

# New neurology studies a 'wakeup call' for global health

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Neurology experts from around the world will convene November 27 in Auckland, New Zealand, for a conference on "brain health," examining what one calls "the greatest challenge of societies in the 21st century." Among the neurological disorders to be discussed at the Brain Summit are stroke, traumatic brain injury, Alzheimer's disease, Parkinson's disease, multiple sclerosis, and migraine and other headaches.

The topics are covered in a new series of 11 papers on neurological disorders in *The Lancet Neurology*. As part of the Global Burden of Disease (GBD), the studies assess death and disability from 15 neurological disorders between 1990 and 2016 in 195 countries and territories by age and by sex. It is the most extensive study ever conducted on neurological disorders.

"As populations continue to age worldwide, neurological disorders will place even more pressure on [health care services](#) in the near future," said Dr. Theo Vos, Professor of Health Metrics Sciences at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, and a senior author on all of the studies. "Yet current intervention strategies for reducing non-communicable neurological disorders have low effectiveness or are not sufficiently deployed, as is the case with many prevention approaches for stroke. More research is needed and urgently to better understand how to address many of these disorders."

According to Dr. Elena Becker-Barroso, Editor-in-Chief of *The Lancet Neurology*, "Brain health is the greatest challenge of societies in the 21st

century. These articles should be a wakeup call for health care systems and research funding agencies, as the data show that neurology and neurosciences must be at the top of their agendas."

Study authors found one in four people worldwide suffered from headaches in 2016, with 1.89 billion people estimated to have experienced a tension-type headache, and 1.04 billion people a migraine.

They also found Parkinson's [disease](#) is the fastest growing of all neurological disorders. The number of individuals with Parkinson's disease has more than doubled since 1990, increasing from 2.5 million that year to 6.1 million in 2016.

"These findings are integral to making the Global Burden of Disease study more accessible to clinicians," said Vos. "Medical personnel who care for those with neurological diseases have long wanted a comprehensive roadmap to improve their understanding of neurological disease burden. This series of articles is a helpful first step."

The Global Burden of Disease Brain Summit is a collaboration between Auckland University of Technology (AUT), *The Lancet Neurology* journal, and the Global Burden of Disease study, which is coordinated by IHME.

"We need worldwide cooperation in the research, treatment and prevention of neurological disorders, which is grossly underfunded," said Professor Valery Feigin, Director of the National Institute for Stroke and Applied Neurosciences at AUT and a senior author on the studies.

"Neurological care within the public health system needs to be strengthened, and effective primary prevention is essential to help curb this global health crisis."

The studies and additional information are available at

<http://www.healthdata.org>.

## **Additional key findings include:**

### **Headache disorders**

- In 2016, tension-type headache was the third most prevalent cause of disease globally, after tooth cavities and latent (i.e., non-active) tuberculosis. Migraine was the sixth leading cause of disease globally, after age-related hearing loss and dietary iron deficiency, which ranked fourth and fifth, respectively.
- Despite being less prevalent than tension-type headaches, migraines are substantially more disabling.
  - In terms of disability, migraine ranked second globally after low back pain; it was also among the 10 most disabling disorders in all 195 countries and territories, in both 1990 and 2016.
- In 2016, 1.89 billion people were estimated to have experienced a tension-type headache and 1.04 billion people a migraine.
  - Three in 10 women and one in five men globally were estimated to have experienced a tension-type headache in 2016.
  - One in six women and one in 10 men globally were estimated to have experienced a migraine in 2016.
- Together, in 2016, migraine and tension-type headache caused 52.3 million years lived with disability (YLDs) globally, which was 6.5% of all YLDs.
- Migraine is particularly burdensome among women aged 15-49 years.
- Unlike many other diseases and injuries quantified in GBD studies, headache rates do not decrease with socioeconomic development; therefore, their relative importance is likely to increase in the future.

## Motor neuron diseases

- Motor neuron diseases, such as amyotrophic lateral sclerosis (ALS), are a group of degenerative nerve disorders that cause [death](#) in half of all affected individuals within 15-20 months of diagnosis.
- Despite being rare, motor neuron diseases cause severe disability and have high fatality rates.
  - Globally, 330,918 people had a motor neuron disease in 2016;
  - Motor neuron diseases were responsible for 34,325 deaths globally in 2016.
- More than half of global deaths and nearly half of all prevalent cases of motor neuron diseases occurred in high-income countries in the GBD regions of North America, Western Europe, and Australasia, but motor neuron diseases were less burdensome in high-income countries in the Asia Pacific region.
- Between 1990 and 2016, the burden of [motor neuron diseases](#) has increased substantially.
  - The number of disability-adjusted life years (DALYs) grew by 59.0% over the 26-year study span, increasing from 582,296 in 1990 to 926,090 in 2016.

## Meningitis

- Global meningitis deaths decreased by 21.0% from 1990 to 2016, from 403,012 to 318,400.
  - However, meningitis burden remains high, with progress lagging substantially behind that of other vaccine-preventable diseases.
  - Authors found incident cases of meningitis increased over the 26-year study period, with 2.50 million incident

cases in 1990 and 2.82 million in 2016.

