
Richard Brown DC, LL.M

With additional slides from Scott Haldeman DC, MD, Ph.D.
IMPACTING SPINE CARE AROUND THE WORLD

Why do we care about spine disorders in underserved populations?

Is it personal or is it the numbers
GP

36 year old hospital employee was happily married with 2 children at school before onset of spine pain
Presents to the WSC clinic in Botswana with 10 year history of low back pain that expanded to encompass the entire spine.

Could not care for self - needs help to go to toilet, bathe, bend over. Could not make love to her husband.
Husband unable to take care of her and their children and leaves. Moves in with her family who now have to take care of her.
Unable to work in the hospital and loses job. Stops paying taxes. No worker’s compensation or social net.

Tries to start business making jewelry at home to survive. Could not travel to sell her jewelry.
Could not take care of children or clean her home.
Does not have funds to send children to school.
Impact extends beyond the person with pain

Employer loses skilled employee
Husband loses additional financial support for family, companionship and conjugal relations
Children stop going to school
Family stressed by having additional 3 people to care for
Government loses tax revenue
1 Billion people in the World suffer from spinal disorders at any one moment in time

Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010
Estimates of World Disability Prevalence
Disability threshold of 40 (on a 100 point scale)
Considered significant disability

<table>
<thead>
<tr>
<th>Subpopulation or subgroup</th>
<th>Higher income countries</th>
<th>Lower income countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9.1% (SE 0.32)</td>
<td>12.0% (SE 0.18)</td>
</tr>
<tr>
<td>female</td>
<td>14.4% (SE 0.32)</td>
<td>22.1% (SE 0.24)</td>
</tr>
<tr>
<td>Age 18-49</td>
<td>6.4% (SE 0.27)</td>
<td>10.4% (SE 0.20)</td>
</tr>
<tr>
<td>Age &gt;60</td>
<td>29.5% (SE 0.66)</td>
<td>43.4% (SE 0.47)</td>
</tr>
<tr>
<td>Urban</td>
<td>11.3% (SE 0.29)</td>
<td>14.6% (SE 0.25)</td>
</tr>
<tr>
<td>Rural</td>
<td>12.3% (SE 0.34)</td>
<td>18.6% (SE 0.24)</td>
</tr>
<tr>
<td>Poorest quintile</td>
<td>17.6% (SE 0.58)</td>
<td>22.4% (SE 0.35)</td>
</tr>
<tr>
<td>Richest quintile</td>
<td>6.5% (SE 0.35)</td>
<td>13.3% (SE 0.25)</td>
</tr>
</tbody>
</table>
• Arthritis, rheumatism and back problems were the most common health conditions related to disability
• People with disabilities have generally
  – poorer health
  – lower education achievements
  – fewer economic opportunities and higher rates of poverty
Back pain is a 21st century global epidemic

Low back pain leading global cause of disability
Chronic low back pain Globally:

Point prevalence 18.1%
12-month prevalence 38.1%

Chronic low back pain in Africa

Point prevalence 32%
12-month prevalence 50%

Chronic low back pain
Prevalence in LMICs

In workers
52%

Global prevalence of spinal disorders

• Global burden of disease study
  – Low back pain #1 cause of disability
  – Neck pain #6 cause of disability
• Most is non-specific
• Persistent, episodic
• 85% lifetime prevalence of back pain
• Increasingly recognised as high impact NCD
Impact of spinal disorders across the life course.

Africa: 1 year prevalence of low back pain: adolescents 33%; adults 50%
Widespread impact of spinal disorders

- National economies
- Local economies
- Workforce and business prosperity
- Family and community impact
Direct impact is the tip of the iceberg
Co-morbidity

• Lack of physical activity
  – Obesity
  – Cardiovascular disease
  – Diabetes

• Lack of ability to work
  – Financial hardship
  – Burden on other family members

• Lack of ability to participate in community and family
  – Psychosocial co-morbidity
Health in Africa

