The Global Surgery Indicators and World Bank’s World Development Indicators (WDI)

World Bank
Development Data Group (DECDG)

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Outline of the presentation

• What is World Bank’s World Development Indicators (WDI)
• What are the global surgery indicators
• Progress made
• Promoting global surgery data
• Data quality
• Challenges/opportunities
What is WB’s World Development Indicators (WDI)
What is World Bank’s World Development Indicators (WDI)

World Bank’s main work:

1. Development Projects (funded over 12,000 projects since 1947)
2. Knowledge and Innovation (e.g. WDI, Open Data, Open Knowledge Repository)
3. Products and Services (offer support to developing countries through policy advice, research, and technical assistance)
What is World Bank’s World Development Indicators (WDI)

World Development Indicators (WDI) is one of the main knowledge products of the World Bank.
WDI: Global Coverage – 217 Countries/Economics
Data Coverage: 1500+ Indicators from year 1960

Each small box is an indicator, that are grouped by first two letters of the indicator code which is thematic.
Criteria for Inclusion of indicators in WDI

1. Development relevance
2. Good data coverage – across the world, and over time (trend data if possible)
3. Comparability across countries and across time (consistent definitions and methodology)
4. Good reliable source with regular updates
Producing WDI data involves:
- 50+ international organizations
- 200+ NSOs
- WB country economists from 150 countries

WDI indicators are updated quarterly (July, September, December and April) or more

⅔ of the data come from external partners

Sources include admin data, academia & household surveys
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## WDI Usage Statistics (approx. annualized)

<table>
<thead>
<tr>
<th>Channel</th>
<th>“Views” (‘000s)</th>
<th>Unique users (‘000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book (incl. print &amp; OKR pdf)</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Bulk download</td>
<td>345</td>
<td>75</td>
</tr>
<tr>
<td>Tables online</td>
<td>1,500</td>
<td>500</td>
</tr>
<tr>
<td>Databank (WDI only, = 50% total)</td>
<td>9,300</td>
<td>1,500</td>
</tr>
<tr>
<td>data.worldbank.org</td>
<td>80,000</td>
<td>30,000</td>
</tr>
<tr>
<td>API data queries</td>
<td>80,000</td>
<td></td>
</tr>
<tr>
<td>Google infobox</td>
<td>80,000 (17-170,000)</td>
<td></td>
</tr>
</tbody>
</table>
WDI PRODUCTS

- WDI database
- WDI book/WDI online
- Online tables
- Atlas of SDGs
- SDG dashboards
Global Surgery Indicators
Global Surgery 6 Indicators

- Access to timely essential surgery
- Specialist Surgical Workforce Density
- Surgical Volume
- Perioperative Mortality Rate
- Risk of impoverishing and catastrophic expenditure
Global Surgery Indicators and WDI

- Early 2015: WDI team was contacted by the global surgery team
- June 2015: Global surgery team and WDI team met and agreed to work towards publishing the global surgery indicators
- November 2015: Global surgery data on 6 indicators were shared with the WDI team
- April 2016: World Development Indicators 2016 published the 4 surgery indicators (#2,3,5,6) (2 indicators (#1,4) were not published due to low data coverage)
- April 2017: SAO density & surgical volume data were updated in World Development Indicators 2017
- April 2018: More SAO density and surgical volume data were added from Pacific countries
- July 2018: Time-series financial risk protection data were added
### Progress - Data coverage of 6 global surgery indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>WDI 2016</th>
<th></th>
<th>WDI 2017</th>
<th></th>
<th>WDI 2018</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Geographic accessibility *</td>
<td>14 (6%)</td>
<td>14 (6%)</td>
<td>14 (6%)</td>
<td>14 (6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 SAO density</td>
<td>173 (80%)</td>
<td>173 (80%)</td>
<td>174 (80%)</td>
<td>174 (80%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 # of surgical procedures (non-modelled)</td>
<td>33 (15%)</td>
<td>58 (27%)</td>
<td>69 (32%)</td>
<td>69 (32%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Perioperative mortality rates *</td>
<td>19 (9%)</td>
<td>19 (9%)</td>
<td>19 (9%)</td>
<td>19 (9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Risk of Impoverishing expenditure</td>
<td>186 (86%)</td>
<td>186 (86%)</td>
<td>149** (69%)</td>
<td>149** (69%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Risk of catastrophic expenditure</td>
<td>186 (86%)</td>
<td>186 (86%)</td>
<td>149** (69%)</td>
<td>149** (69%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Not published in WDI  ** Time series data
Global Surgery Indicators in WDI: How many times users are viewing
between May 1 2017 – April 30 2018

