK healthcare needs in children can result in profound long-term consequences for their physical, emotional and social development and participation[11].

MSK conditions are the leading cause of pain and disability worldwide, with low back pain identified as the single condition responsible for the greatest disability in almost all countries[12]. Of all condition groups, the need for rehabilitation is greatest for MSK conditions across all countries, based on disability burden[13].

Population health surveillance data suggest the prevalence, burden and cost of MSK health impairments will continue to rise globally, especially in LMICs, owing to higher rates of population growth and ageing, an increasing prevalence of risk factors for non-communicable diseases (NCDs) and increasing rates of MSK injury and trauma due to occupational injury, road traffic trauma and interpersonal violence in these settings[12, 14].

The rate of increase in disease burden for MSK conditions and transport injuries per 100,000 population is greater in LMICs compared with high-income settings[12,14]. Current estimates of MSK-attributed disability burden most likely underestimate the true burden, since injury and trauma and pain conditions manifesting in MSK structures are estimated separately, with primary prevalence and incidence data unavailable for many LMICs[15–17]. Figure 1 illustrates the high MSK-attributed disability burden across World Bank regions, with MSK health conditions the leading condition group in lower-middle and upper-middle income countries and the third-leading condition in lower income countries (following other NCDs and mental health conditions). MSK conditions are also among the leading causes accounting for more than 75% of disease burden attributed to NCDs and injuries for the poorest billion people aged 5–40 years and greater than 40 years of age[18].

Both sexes, All ages, 2019, YLDs per 100,000

	WB LI	WB LMI	WB UMI	WB HI
Mental disorders	1	2	2	2
Other non-communicable	2	3	3	3
Musculoskeletal disorders	3	1	1	1
Nutritional deficiencies	4	5	15	16
Neurological disorders	5	6	5	4
NTDs & malaria	6	14	20	21
Skin diseases	7	8	8	10
Sense organ diseases	8	4	4	7
Maternal & neonatal	9	11	13	15
Chronic respiratory	10	9	10	8
Diabetes & CKD	11	7	6	6
Unintentional injury	12	10	9	5
Respiratory infections & TB	13	15	16	17
Cardiovascular diseases	14	12	7	9
Self-harm & violence	15	19	19	19
Enteric infections	16	18	18	18
HIV/AIDS & STIs	17	21	21	20
Substance use	18	17	11	11
Transport injuries	19	13	14	14
Digestive diseases	20	16	12	13
Other infectious	21	20	22	12
Neoplasms	22	22	17	12

Figure 1: Top ranked causes of disability, measured as the years lived with disability (YLDs) rate per 100,000 population across World Bank (WB) regions for all ages and both sexes in 2019. Source: Institute for Health Metrics and Evaluation (https://www.healthdata.org/gbd/data-visualizations), accessed 4 March 2022. LI: low income; LMI: lower-middle income; UMI: upper middle income; HI: high income. NTDs: neglected tropical diseases; CKD: chronic kidney disease; TB: tuberculosis; HIV/AIDS: human immunodeficiency virus/acquired immunodeficiency syndrome; STIs: sexually-transmitted infections.

The demand for health services for MSK health impairments will continue to rise and the economic impacts of lost human capital will increase dramatically in LMICs. These sobering projections paint a stark warning to health systems and economies globally and particularly in LMICs. Health systems strengthening efforts are urgently needed across LMICs to improve the prevention and management of MSK health impairment and arrest the escalating disability and economic burden[14,19,20].

RESPONDING TO THE HEALTH, SOCIAL AND ECONOMIC BURDEN ATTRIBUTED TO MUSCULOSKELETAL HEALTH IMPAIRMENT IN LOW- AND MIDDLE-INCOME COUNTRIES

Health systems strengthening refers to actions that aim to improve one or more of the functions of health systems – leading to better health through improvements in access, coverage, quality or efficiency and should address more than one of the six building blocks of health systems[21,22]. While evidence for health systems strengthening interventions for LMICs is emerging[22,23], this evidence relates to more strongly prioritised health challenges such as communicable, maternal, neonatal and nutritional diseases. Evidence related to the specific context for MSK health in LMICs is nascent. Our current understanding of, and evidence for, health systems strengthening responses for MSK health impairments are typically derived from high-income countries. For example, health policy response evaluations have only been investigated in high-income settings[24–27], creating uncertainty about the MSK-relevant policy landscape in LMICs.

This context highlights a significant knowledge gap in co-creating and implementing solutions with LMICs. A contextual understanding of specific challenges and opportunities for health systems strengthening initiatives for MSK health in LMICs is needed.