• 14% of world’s population
• Disproportionate burden of disease
• Only 4 out of 25 poorest countries in the world are not African
• +ve causal relationship between income and health
• Spinal disorders not prioritised despite prevalence
• Back pain and neck pain combined are second only to ischemic heart disease in the impact on the global burden of disease
• Back and neck pain combined have a greater impact on global health than
  – HIV/AIDS
  – Alzheimer’s Disease
  – Malaria
  – Lower respiratory infections
  – Breast and lung cancer combined
  -- Diabetes
  -- Depression
  -- Stroke

Disability-adjusted life years (DALYs) for 291 diseases in 21 regions, 1990–2010
Prevalence of liver diseases in general adult US population, 2011-2013

- Prevalence of liver disease in general population: 1.18
- Prevalence of neck pain population: 2.69
- Prevalence of persistent pain and neck pain population: 4.00
- Prevalence of severe pain and neck pain population: 4.36
- Prevalence of persistent & severe pain and neck pain population: 4.83

NHIS Data – Yang H and Haldeman S
Prevalence of kidney disease in General adult US population, 2011-2013

- Prevalence of kidney disease in general population: 1.81
- Prevalence of kidney disease in neck pain population: 4.35
- Prevalence of kidney disease in persistent pain and neck pain population: 6.38
- Prevalence of kidney disease in severe pain and neck pain population: 7.76
- Prevalence of kidney disease in persistent & severe neck pain population: 8.55

NHIS Data – Yang H and Haldeman S
Prevalence of diabetes in general adult US population, 2011-2013

<table>
<thead>
<tr>
<th>Population</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>8.94</td>
</tr>
<tr>
<td>Neck pain population</td>
<td>13.45</td>
</tr>
<tr>
<td>Persistent pain and neck pain population</td>
<td>18.16</td>
</tr>
<tr>
<td>Severe pain and neck pain population</td>
<td>21.01</td>
</tr>
<tr>
<td>Persistent &amp; severe pain and neck pain population</td>
<td>23.29</td>
</tr>
</tbody>
</table>

NHIS Data – Yang H and Haldeman S
Prevalence of the depression/anxiety in general adult US population, 2011-2013

- Prevalence of depression/anxiety in general population: 2.73%
- Prevalence of depression/anxiety in neck pain population: 7.44%
- Prevalence of depression/anxiety in persistent pain and neck pain population: 11.21%
- Prevalence of depression/anxiety in severe pain and neck pain population: 14.05%
- Prevalence of depression/anxiety in persistent & severe pain and neck pain population: 15.99%

NHIS Data – Yang H and Haldeman S
People over the age of 70 with back pain 13% increased all cause mortality per year lived

Social determinants of health

- Social
- Political
- Environmental
- Economic
Ageing population

- Expanding global ageing population
- Spinal disorders increase in prevalence with age
- WHO: Integrated Care for Older People
- Focus on functional capabilities, intrinsic capacity
- Physical activity, falls prevention, nutrition, sensory capacity.
Impact in low- and middle income countries

- Key interventions are those with high impact and low resource
- Education of local community health workers to deliver group spine care interventions
- Access to low-cost primary care manual therapy interventions with emphasis on patient education, self-help, sustainable models of care
Some of the difficulties in managing spinal disorders in low and middle income communities
Primary care physician consultation time: a systematic review of 67 countries


In countries representing about 50% of the global population spend 5 min or less with their primary care physicians
Primary care physician consultation time: a systematic review of 67 countries


• Examples:
  – Tanzania – 3.8 minutes
  – India – 2.3 minutes
  – China – 2 minutes
  – Bangladesh – 1 minute
  – UK, Spain, Japan, The Netherlands, Brazil – 5-10 minutes
  – US, Canada, Australia, France, Denmark – 15-20 minutes
Primary care physician consultation time: a systematic review of 67 countries


Short consultation length was responsible for:

• **driving polypharmacy**
• **higher hospital admission rates**
• **overuse of antibiotics**
• **poor communication with patients**
Limited health care providers (doctors, nurses, and surgeons)

Limited understanding and education on the latest guidelines and methods of evaluating and treating patients with spine disorders
Current model in many low and middle income communities

- General physicians: No spine care
- Clinics: No spine care
- District Hospital: Minimal spine care
- Tertiary hospital: All spine care
High incidence of Serious Red Flag Disorders in LMICs