<table>
<thead>
<tr>
<th>Description</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>All WDI Indicators: Views on <a href="https://data.worldbank.org">https://data.worldbank.org</a> *</td>
<td>21,485,890</td>
</tr>
<tr>
<td>All health indicators (SH.* domain)</td>
<td>1,375,847</td>
</tr>
<tr>
<td>SH.MED.SAOP.P5 (SAO density)</td>
<td>5,253</td>
</tr>
<tr>
<td>SH.SGR.PROC.P5 (Surgical volume)</td>
<td>12,577</td>
</tr>
<tr>
<td>SH.SGR.IRSK.ZS (Risk of impoverishing expenditure)</td>
<td>1,099</td>
</tr>
<tr>
<td>SH.SGR.CRSK.ZS (Risk of catastrophic expenditure)</td>
<td>835</td>
</tr>
</tbody>
</table>

*This includes only the views from the Open Data home page. This excludes other sites like DataBank.
Totally the 4 global surgery indicators were viewed by users **20,000 times** a year between 2017-18
Promoting Global Surgery Indicators in WDI
Good health and well-being

Ensure healthy lives and promote well-being for all at all ages

Low-income countries have a severe shortage of specialist surgical workers. All low- and most lower-middle-income countries have fewer than the target number.

Specialist surgical workforce, by country, most recent value in 2011–16 (per 100,000 people)

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Number of Surgical Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>High income</td>
<td>200</td>
</tr>
<tr>
<td>Upper middle income</td>
<td>150</td>
</tr>
<tr>
<td>Lower middle income</td>
<td>100</td>
</tr>
<tr>
<td>Low income</td>
<td>50</td>
</tr>
</tbody>
</table>

The Lancet Commission on Global Surgery recommends a target of at least 20 surgical workers per 100,000 people.

Better staffed health systems can lead to improved health outcomes. For example, life expectancies are higher where there are more surgical workers per person.

Life expectancy at birth, by country, 2016 (years)

- High income: 80
- Upper middle income: 75
- Lower middle income: 70
- Low income: 60

In low-income countries, where there are fewer surgical workers, life expectancy is shorter, often due to deaths among infants and newborns.

Source: The Lancet Commission on Global Surgery. World Development Indicators (GH.MED.SAOP.PS).
Measuring surgical systems worldwide: an update

Five billion people—two-thirds of world pop anesthesia and obstetric (SAO) care while a anesthesia decision-making or treatment. Trea Despite such huge burden of disease, safe and Why? It may be because surgery and anesthesi that address the breadth of human disease — trauma-related disease and injuries, and inter vertical disease-based programs.

Prior to 2015, global data on surgery, anesthes that ‘We can’t manage what we don’t measure’ Surgical, Obstetric and Anesthesia (SAO) indica analysis of these data show large gaps in SAO e There are 70-times as many surgical work compared with low-income countries
Why are people dying following surgery in Africa?

Surgery is a core component of health. It is a cost-effective intervention\(^1\) which is important for global health.\(^2\) However, to fully realize the health benefits of surgery, it needs to be safe. In the African continent—with a population of 1.2 billion people—it is estimated that approximately 95% do not have access to safe and affordable surgery. The Lancet Commission on Global Surgery has established six indicators to indicate the success of providing access to safe and affordable surgery.\(^3\) Four of them are included in the World Bank’s World Development Indicators (WDI) database. The perioperative mortality rate (POMR)—the number of in-hospital deaths from any cause in patients who have undergone a procedure done in an operating theatre, divided by the total number of procedures—is one of the indicators the success in achieving safe surgery, yet it is not included in the WDI as the data is sparse, including the one from Africa. The recent publication of the African Surgical Outcomes Study (ASOS) has cast an important light on the POMR in Africa.\(^4\)

ASOS has shown that for patients in Africa fortunate enough to access surgical care, the patient outcomes following surgery are relatively poor. ASOS demonstrated that African surgical patients were twice as likely to die following surgery when compared to the global average, despite a similar complication rate to the global average (Table 1). This is despite the fact that surgical patients in Africa are relatively healthy when compared with similar international surgical patient cohorts.\(^5\) and one would thus expect them to do well postoperatively. Therefore, if the data from ASOS had been risk-adjusted for patient comorbidities, it is likely that the mortality following surgery in Africa is more than twice the global average. The results from ASOS are compelling as they provide comprehensive data on surgical outcomes in Africa, from 25 countries, 247 hospitals, and over 11,000 patients.