In 2021, the Global Alliance for Musculoskeletal Health (G-MUSC) published a seminal report that outlined a roadmap to health systems strengthening for MSK health globally[28]. The report, Towards a global strategy to improve musculoskeletal health, was informed by a program of participatory research (678 stakeholders across 72 countries) designed to empirically derive 8 Pillars for Action, supported by 59 detailed actions[24,29]. The research involved:

- **Phase 1:** detailed qualitative study that sampled 31 international key informants (KIs) to generate insights into the current landscape for the prevention and management of MSK health globally.
- **Phase 2:** scoping review of MSK health policies from the 30 most populous nations.
- **Phase 3:** global eDelphi to iterate a framework of actions, derived from phases 1 & 2.

While the roadmap provides critical direction for a global response to improving MSK health, considerations specific to LMICs were not reported in detail. This report describes research that fills this knowledge gap, specific to the LMIC context and should be considered alongside the global report.

2

ABOUT THIS REPORT

What is this report about?

This report describes a program of research that extends on research previously conducted through a global lens[28], to explore in greater detail the context, challenges and opportunities for health systems strengthening for MSK health in LMICs. The report describes two components:

Part 1: a secondary analysis of qualitative data collected from KIs who resided in a LMIC (phase 1 from primary study – see page 4)[28]; and

Part 2: a primary content analysis of health policies from select LMICs represented in Part 1.

Who is this report for?

The report is primarily intended for stakeholders tasked with designing, implementing, financing and evaluating health system strengthening responses for NCDs and injury and trauma across the life-course in LMICs. The report highlights *why, where and how* MSK fits in this context. The report can be used as an advocacy resource to elevate the priority of MSK health and as a tool to guide decisions and actions about health systems strengthening responses for MSK health.

The report is framed to be relevant to citizens, healthcare providers, educators and researchers. The report is intended to support the work of the World Health Organization (WHO), other global health agencies or societies and policy makers and health service managers at national and sub-national levels.

3 DEVELOPING THIS REPORT

Part 1

Objective

To understand the landscape (context), challenges and opportunities for health systems strengthening responses for MSK health in select LMICs.

Method

We performed a secondary analysis of qualitative data previously collected as part of a project examining these issues within a global context[24,29]. Specifically, we selected transcripts of interviews with KIs who were residents in a LMIC at the time of data collection or who discussed their professional experience from previously working in a LMIC. Ten KIs were living across 9 LMICs at the time of data collection (Argentina, Bangladesh, Brazil, Ethiopia, India, Kenya, Malaysia, Philippines and South Africa). Two were no longer residing in a LMIC but had explicitly discussed their prior work experience in a LMIC, including Botswana, Dominican Republic, India and Tanzania. Profiles of these 12 countries are provided in Table 1.

Our approach followed best practice principles for secondary analysis of qualitative data[30]. Data were thematically analysed and iteratively refined by the project team. The thematic analysis derived 5 meta-themes, each supported by number of sub-themes, framed as either a 'challenge' or 'opportunity'. Further information about the methods used is provided in the accompanying research publication[31].

Part 2

Objective

To derive a snapshot of priorities and strategies described in national health policies for integrated prevention and/or management of NCDs across select LMICs.

Method

We performed a primary systematic content analysis of health policy documents focused on integrated prevention and/or management of NCDs among the 9 LMICs represented in Part 1, aligned to where KIs were resident at the time of data collection and following previously developed methods[25]. We considered content analysis of policies targeting NCDs to be the most appropriate policy area for MSK health, consistent with prior research[25].

Eligible policy documents were identified from a number of sources including:

1. Extraction from the WHO NCD document repository.
2. Extraction from the WHO MiNDbank database.
3. Desktop Internet search by the project team using Google and by country investigators on the Ministry of Health website for each country and/or liaison with national Ministry of Health contacts.

Text data from each policy were extracted using a previously-developed policy content analysis process[25], in accordance with READ guidelines[32]. We applied and extended a previously developed coding framework to summarise the strategies proposed in each policy[25]. Further information about the methods used is provided in the accompanying research publication[31].

Table 1: Summary table of sociodemographic and health characteristics of the 12 represented LMICs. Data are based on UN World Population Prospects for 2020 and Global Burden of Disease 2019 health estimates. Reproduced from Briggs et al under a Creative Commons licence (CC BY-NC)[31].

