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The Health Burden of Disease

04 October 2021 | Opinion | By Devin Partida is a medical and health tech writer from San Francisco, California. She also writes about medical technologies, AI and cybersecurity on ReHack.com.

In the 1990s, a new concept was developed by the Harvard School of Public Health, the World Bank and the World Health Organization (WHO) to explain death and loss of health due to diseases, injuries and other risk factors. This concept became more commonly known as the burden of disease.

The burden of disease is used to calculate and estimate a population's overall health. It can give some insight into the effects of a given condition. More medical technology continues to emerge, and leveraging it to improve health care will be necessary for the future.

In the middle of the COVID-19 pandemic, it's critical to gather data regarding patient health to help determine the burden of disease.

Below is some more information about the burden of disease and how it is calculated and used by health care organizations.

History of the Burden of Disease

The World Bank decided in 1992 to perform the initial burden of disease study. The ultimate goal was to provide a comprehensive examination of disease burden in 1990.

Before this study, early attempts to quantify the cause of global death patterns were not enough but still provided valuable contributions. These studies were restricted to broad causes of death, such as infectious and parasitic diseases, but they failed to analyze nonfatal health outcomes.

The results were widely published and created more disease burden exercises. The World Bank's study was invaluable to the scientific research community, as it's still used to calculate the burden of disease worldwide. It served as a major advance in the field of global public health statistics.

In addition, as more countries adopted this framework for public health accounting, it became evident that perception of some ailments changed, particularly psychiatric issues. It drew more attention to the burden of various conditions and helped educate medical professionals about the populations they served.

Importance of Using the Burden of Disease

The world is full of diseases, illnesses and disabilities — there's no denying that. Millions of people die each year due to these factors. Governments, health care providers and the media can all benefit from using the burden of disease to identify which ailments are causing the most deaths in a given population.

Understanding which diseases are negatively affecting people's lives is crucial for plenty of reasons. For example, educating people about different maladies is necessary, and encouraging them to follow their doctors' recommendations in living a healthy lifestyle can help lessen the burden of a given disease.

Deciding which conditions pose the greatest public health risks can educate health care providers about which of their patients need to be aware of the implications. It's no secret that various diseases impact more than the individual — it affects families, doctors, friends and co-workers.

It's also worth noting that the burden of disease information can help educate medical professionals on sanitation and cleaning within health care facilities.

The individuals providing care must avoid potentially life-threatening diseases, which has become more evident throughout the ongoing COVID-19 pandemic. Efforts need to be made to protect health care providers from such conditions.

Calculating the Burden of Disease

To accurately estimate the burden of disease, one would add all these factors together:

- **Years of Life Lost (YLL):** The number of years a person loses as a direct result of an ailment
- **Years of Life Lived With a Disability (YLD):** The number of years a person lives with a disability caused by a disease

Adding these two figures together gives a single-figure number that describes the disease burden. This is referred to as DALY, or Disability Adjusted Life Year. The DALY is meant to represent one year of life lost if the individuals were in full health.

It's necessary to extract data from these various sources to get to the DALY figure:

- Censuses
- Household surveys
- Civil registration and vital statistics
- Disease registries
- Health service use
- Satellite imaging
- Air pollution monitors
- Disease notifications

It's no wonder that all these sources provide crucial information in calculating the disease burden. In general, the health care industry relies on a vast amount of data to gain valuable insights and draw conclusions to help improve care.

Regularly reporting on a population's health can help guide medical providers when improving intervention strategies.

Understanding and Measuring Burden of Disease

There are two schools of thought when it comes to the burden of disease. It can be measured in economic terms or a biomedical context. Gauging the impact of certain conditions and assessing the potential of medical interventions is necessary for professionals. The burden of disease calculations provides valuable evidence in helping them do so.

Here's a breakdown of the economic and biomedical applications of the burden of disease.

Biomedical

Medical professionals or researchers using disease burden information are interested in the following factors:

- **Morbidity:** The number of people who are unwell or disabled and the severity of their illness/disability
- **Mortality:** Number of people who die as a result of their disability or disease and whether or not it was considered a premature death
- **Trends:** Morbidity and mortality patterns that come from disease burden information, as well as the risk of becoming disabled

- **Risk attribution:** Studies that show links between illness and recognized risk factors

Economic

On the other hand, these factors use the disease burden information in an economic context:

- **Direct costs:** The value of spending on prevention, treatment and diagnosis of a disease — for example, immunization, in-hospital and outpatient care

- **Indirect costs:** The value of labor and productivity losses, such as missing work due to disease, reduced productivity at work or premature death

There are many ways to apply the disease burden information. Using it to identify these factors contributes to a strong public health care system.

1990-2019 Global Disease Burden Study

Some findings in this study show that global health, generally speaking, has vastly improved over the past few decades. The number of DALYs has remained relatively stable in the last 30 years, and it's looking hopeful for the future.

According to the study, below are some of the top causes of DALYs based on age group:

- **Children younger than 10:** lower respiratory infections, diarrhoeal diseases, malaria, meningitis, whooping cough and sexually transmitted infections

- **Ages 10-24:** road injuries, self-harm and interpersonal violence

- **Ages 24-49**: road injuries, HIV/AIDS, low back pain, headache disorders and depressive conditions

- **Ages 50-74:** ischaemic heart disease and stroke

Seeing this information can help health care providers learn which of their patients, dependent on their age, are most at risk for these top causes of DALYs and provide treatment options to lessen the threat.

Using the Burden of Disease for COVID-19

The Centers for Disease Control and Prevention (CDC) uses statistical disease burden to gather more information about COVID-19. The estimates extracted from this data can educate health care workers on how to direct and allocate various resources, plan prevention and control methods, and predict the future burden of the disease the virus causes.

One factor that makes it challenging to know the true burden of COVID-19 is the asymptomatic nature of the virus. Because some people show no symptoms but test positive, how can it be known for sure who's been impacted?

The CDC plans on continually updating its website to fully address the burden of COVID-19.

Using the Burden of Disease Assessment in the Future

It's certainly interesting to learn more about the burden of disease, its history and how it can still be used in the medical industry today. The goal is to improve public health knowledge, intervene as soon as possible and provide professionals with the information they need to succeed on the job.