



**GBD**  
GLOBAL BURDEN OF DISEASE

# GBD estimates of the need for rehabilitation

---

WHO, the Lancet, & IHME webinar

December 2<sup>nd</sup>, 2020

Theo Vos, Institute for Health Metrics and Evaluation

# Objectives

- Estimate the number of people who could benefit from rehabilitation using Global Burden of Disease 2019 data
  - from 1990 to 2019
  - by age and sex
  - by WHO region ...and for 204 countries
  - by disease groupings and specific conditions
  - taking into account co-occurrence of conditions when aggregating across conditions
  - aggregating by GBD 'sequelae', the mutually exclusive and collectively exhaustive consequences of diseases and injuries

# Methodology: Rehabilitation Hierarchy

- Musculoskeletal disorders
  - Low back pain, neck pain
  - Osteoarthritis
  - Rheumatoid arthritis
  - Fractures
  - Amputation
  - Other injuries
- Cardiovascular diseases
  - Acute myocardial infarction
  - Heart failure
- Chronic respiratory disease: COPD
- Neoplasms
- Sensory impairments
  - Hearing loss
  - Vision loss
- Neurological Disorders
  - Stroke
  - Alzheimer's disease and dementia
  - Parkinson's disease
  - Traumatic brain injury
  - Cerebral palsy
  - Spinal cord injury
  - Multiple sclerosis
  - Motor-neuron disease
  - Guillain-Barré syndrome
- Mental disorders
  - Schizophrenia
  - Developmental intellectual disability
  - Autism spectrum disorders



GBD

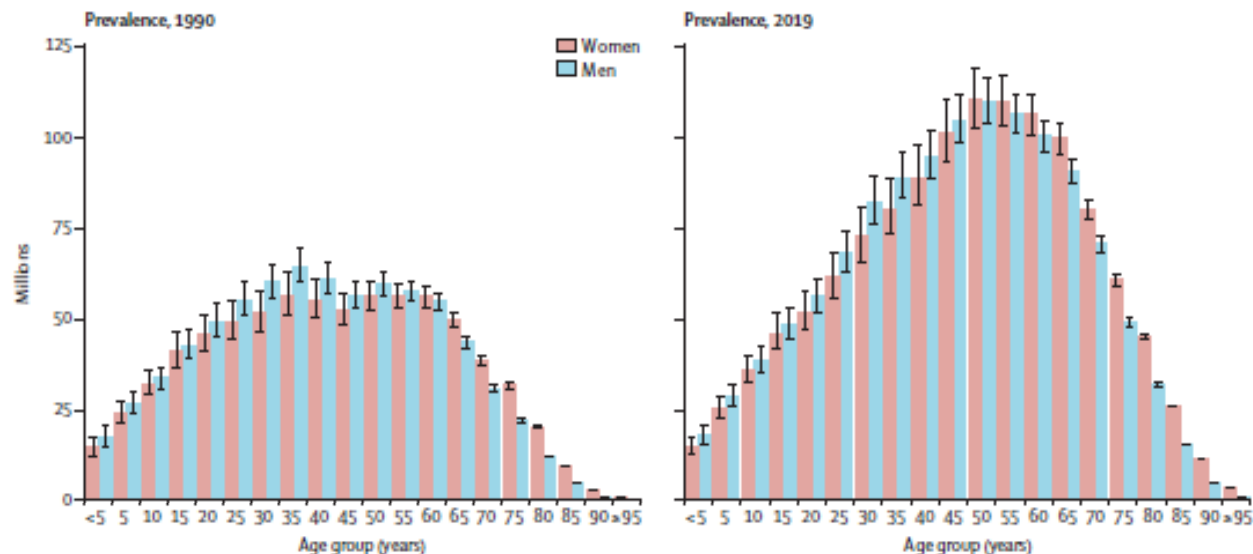
# Methodology

- Exclusions:
  - Any asymptomatic health states
  - Mild motor impairment
  - Borderline intellectual disability
  - Hearing loss < 35 db
  - Mild vision loss
  - Minor injuries
- For cancer we included:
  - Diagnosis and primary therapy phase of all cancers
  - Colon and rectum cancer with stoma
  - Larynx cancer with laryngectomy
  - Breast cancer with mastectomy

# Results: Global, 2019

Rehabilitation Category	Persons (millions)	YLDs (millions)	Average DW
<b>All Rehabilitation</b>	<b>2,410</b>	<b>310</b>	<b>0.13</b>
Musculoskeletal disorders	1,714	149	0.08
Neurological disorders	255	51	0.20
Sensory impairments	677	45	0.07
Mental disorders	187	29	0.16
Chronic respiratory diseases	118	20	0.17
Cardiovascular diseases	37	4	0.11
Neoplasms	18	2	0.11

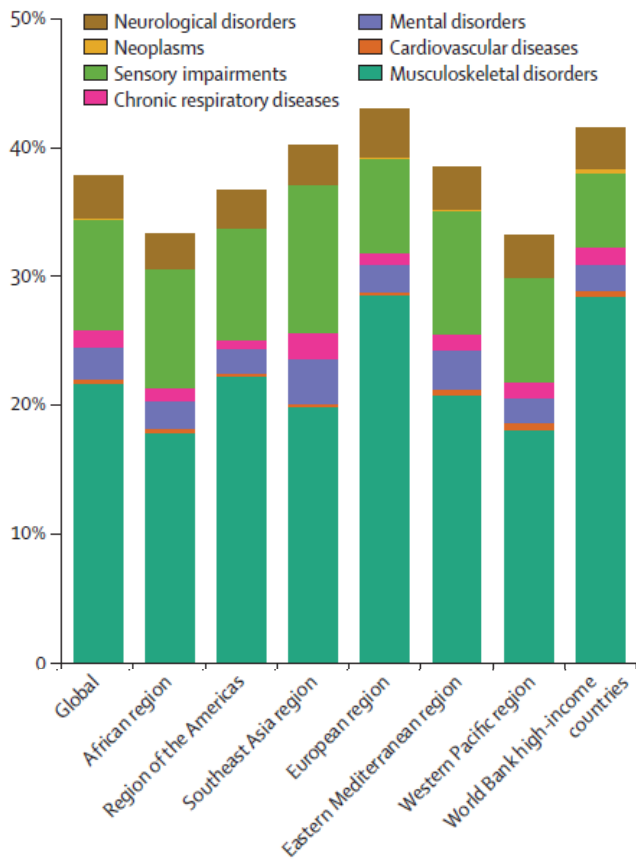
# Global prevalence by age and sex, 1990 and 2019