Country	World Bank Region[a]	World Bank economic band (fiscal year 2022)[a]	Land area (km^2)[b]	Population total (both sexes) in '000[c]	Population density (per km^2)[d]	Under-five mortality rate[e]	% total disability-adjusted life years (DALYs) 2019 attributed to MSK health condition (95% UI); rank[f]	Percentage of total population by broad age bands (years) per 100 total population[g]					
								0–14	15–24	25–49	50–64	65–74	75+
Argentina	Latin America & the Caribbean	Upper-middle	2,736,690	45,196	16.5	8.7	8.77 (6.09–10.75); #3	24.4	15.5	34.7	14.0	6.6	4.8
Bangladesh	South Asia	Lower-middle	130,170	164,689	1265.2	29.1	6.86 (5.32–8.44); #4	26.8	18.7	37.5	11.8	3.1	2.1
Botswana^	Sub-Saharan Africa	Upper-middle	566,730	2,352	4.1	41.6	2.41 (1.77–3.09); #14	33.4	18.3	35.1	8.7	3.2	1.3
Brazil	Latin America & the Caribbean	Upper-middle	8,358,140	212,559	25.4	14.7	7.32 (5.98–8.85); #4	20.7	15.7	38.1	15.9	6.0	3.6
Dominican Republic^	Latin America & the Caribbean	Upper-middle	48,310	10,848	224.5	33.8	4.69 (3.45–6.07); #8	27.4	17.5	34.6	12.9	4.6	2.9
Ethiopia	Sub-Saharan Africa	Low	1,129,300	114,964	115.0	48.7	2.14 (1.57–2.76); #15	39.9	21.5	28.3	6.8	2.4	1.1
India	South Asia	Lower-middle	2,973,190	1,380,004	464.1	32.6	4.80 (3.75–5.92); #9	26.2	18.0	36.4	12.8	4.5	2.1
Kenya	Sub-Saharan Africa	Lower-middle	569,140	53,771	94.5	41.9	2.63 (1.99–3.35); #14	38.6	20.9	31.1	6.9	1.9	0.6
Malaysia	East Asia & Pacific	Upper-middle	328,550	32,366	98.5	8.6	7.44 (5.72–9.17); #3	23.4	17.1	38.8	13.5	4.9	2.3
Philippines	East Asia & Pacific	Lower-middle	298,170	109,581	367.5	26.4	6.19 (4.73–7.74); #7	30.0	18.8	34.0	11.6	3.8	1.7
South Africa	Sub-Saharan Africa	Upper-middle	1,213,090	59,309	48.9	32.2	2.79 (2.16–3.51); #11	28.8	16.6	37.8	11.3	3.8	1.7
United Republic of Tanzania^	Sub-Saharan Africa	Lower-middle	885,800	59,734	67.4	48.9	2.01 (1.50–2.59); #15	43.6	19.6	27.7	6.5	1.9	0.7

^ Country not included in the Part 2 analysis.

(a) https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

(b) 2020 estimates (World Bank). Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf and exclusive economic zones. In most cases the definition of inland water bodies includes major rivers and lakes. https://data.worldbank.org/indicator/AG.LND.TOTL.K2?end=2020&start=2020&view=map&year=2020

(c) De facto population in a country, area or region as of 1 July 2020. Figures are presented in thousands (https://population.un.org/wpp/Download/Standard/Population/)

(d) 2020 estimate (https://population.un.org/wpp/Download/Standard/Population/)

(e) Probability of dying by age 5 per 1,000 live births. 2019 estimates https://www.who.int/data/gho/data/countries

(f) GBD health estimates for 2019, Institute for Health Metrics and Evaluation https://vizhub.healthdata.org/gbd-compare/

(g) Percentage of total population by broad age groups. De facto population as of 1 July 2020. Figures are expressed per 100 total population (https://population.un.org/wpp/Download/Standard/Population/)

4 OVERVIEW OF RESULTS

PART 1: SECONDARY ANALYSIS OF QUALITATIVE DATA

12 transcripts were analysed based on interviews with 12 KIs resident, or with professional experience, in a LMIC. Table 2 summarises the KI characteristics.

Table 2: Demographic and geographic profile of the KIs (n = 12)

Sampling categories[#]	Demographic characteristics
• Person with a lived experience of an MSK condition or persistent MSK pain: n = 2 • Global or international clinical/professional organisation relevant to MSK health, persistent pain care and/or injury and trauma: n = 9 • Global or international advocacy organisation relevant to MSK health, persistent pain care, injury and trauma, ageing, NCDs or health systems strengthening: n = 4 • Thought leader in health system reform or health policy relevant to MSK health, persistent pain, or injury and trauma: n = 3 • World Health Organization: n = 1	Mean (SD) age, range: • 57.6 (11.3), 41–77 years Mean (SD) years of experience in healthcare, range: • 29.7 (11.7), 10–45 years Registered clinicians • 10 (83%)

8 clinical disciplines	12 LMICs included
Chiropractic: n = 1 Neurology: n = 1 Orthopaedic or trauma surgery: n = 1 Paediatric rheumatology: n = 1 Physical medicine and rehabilitation: n = 1 Physiotherapy: n = 1 Public health medicine: n = 1 Rheumatology: n = 3	Argentina Bangladesh Botswana[^] Brazil Dominican Republic[^] Ethiopia India Kenya Malaysia Philippines South Africa United Republic of Tanzania[^]

[#] Groups are not mutually exclusive, meaning a KI could identify as representing one or more of the sampling categories.

[^] KIs representing these nations were not resident at the time of data collection, but explicitly referred to their experience in working in these settings.

MSK: musculoskeletal

The LMIC-specific findings from the qualitative analysis are summarised in Figure 2. The findings are organised across 5 meta-themes, each supported by a number of themes and sub-themes. The full suite of themes and sub-themes are provided in an accompanying research publication[31], which identified novel LMIC-specific findings and shared findings with the parent global analysis study.