- Eighty-five percent of all meningitis deaths in 2016 occurred in low-income countries.
  - Meningitis deaths remained primarily concentrated in a band of 26 countries across sub-Saharan Africa, stretching from Senegal in the west to South Sudan and Ethiopia in the east.
  - However, four of the top 10 countries with the greatest number of meningitis deaths—India, Pakistan, Afghanistan, and China—are located outside of this "meningitis belt."

## **Parkinson's disease**

- Parkinson's disease is the fastest growing of all neurological disorders.
  - The number of individuals with Parkinson's disease has more than doubled since 1990, increasing from 2.5 million that year to 6.1 million in 2016.
  - The largest increase in patients with Parkinson's disease was seen in middle SDI (Socio-demographic Index) countries.
- In 2016, Parkinson's disease caused 211,296 deaths globally.

## **DEATH RATES (AGE-STANDARDIZED, BOTH SEXES), 2016**

### **Motor neuron diseases**

#### **Highest rates:**

1. New Zealand: 2.2 deaths per 100,000

2. Australia: 2.1
3. United Kingdom: 2.1
4. Ireland: 2.0
5. Iceland: 1.8
6. Finland: 1.8
7. Netherlands: 1.8
8. Canada: 1.8
9. Sweden: 1.8
10. Andorra: 1.7

### **Lowest rates:**

1. South Sudan: 0.045 deaths per 100,000
2. Rwanda: 0.052
3. Madagascar: 0.057
4. Democratic Republic of the Congo: 0.058
5. Mozambique: 0.059
6. Somalia: 0.061
7. Ethiopia: 0.061
8. Uganda: 0.061
9. Burundi: 0.064
10. Kenya: 0.065

### **Parkinson's disease**

#### **Highest rates:**

1. Canada: 6.9 deaths per 100,000
2. Argentina: 5.4
3. Greenland: 5.4
4. United States: 5.1
5. Chile: 4.9

6. Uruguay: 4.9
7. Iran: 4.7
8. Slovenia: 4.6
9. Slovakia: 4.6
10. Czech Republic: 4.6

## **Lowest rates:**

1. Central African Republic: 1.6 deaths per 100,000
2. South Sudan: 1.7
3. Democratic Republic of the Congo: 1.8
4. Madagascar: 1.8
5. Niger: 1.8
6. Lesotho: 1.9
7. Papua New Guinea: 1.9
8. Burundi: 1.9
9. Chad: 1.9
10. Somalia: 1.9

## **Meningitis**

### **Highest rates:**

1. Somalia: 33.8 deaths per 100,000
2. Niger: 33.3
3. Guinea-Bissau: 33.2
4. South Sudan: 32.5
5. Zambia: 31.7
6. Sierra Leone: 31.0
7. Burkina Faso: 30.9
8. Chad: 30.0
9. Mali: 28.3

10. Guinea: 28.1

### **Lowest rates:**

1. Singapore: 0.16 deaths per 100,000
2. Luxembourg: 0.19
3. Switzerland: 0.20
4. Japan: 0.20
5. Australia: 0.20
6. Sweden: 0.22
7. Finland: 0.22
8. Italy: 0.22
9. Slovenia: 0.23
10. Germany: 0.24

## **PREVALENT CASES (AGE-STANDARDIZED, BOTH SEXES), 2016**

### **Migraine**

#### **Highest rates**

1. Italy: 20,678 prevalent cases per 100,000
2. Nepal: 20,417
3. Austria: 19,787
4. Netherlands: 19,719
5. Luxembourg: 19,576
6. Spain: 19,257
7. Portugal: 18,675
8. Cyprus: 18,642
9. Israel: 18,493
10. Ireland: 18,432



## **Lowest rates:**

1. China: 8,556 prevalent cases per 100,000
2. North Korea: 9,557
3. Taiwan: 9,788
4. Ethiopia: 10,256
5. Tanzania: 10,347
6. Northern Mariana Islands: 10,578
7. Guam: 10,671
8. Kenya: 10,710
9. Comoros: 10,727
10. Djibouti: 10,768

## **Tension-type headache**

### **Highest rates:**

1. Brazil: 35,208 prevalent cases per 100,000
2. Afghanistan: 34,213
3. Paraguay: 33,290
4. Haiti: 32,568
5. Yemen: 32,528
6. Palestine: 32,495
7. Iraq, 32,295
8. Turkey: 32,075
9. Sudan: 31,818
10. Nepal: 30,891

### **Lowest rates:**

1. Taiwan: 15,584 prevalent cases per 100,000
2. China: 17,100

3. North Korea: 18,550
4. Ethiopia: 19,666
5. United States: 19,859
6. Guam: 20,324
7. Northern Mariana Islands: 20,469
8. France: 20,659
9. Switzerland: 20,980
10. Fiji: 21,090

**More information:** Lars Jacob Stovner et al, Global, regional, and national burden of migraine and tension-type headache, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016, *The Lancet Neurology* (2018). [DOI: 10.1016/S1474-4422\(18\)30322-3](https://doi.org/10.1016/S1474-4422(18)30322-3)

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