Table 1. Mortality, complications and ‘failure to rescue’ following surgery

Source: ISOS International Surgical Outcomes Study ASOS African Surgical Outcomes Study\(^4\)
Cured Into Destitution: the after surgery

Maternal Mortality Ratio (per 100,000 live births)

Income Group
- Low income
- Lower middle income
- Upper middle income
- High income
TWITTER: PROMOTING GLOBAL SURGERY INDICATORS

World Bank Data @worldbankdata · 12h
The delivery of safe and quality surgical care is critical for the realization of many of the Sustainable Development Goals, including: Good health and well-being (#sdg3); No poverty (#sdg1); Gender equality (#sdg5), and Reducing inequalities (#sdg10). wrld.bg/p0QV30iiZdr

World Bank @WorldBank · Feb 27
9 out of 10!
That's the number of people in low-income countries at risk of becoming poor due to catastrophic out-of-pocket payments for surgical and anesthesia services when surgical care is required:
wrld.bg/EHmY30iCAZd

World Bank @WorldBank · Feb 18
Countries with more surgical workers tend to have a higher #LifeExpectancy. And most low-income countries fall below the benchmark of 20 workers per 100k people:
wrlbg/5owM30ioTIL

Most people in low- and lower middle-income countries receive SAO care
Risk of catastrophic expenditure for surgical care in 2014 (% of people at risk)

Life expectancy tends to be higher in countries with a surgical workforce larger than 20 workers per 100,000 people

Low-resource 
High-resource 
Lower-middle income 
Upper-middle income
World Bank 🌍 @WorldBank · 4d
Over two billion people cannot afford surgery 😞 if they needed it today. Read why low-income countries face the highest risk of financial catastrophe: wrld.bg/z17730ltZMF

Jim Yong Kim 🌍 @JimYongKim · 1d
New data shows that 181 million people are thrown into poverty each year because they needed #surgery. Access to quality, affordable healthcare including surgical care is essential to good health—and is the very foundation of #humancapital. #healthforall

World Bank Research
Data quality
## Dimensions of data quality

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness</td>
<td>Data are available for all required data elements.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Proximity of the data to the &quot;truth&quot; - effected by systematic biases e.g. omission and misclassification</td>
</tr>
<tr>
<td>Validity</td>
<td>The data measure what they intend to measure</td>
</tr>
<tr>
<td>Reliability</td>
<td>Data are measured and collected consistently</td>
</tr>
<tr>
<td>Timeliness</td>
<td>Is data available for use in a timely manner</td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td>Data has all the detail needed for the creation of useful indicators</td>
</tr>
<tr>
<td>Utility</td>
<td>Data produced is useful and pertinent for policy and programmatic needs</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Can these data be accessed by potential data users</td>
</tr>
</tbody>
</table>

Source: Presentation of Dr. Hannah Blencowe
## Challenges in data quality for 6 global surgery indicators

<table>
<thead>
<tr>
<th></th>
<th>Access</th>
<th>SAO</th>
<th>Volume</th>
<th>POMR</th>
<th>FRP (modelled)</th>
<th>FRP (non-modelled)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Accuracy</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Validity</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Reliability</td>
<td>X</td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>Timeliness</td>
<td>X</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Comprehensiveness</td>
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<tr>
<td>Utility</td>
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<tr>
<td>Accessibility</td>
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<td>X</td>
</tr>
</tbody>
</table>
For reliable data with good coverage, a strong data collection/reporting system is needed. This involves:

- **Health facility**
- **MoH / NSO**
  - Acquire, curate, disseminate
- **International Organization**
  - Acquire, curate, disseminate
- **Household surveys**
  - Acquire, curate, disseminate
Challenges & opportunities for data collection

Capacity issues
• Capacity building and training

No incentives
• Request needed from international organizations.
  • International organizations use these country data

No resources
• Data collection should become higher priority

Lack of communication/trust/understanding
• Better partnerships needed at all levels. Need solid data collection system.
  • Centralized data management system (by MoH/NSOs & by International organizations)

Unclear what & how to measure
• Need clear international standards (definition, methodology),
  • Guide/manual for countries
For reliable data with good coverage, strong data collection / reporting system is needed. "Through the development of core partnerships with country teams, implementers, demographers, mathematicians, epidemiologists and international organizations, UNAIDS has developed the capacity of country teams to produce internationally comparable HIV estimates." (Mary Mahy et al. 2017)
Key words to better data collection

Partnerships

Capacity building
For reliable data with good coverage, a strong data collection / reporting system is needed.