SUMMARY OF CHALLENGES AND OPPORTUNITIES FOR HEALTH SYSTEMS STRENGTHENING IN MUSCULOSKELETAL HEALTH IN LOW- AND MIDDLE-INCOME COUNTRIES

META THEMES | **KEY THEMES** | ⚠ Challenges | Opportunities

1 MSK health is a lower priority in LMICs

1 LMICs face a complex health landscape with a priority on prevention and control of communicable, maternal, neonatal and nutritional diseases (CMNNDs) and health conditions associated with high mortality

- ⚠ CMNNDs remain the priority in LMICs given the high prevalence and mortality rates, particularly in children.
- ⚠ LMICs face a dual and competing burden of CMNNDs and NCDs as part of the complex health landscape.
- Raise the profile of MSK health and focus on the cost of disability and the socio-economic benefits associated with early and effective management of MSK conditions, particularly in children.

2 Integrated local surveillance systems to monitor MSK conditions and their impacts are needed in LMICs to provide data to guide health policy decisions

- ⚠ LMICs lack local surveillance systems to generate reliable data about the prevalence, incidence and impacts of MSK health impairments to advance MSK health as a priority area.

3 Promoting and prioritising MSK health at the national government level in LMICs

- ⚠ Political instability inhibits sustained prioritisation of chronic NCDs such as MSK conditions.
- Coordinate advocacy and lobbying from patient advocacy groups and organisations, health professional organisations and community champions to raise the profile of MSK conditions in LMICs.

4 Awareness and education of MSK health is needed to better understand the suite of conditions and how to address prevention and management in LMICs

- ⚠ "Musculoskeletal" health is a poorly understood term, which makes it difficult for decision-makers to understand the breadth and impact of MSK impairments.
- ⚠ Sedentary lifestyle is an emerging risk factor in LMICs, particularly in relation to prevention of MSK conditions in children and young people.
- Prioritise initiatives to help raise awareness about the importance of prevention of MSK conditions in specific settings (e.g. workplaces).

Figure 2: Summary of challenges and opportunities for health systems strengthening in MSK health in low- and middle-income countries (LMICs), derived from Part 1. Key themes (1–8) are summarised alongside each meta theme with the unique opportunities (in green) and challenges (in orange) listed underneath each theme. Data presented reflect the challenges and opportunities that are novel or have nuances relevant to LMICs. The full suite of data is presented in an accompanying publication[31].

META THEMES

KEY THEMES

Challenges

Opportunities

2 Social determinants adversely affect MSK health in LMICs

5 Socioeconomic factors that impact on a person's health in LMICs

- ⚠ Health inequities and barriers to care for MSK health in LMICs are driven largely by socioeconomic, geographic and knowledge-based factors.
- Educate the general population about when and how to access and navigate the healthcare system for MSK health.
- Increase telehealth across LMICs, supported by evidence, to reduce inequities in access to healthcare services, particularly for those individuals who face care inequities due to geography.

3 Healthcare system issues further contribute to MSK health as a low priority

6 Health system capacity in LMICs to provide care for MSK conditions

- ⚠ LMICs often lack strong primary care, rehabilitation and surgical facilities, and consequently, do not have the capacity or resources to provide comprehensive and integrated MSK care.
- Prioritise community-based programs for improving MSK care in LMICs.

7 MSK-specialised workforce in LMICs

- Emphasise screening for MSK conditions in LMICs to facilitate early recognition, diagnosis and timely treatment, and prevent severe disability, particularly in children.

4 Economic realities in LMICs restrict system capacity to direct and mobilise resources towards MSK health

8 Allocating resources towards MSK conditions in LMICs

- Innovative financing models to support LMICs to mobilise and direct resources to MSK health and care are needed, including:
  - (a) Financing partnerships with industry/private sector or international agencies.
  - (b) Taxation models to raise revenue to direct towards MSK injury and other innovative financing models for non-traumatic MSK health conditions.
  - (c) Budget allocations must consider making effective treatments more affordable and address funding for MSK work-related injuries, including assistance for workplace accommodations.

5 Build research capacity in LMICs

9 Research opportunities

- Develop and test interventions and models of care that are locally contextualised (feasible and culturally appropriate) in LMICs.

PART 2: PRIMARY CONTENT ANALYSIS OF NATIONAL HEALTH POLICIES

Twelve policies met the inclusion criteria for the review from across the 9 LMICs included[33–44], as summarised in Table 3. Across the 9 LMICs, all had policies that considered cardiovascular disease, diabetes and respiratory conditions and most also considered cancer. None explicitly reported a strategic priority area on MSK conditions or non-cancer pain (Figure 3).