Outerbridge G, Eberspaecher S, Haldeman S. J Can Chiropr Assoc 2017; 61(3)

From the World Spine Care clinics
Primary spine care setting

- Shoshong, Botswana (rural) 10%
- Mahalapye, Botswana (urban) 9%
- Dominican Republic (urban) 12%
A list of serious pathology and bony deformity presenting to the WSC clinics from 2012 to 2017

<table>
<thead>
<tr>
<th>Situs inversus</th>
<th>Cauda equina syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical fracture</td>
<td>Cervical stenosis with radiculopathy</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>Cervical disc herniation with radiculopathy</td>
</tr>
<tr>
<td>Polyneuropathy</td>
<td>Vertebral body compression fracture</td>
</tr>
<tr>
<td>Fractured dens</td>
<td>T7 myelopathy secondary to burst fracture</td>
</tr>
<tr>
<td>Sprengel’s deformity</td>
<td>Organic referred – multiple locations</td>
</tr>
<tr>
<td>Klippel Fiel syndrome</td>
<td>Lumbar disc herniation with radiculopathy</td>
</tr>
<tr>
<td>Tuberculosis of the spine</td>
<td>Lumbar stenosis with radiculopathy</td>
</tr>
<tr>
<td>Scoliosis</td>
<td>Diffuse Idiopathic Skeletal Hyperostosis</td>
</tr>
<tr>
<td>Traumatic coccydynia</td>
<td>Congenital interspinous pseudoarthrosis</td>
</tr>
<tr>
<td>Peroneal nerve entrapment</td>
<td>Peripheral nerve entrapment</td>
</tr>
<tr>
<td>Hydrosal</td>
<td>Hemorrhagic ovarian cyst</td>
</tr>
<tr>
<td>Metastatic bone tumor</td>
<td>Rheumatoid arthritis</td>
</tr>
<tr>
<td>Karposi sarcoma</td>
<td>Malignant GI tumor</td>
</tr>
<tr>
<td>Peptic ulcer</td>
<td>Reflex sympathetic dystrophy</td>
</tr>
<tr>
<td>Cerebral Palsy</td>
<td>Diabetic polyneuropathy</td>
</tr>
<tr>
<td>Traumatic paraplegia</td>
<td>Facial nerve palsy</td>
</tr>
<tr>
<td>Traumatic hemiparesis</td>
<td>Polymyalgia rheumatica</td>
</tr>
<tr>
<td>Gout</td>
<td>Arthritis secondary to infection</td>
</tr>
<tr>
<td>Rib fracture</td>
<td>Friedrich’s ataxia</td>
</tr>
<tr>
<td>Myositis</td>
<td>Motor delay due to in utero hypoxia</td>
</tr>
<tr>
<td>HIV</td>
<td>Neurofibromatosis with IVF stenosis secondary to dumbbell neurofibroma</td>
</tr>
<tr>
<td>Stroke</td>
<td>Legg–Calvé–Perthes disease</td>
</tr>
<tr>
<td>Jaw fracture</td>
<td>Benign paroxysmal positional vertigo</td>
</tr>
<tr>
<td>Paget’s disease</td>
<td>Cervical spondylotic myelopathy</td>
</tr>
<tr>
<td>Type II diabetes</td>
<td>Non-union of shoulder fracture</td>
</tr>
<tr>
<td>Blount’s disease</td>
<td>Uterine fibroid causing pelvic nerve compression</td>
</tr>
<tr>
<td>Ankylosing spondylitis</td>
<td></td>
</tr>
</tbody>
</table>
Non-surgical care

- Majority of spinal disorders are not suitable for surgery
- Key to managing spinal disorders is patient empowerment and education of community workers
- Primary spine care workers can focus on keeping people moving and addressing risk factors early.
Summary

• Addressing the burden of spine care disorders in Africa has to be centrally resourced, community focused, and patient-centred.
• The benefits of international initiatives, such as ICOPE, must be communicated from the top down
• Tackling the burden of spinal disorders as an emerging NCD must be prioritised to improve the health of nations
Thank you