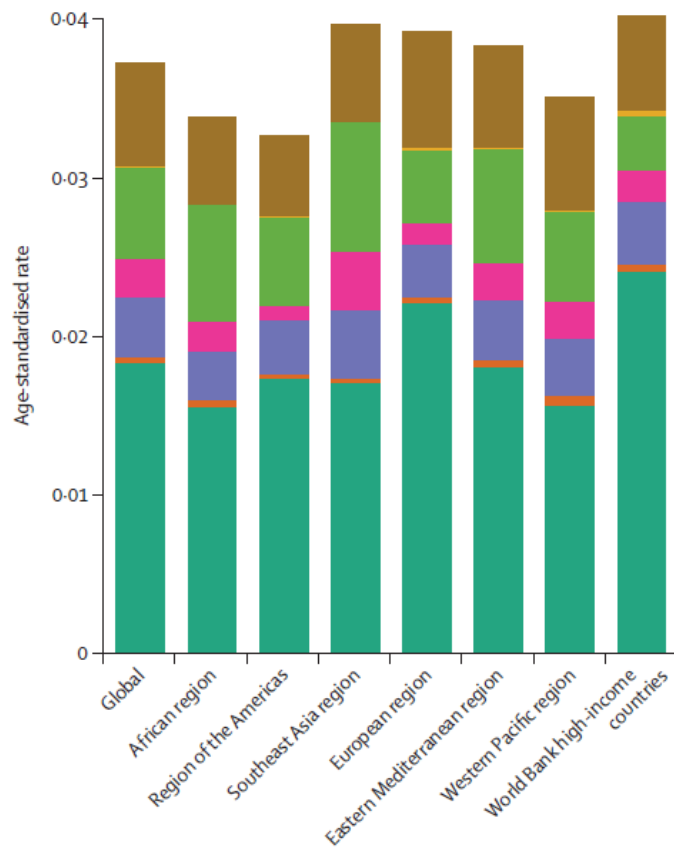
GBD

# Global age-standardized prevalence and YLDs by rehabilitation category and world region, 2019

Prevalence



Years of life lived with disability



# Discussion and future directions

- Detailed information on need by age, sex, type of condition and country is useful for planning rehabilitation services
- **Note: these estimates reflect those who may benefit from a rehabilitation effort at some point during the course of their disease, injury or disabling outcome**
- This may be a one-off intervention such as providing glasses for refractive error or require longer-term rehabilitative care as would be the case for spinal cord injury, blindness or cerebral palsy
- Complementary work: pooling data from trials on effectiveness of rehab interventions and quantify potential to prevent ongoing burden ...not a trivial task .....
- COVID: substantial organ damage (e.g. lungs, brain, heart) in a proportion of survivors and not just those with severe infection
- a bespoke visualization tool will be ready next month to facilitate access to the data .....I'll give you a sneak preview



GBD



# Preview of WHO Rehabilitation Need Estimator tool



GBD

# Results: Global, 2019

Rehabilitation Category	Persons (millions)	YLDs (millions)	Average DW
<b>Musculoskeletal disorders</b>	<b>1,714</b>	<b>149</b>	<b>0.11</b>
Low back pain	568	64	0.11
Neck pain	223	22	0.10
Fractures	436	26	0.06
Other injuries	305	11	0.03
Osteoarthritis	344	19	0.05
Amputation	176	6	0.03
Rheumatoid arthritis	13	2	0.18



GBD

# Results: Global, 2017

Rehabilitation Category	Prevalence	YLDs	Average DW
<b>Neurological disorders</b>	<b>255</b>	<b>51</b>	<b>0.20</b>
Cerebral palsy	50	11	0.21
Stroke	86	18	0.21
Traumatic brain injury	49	7	0.14
Alzheimer's disease and dementia	52	7	0.14
Spinal cord injury	21	6	0.30
Parkinson's disease	4	1	0.30
Multiple sclerosis	1	1	0.33
Motor-neuron disease	<1	<1	0.25
Guillain-Barré syndrome	<1	<1	0.30



GBD

# Results: Global, 2017

Rehabilitation Category	Prevalence (millions)	YLDs (millions)	Average DW
<b>Cardiovascular diseases</b>	<b>37</b>	<b>4</b>	<b>0.11</b>
Acute myocardial infarction	1	<1	0.09
Heart failure	35	4	0.11
<b>COPD</b>	<b>118</b>	<b>20</b>	<b>0.17</b>
<b>Neoplasms</b>	<b>18</b>	<b>2</b>	<b>0.11</b>
<b>Mental disorders</b>	<b>187</b>	<b>29</b>	<b>0.16</b>
Schizophrenia	24	15	0.64
Developmental intellectual disability	137	10	0.07
Autism spectrum disorders	28	4	0.15
<b>Sensory impairments</b>	<b>677</b>	<b>45</b>	<b>0.07</b>
Hearing loss	403	24	0.06
Vision loss	329	21	0.06