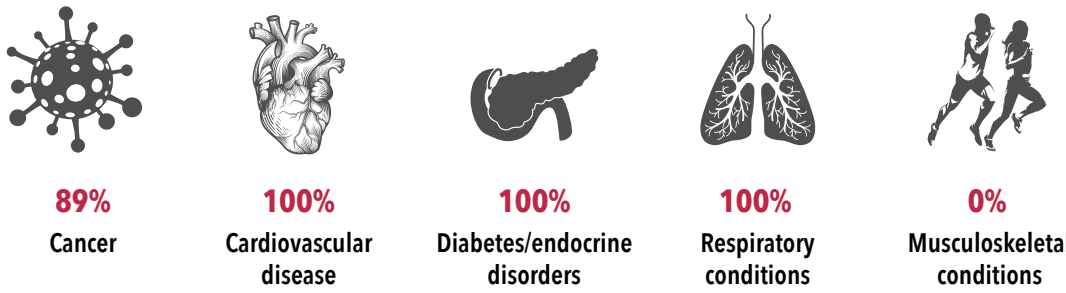


Figure 3

The other disease or health state strategic foci reported across the policies, by country, are summarised in Figure 4.

Nation	Number of policies	Cardiovascular diseases	Diabetes	Respiratory conditions	Cancer	Neurological or neurodevelopmental conditions	Mental health conditions	Oral health conditions	Chronic kidney disease	Cerebrovascular disease	Hypertension	Skin diseases	Auditory health conditions	Auto-immune diseases (unspecified)	Blood/bleeding disorders	Musculoskeletal conditions or non-cancer pain	Injury/accidents, including occupational health	Diseases associated with substance abuse	Injury associated with environmental toxins, venom/animal injury, acids, drowning or burns	Disability in general	Conditions associated with climate change	Healthy ageing	Chronic communicable diseases (e.g. tuberculosis, rheumatic fever, rheumatic heart disease)
Argentina	2	●	●	●	●					●							●						
Bangladesh	2	●	●	●	●	●	●	●					●				●	●	●	●	●	●	
Brazil	1	●	●	●	●			●									●						
Ethiopia	1	●	●	●					●														
India	2	●	●	●	●				●	●	●												●
Kenya	1	●	●	●	●	●	●	●	●			●		●	●		●						
Malaysia	1	●	●	●	●																		
Philippines	1	●	●	●	●																		
South Africa	1	●	●	●	●	●	●																
Counts	12	9	9	9	8	3	3	3	3	2	1	1	1	1	1	0	4	1	1	1	1	1	1
% by country	–	100	100	100	88.9	33.3	33.3	33.3	33.3	22.2	11.1	11.1	11.1	11.1	11.1	0	44.4	11.1	11.1	11.1	11.1	11.1	11.1
		Non-communicable diseases															**Other acute & chronic health conditions**						

Figure 4: Frequency map, by country, of stated strategic foci across policies for non-communicable diseases (left panel) and other included acute and chronic health conditions (right panel). Adapted from Briggs et al under a Creative Commons licence (CC BY-NC)[31].

Table 3: Summary of included national integrated noncommunicable diseases health policy documents (n = 12) in Part 2. Adapted from Briggs et al under a Creative Commons licence (CC BY-NC)[31].

Nation [World Bank income band; region^]	Policy title (year of publication); timespan	Scope (NCD prevention; NCD management; both)	Aim or vision	MSK* cited in background (yes/no)	MSK* health explicitly included in policy scope				Stated objectives or strategies relevant to prevention or management of MSK health (all; some; none)	Internal validity score (0–14)
					MSK conditions	Mobility or functional impairment	Persistent non-cancer pain	Injury or trauma		
Argentina [upper middle; Latin America & the Caribbean] [41]	Resolution 1083/2009: Approve the National Strategy for the Prevention and Control of Noncommunicable Diseases and the Healthy Argentina National Plan (2009); n/a†	Prevention + management	To reduce the prevalence of risk factors and death from chronic NCDs in the general population, through health promotion, reorientation of services for health and surveillance of NCDs and risk factors. The Healthy Argentina National Plan also aims to coordinate population-based actions aimed at comprehensively combating the main risk factors for chronic NCDs, such as physical inactivity, poor diet, and tobacco use.	yes	✗	✗	✗	✓	all	10
Argentina [upper middle; Latin America & the Caribbean] [40]	Estrategia Nacional de Prevención y Control de Enfermedades No Transmisibles (2013); n/a†	Prevention only	To make available to local governments a series of strategies, resources and effective tools to prevent chronic NCDs at the community level.	yes	✗	✗	✗	✗	all	8
Bangladesh [lower middle; South Asia] [33]	Multisectoral Action Plan for Prevention and Control of Noncommunicable diseases 2018–2025 (2018); 2018–2025	Prevention + management	To contribute towards making Bangladesh free of the avoidable burden of NCD deaths and disability.	yes	✗	✗	✗	✗	some	13
Bangladesh [lower middle; South Asia] [35]	Fourth Health, Population and Nutrition Sector Programme (4th HPNSP) Operational Plan – Non-communicable Diseases. January 2017 – June 2022 (2017); 2017–2022	Prevention + management	To reduce mortality and morbidity of NCDs in Bangladesh through control of risk factors and improving health service delivery.	yes	✓	✓	✗	✓	some	11
Brazil [upper middle; Latin America & the Caribbean] [42]	Plano de Ações Estratégicas para o Enfrentamento das Doenças Crônicas e Agravos Não Transmissíveis no Brasil, 2021–2030 (2021); 2021–2030†	Prevention + management	To present a guideline for the prevention of risk factors for NCDs and for the promotion of health of the population, aiming to solve health inequalities.	yes	✗	✗	✗	✓	all	9

Nation [World Bank income band; region^]	Policy title (year of publication); timespan	Scope (NCD prevention; NCD management; both)	Aim or vision	MSK* cited in background (yes/no)	MSK* health explicitly included in policy scope				Stated objectives or strategies relevant to prevention or management of MSK health (all; some; none)	Internal validity score (0–14)
					MSK conditions	Mobility or functional impairment	Persistent non-cancer pain	Injury or trauma		
Ethiopia [low; Sub-Saharan Africa][38]	National Strategic Action Plan for the Prevention and Control of Major Non-communicable Diseases 2013–2017 EFY (2020/21–2024/25) (2020); 2020–2025	Management only	To see healthy, productive and prosperous Ethiopians free from preventable and avoidable NCDs.	yes	✗	✗	✗	✗	some	13
India [lower middle; South Asia] [34]	National Multisectoral Strategic Plan for the Prevention and Control of Noncommunicable Diseases 2017–2022 (2017); 2017–2022	Prevention + management	All Indians enjoy the highest attainable status of health, well-being and quality of life at all ages, free of preventable NCDs and premature death.	no	✗	✗	✗	✗	all	12
India [lower middle; South Asia] [36]	National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke: Operational Guidelines (Revised: 2013–17) (2013); 2013–2017	Prevention + management	Awareness generation for behaviour and life-style changes, screening and early diagnosis of persons with high level of risk factors and their referral to appropriate treatment facilities i.e. Community Health Centres and District Hospital for management of NCDs.	no	✗	✗	✗	✗	some	5
Kenya [lower middle; Sub-Saharan Africa] [37]	National Strategic Plan for the Prevention and Control of Non-Communicable Diseases 2021/22–2025/26 (2021); 2021–2026	Prevention + management	To halt and reverse the rising burden of NCDs through effective multisectoral collaboration and partnerships by ensuring Kenyans receive the highest attainable standard of NCD continuum of care that is accessible, affordable, quality, equitable and sustainable; thus, alleviating suffering, disease and death for their well-being and socio-economic development.	yes	✗	✗	✗	✓	some	13

Nation [World Bank income band; region^]	Policy title (year of publication); timespan	Scope (NCD prevention; NCD management; both)	Aim or vision	MSK* cited in background (yes/no)	MSK* health explicitly included in policy scope				Stated objectives or strategies relevant to prevention or management of MSK health (all; some; none)	Internal validity score (0–14)
					MSK conditions	Mobility or functional impairment	Persistent non-cancer pain	Injury or trauma		
 **Malaysia** [upper middle; East Asia & Pacific] [39]	National Strategic Plan for Non-Communicable Disease: Medium Term Strategic Plan to Further Strengthen the NCD Prevention and Control Program in Malaysia (2016–2025) (2016); 2016–2025	Prevention + management	To reduce the burden of NCDs in Malaysia.	no	✖	✖	✖	✖	all	8
 **Philippines** [lower middle; East Asia & Pacific] [44]	Philippine Multisectoral Strategic Plan for the Prevention and Control of Non-Communicable Diseases 2017–2025 (2016); 2017–2025	Prevention + management	To attain a Philippines free of the preventable burden of NCDs through addressing risk factors and promoting healthier environments.	no	✖	✖	✖	✖	some	9
 **South Africa** [lower middle; Sub-Saharan Africa] [43]	National Strategic Plan for the Prevention and Control of Non-communicable Diseases 2022–2027 (2022); 2022–2027	Prevention + management	A long and healthy life for all through equitable access to prevention and control of NCDs. To provide integrated people-centred interventions, to promote health and wellness, prevention and control for South Africa through a strengthened national response to reduce avoidable and premature NCDs+ morbidity, disability and mortality with the framework of the Sustainable Development Goals.	yes	✖	✖	✖	✖	some	13

^ Based on 2022 fiscal year classifications by the World Bank https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

† Document translated from national language to English.

MSK: refers to musculoskeletal (MSK) conditions, mobility/functional impairment, persistent non-cancer MSK pain, or injury/trauma.

n/a: not applicable.

NCD(s): non-communicable disease(s).

Eight (67%) policies made some reference to MSK health in their background commentaries. Although MSK health was under-represented as a specific strategic priority area across the policies, one or more of the actions/strategies outlined for NCD prevention or management in each policy were relevant to the prevention and management of MSK health impairment. This highlights the opportunity for more explicit integration of MSK health into NCD policy. Importantly, a number of policies included within-policy actions or strategies applicable to the prevention or management of MSK health impairment. Most of these actions/strategies were aligned to injury/trauma care (4 policies), while one Bangladeshi policy also considered mobility and specific MSK conditions (Table 3). The specific strategies described across the policies to achieve the stated aims for NCD prevention and management were thematically analysed and organised into 3 overarching categories:

1. General principles for people-centred NCD care.
2. Service delivery.
3. System strengthening.

The components of each of these are described in the accompanying research publication[31].

5

IMPLICATIONS AND RECOMMENDATIONS

Key insights

Collectively, our results highlight in the select LMICs included in the research, the relative lack of prioritisation of MSK health, beyond injury and trauma care, compared to other NCDs. A confluence of limited financial, human and health infrastructure resourcing and performance targets of the Sustainable Development Goals likely contribute to a selective health system strengthening focus on communicable, maternal, neonatal and nutritional diseases; other NCDs associated with premature mortality; and injury and trauma care, *leaving MSK health deprioritised*.

In the Part 1 analysis, KIs identified a number of challenges to elevating the priority status of MSK health in LMICs, including frequent political instability; an absence of MSK-specific policy responses; inadequate reliable local health surveillance data on MSK health impairment, prevalence and impact; and limited population awareness of MSK health and effective management strategies. The Part 2 health policy analysis mirrors these perspectives, identifying a very limited explicit focus on MSK health within the broader NCD policy foci. This context exists despite global health estimates suggesting the burden of disease attributed to MSK health impairment will likely accelerate in LMICs with higher rates of population ageing, greater likelihood of socioeconomic disadvantage and an increased risk factor prevalence for NCDs (such as obesity and reduced physical activity) and road traffic trauma compared to high-income nations[12,13,15,19,45–48].

What are the potential ways forward?

Critically, results from this mixed-methods project signal opportunities for targeted health systems strengthening initiatives that can benefit MSK health in LMICs. In high-income settings, such as the Member States of the Organisation for Economic Co-operation and Development (OECD), MSK health is more frequently and explicitly prioritised[25]. In contrast, the NCD health policy focus in LMICs is oriented towards NCDs aligned with mortality and injury and trauma. However, we identified that the general strategies described in integrated NCD policies have some relevance to improving prevention and/or management of MSK health impairment. This highlights a key opportunity to more explicitly integrate MSK health into policy evolution for NCDs. Seeking synergies for integrating MSK care with prevention and control of NCDs more broadly, appears a rational, efficient, sustainable and appropriate response. In some contexts, this could extend to injury and trauma, for example, in revenue models for financing rehabilitation for MSK impairments. Such integration is consistent with the principles of *development effectiveness*, where integration with existing systems and infrastructure is preferred over establishing new systems, particularly in LMICs[26,49,59]. A focus on implementation research will be important to evaluate processes, barriers and enablers to policy evolution and implementation. This is particularly relevant to LMICs where research is limited.

Key recommendations

Findings from the current study point to specific opportunities and priorities in LMICs. These are summarised below, with recommendations aligned with evidence for health systems strengthening in LMICs[22].

Engage, empower and educate communities and governments of LMICs: focus on costs attributed to lost participation and health loss, particularly in children. Here, public health messaging should include prevention opportunities and the relevance of current global NCD-focused public health initiatives to MSK care (e.g. WHO 'Best Buys' and 'Package of Essential Noncommunicable Disease Interventions for Primary Health Care in Low-Resource Settings'[50,51]).

Governance: integrate MSK health as a priority area within current and emerging national and sub-national NCD and injury and trauma rehabilitation policy. At a global level, increased collaboration between internal programmatic areas in World Health Organization (WHO) (e.g. disability and rehabilitation, assistive technologies and medical devices, NCDs, ageing, injury care, occupational health) may support greater attention to, and prioritisation of, MSK health impairment at a whole-of-agency level, and ultimately in LMICs. Policy evolution may also be informed by learning from the prioritization of other NCDs in the global health agenda and the framework suggested by Shiffman and Smith for global health advocacy and prioritization[52,53].

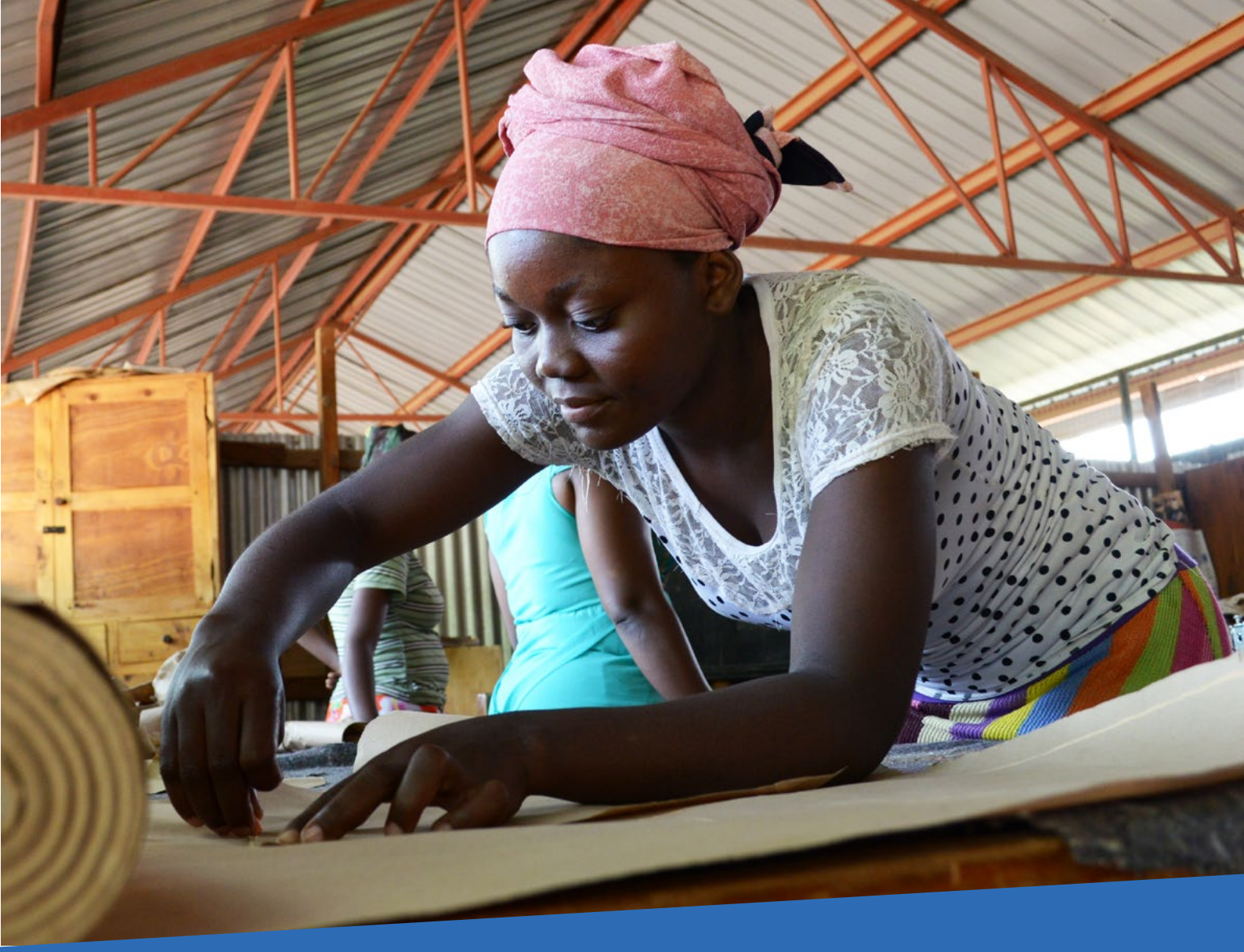
Build capacity in existing NCD service models: extend current service models for NCD and injury care to include MSK health conditions more broadly, with a focus on early screening and intervention in primary care, particularly for children. Further, supporting locally-adapted implementation of emerging global opportunities that are MSK-relevant, including the WHO Package of Interventions for Rehabilitation of MSK conditions[54], the WHO ICOPE service model[55], WHO and UNICEF Global Report on Assistive Technology[56] and WHO Guidelines on chronic primary low back pain will help to build service-level and workforce capacity in MSK healthcare delivery in LMICs.

Financing: create sustainable revenue streams for NCD and injury care in LMICs that include MSK care. This will help to ensure care accessibility and access to essential medicines, laboratory services and rehabilitative therapies. Innovative financing solutions such as taxation and redistribution strategies will be important, supported by evidence for cost-effectiveness and health benefit[57].

Surveillance: build secure infrastructure and systems to collect population-level MSK health impairment prevalence and impact data in LMICs. This is important given the limited primary prevalence data for MSK health conditions across LMICs[16,17]. A greater representation of MSK epidemiology studies from LMICs in regional and global health journals, measurement of MSK health in intrinsic capacity assessment for healthy ageing[58] and monitoring of MSK health as part of the WHO NCD Country Capacity Surveys, would facilitate surveillance efforts.

Limitations and future directions

This research intended to provide a snapshot of select LMICs health systems strengthening context for pain and disability, viewed through a lens of MSK health. We used mixed-methods research (qualitative data and content analysis of health policies) to enable a broad system view of challenges, opportunities and priorities for health systems strengthening efforts across these countries. We included countries across geographic regions and economies, however we cannot assume the findings are transferable to all LMICs. Further aligned research is warranted to broaden our understandings and strengthen evidence from other LMICs. We also recognise that some of the challenges faced in LMICs are relevant to disadvantaged areas in high-income settings.



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