

EAN Fact Sheet

Country profile of Israel

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The EAN is pleased to present this fact sheet to each and every national neurological society, offering key insights into the latest epidemiological, economic, and demographic trends. This data aims to support informed decision-making and enhance understanding of neurological conditions on both national and European level with information provided by three EAN projects: the [“Burden of Neurological Disease in Europe”](#) study, the EAN [“COst of Illness in Neurology in EUrope \(COIN-EU\)”](#) project, the EAN NNS 2021-2022 survey.



Burden of Disease in Europe – Collaboration with IHME

Neurological disorders are the second most common cause of disability and premature death in the European Region and their prevalence and burden will likely increase with the progressive ageing of the European population. Greater attention to neurological diseases must be paid by health authorities for prevention and care. For this reason, the European Academy of Neurology is conducting research on gaining and analysing reliable data on the number of patients with neurological diseases.

These data are obtained from the currently most developed data base, the [Global Burden of Disease \(GBD\)](#) study of the Institute for Health Metrics and Evaluation (IHME), University of Washington, Seattle. The burden of neurological disorders in Europe was calculated for the year 2021 as prevalence, mortality, disability-adjusted life-years (DALYs), years of life lost (YLLs), and years lived with disability (YLDs) for the countries in the EU and the WHO European region for a total of 26 neurological disorders.

The study in Europe is run by the EAN and led by Prof. Dr. Günther Deuschl, Dr. Maurizio Leone and Maria Konti, M.Sc., in close collaboration with the leading scientists of the IHME Institute.

In the table below, you will find the national total counts for DALYs, YLDs, YLLs, prevalence, and deaths, the age-standardised rates by neurological disorder category for the years 1990 and 2021, and the percentage change for both of your country and the WHO Europe.

Diseases with counts less than one have been excluded and the number of decimal points has been adjusted individually for each disease.

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Israel	WHO Europe
	2021	1990	2021		
All Neurological Disorders					
DALYs	279,875	3,252	2,472	-24.0%	-29.0%
Deaths	8,049	100	57	-42.3%	-43.2%
Prevalence	4,390,714	45,532	45,600	0.1%	0.3%
YLDs	160,240	1,497	1,528	2.1%	2.9%
YLLs	119,615	1,755	944	-46.2%	-44.4%
Alzheimer's disease and other dementias					
DALYs	59,491	433	422	-2.7%	-2.5%
Deaths	3,611	24.43	24.29	-0.6%	-2.8%
Prevalence	87,012	678	637	-6.1%	-2.1%
YLDs	18,193	141	132	-6.1%	-2.6%
YLLs	41,298	292	289	-1.0%	-2.5%
Chromosomal abnormalities					
DALYs	731	10	8	-18.2%	-12.3%
Prevalence	8,060	109	88	-18.8%	-12.8%
YLDs	731	10	8	-18.2%	-12.4%
Covid-19 (neurological)					
DALYs	1,565	-	16	-	-
Prevalence	15,143	-	156	-	-
YLDs	1,565	-	16	-	-
Cystic echinococcosis					
DALYs	2	0.02	0.02	-13.5%	-18.3%
Prevalence	7	0.07	0.07	-2.4%	-9.0%
YLDs	2	0.02	0.02	-13.7%	-18.4%
Diabetic neuropathy					
DALYs	26,117	144	224	55.5%	98.1%
Prevalence	205,432	1,131	1,761	55.6%	97.9%
YLDs	26,117	144	224	55.5%	98.1%

Down syndrome					
DALYs	462	7	5	-25.8%	-19.6%
Prevalence	5,052	75	55	-26.6%	-20.7%
YLDs	462	7	5	-25.8%	-19.8%
Encephalitis					
DALYs	784	6.99	7.51	7.4%	-30.1%
Deaths	27	0.16	0.22	35.2%	-15.9%
Prevalence	700	7.96	6.96	-12.5%	-13.6%
YLDs	75	0.85	0.76	-9.9%	-12.0%
YLLs	709	6.15	6.75	9.8%	-31.0%
Epilepsy					
DALYs	11,669	110	118	7.2%	-12.6%
Deaths	125	0.81	1.11	38.1%	3.9%
Prevalence	30,318	268	308	14.7%	3.3%
YLDs	7,503	75	76	1.7%	-11.3%
YLLs	4,166	35	42	19.0%	-14.3%
Guillain-Barre Syndrome					
DALYs	53	0.52	0.52	0.4%	12.4%
Prevalence	180	1.76	1.76	0.3%	12.4%
YLDs	53	0.52	0.52	0.3%	12.4%
Idiopathic intellectual disability					
DALYs	1,482	20	16	-19.3%	-19.7%
Prevalence	30,828	409	329	-19.6%	-21.2%
YLDs	1,482	20	16	-19.3%	-19.7%
Klinefelter syndrome					
DALYs	5	0.03	0.03	4.0%	5.7%
Prevalence	403	4.18	4.39	5.0%	5.5%
YLDs	5	0.03	0.03	4.1%	5.5%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Israel	WHO Europe	
Meningitis						
DALYs	1,005	60	10	-82.7%	-80.5%	
Deaths	23	0.93	0.21	-77.3%	-75.4%	
Prevalence	248	10	3	-75.4%	-66.7%	
YLDs	22	0.90	0.23	-74.3%	-64.6%	
YLLs	983	59	10	-82.8%	-81.3%	
Migraine						
DALYs	61,690	662	657	-0.8%	0.04%	
Prevalence	1,646,071	17,678	17,572	-0.6%	0.3%	
YLDs	61,690	662	657	-0.8%	0.04%	
Motor neuron disease						
DALYs	2,836	25.93	25.29	-2.5%	37.5%	
Deaths	110	0.78	0.91	16.6%	54.1%	
Prevalence	713	5.85	6.65	13.6%	19.8%	
YLDs	152	1.24	1.41	13.6%	19.5%	
YLLs	2,684	24.69	23.88	-3.3%	38.5%	
Multiple sclerosis						
DALYs	1,763	15	17	12.1%	-5.0%	
Deaths	28	0.23	0.25	8.0%	-12.5%	
Prevalence	3,661	30	36	21.0%	26.4%	
YLDs	950	7.94	9.41	18.4%	25.5%	
YLLs	813	7.29	7.67	5.2%	-22.2%	
Nervous system cancer						
DALYs	15,452	160	147	-8.1%	-3.3%	
Deaths	507	4.19	4.42	5.5%	10.8%	
Prevalence	3,278	23	33	40.1%	35.9%	
YLDs	361	2.64	3.45	30.5%	25.3%	
YLLs	15,091	158	144	-8.7%	-3.7%	

Neurocysticercosis						
DALYs	1,455	14.48	13.09	-9.6%	-42.5%	
Deaths	6,912	61.24	61.64	0.6%	-32.8%	
Prevalence	1,455	14.45	13.08	-9.5%	-42.5%	
YLDs	1	0.03	0.01	-83.1%	-70.7%	
YLLs	2	0.06	0.01	-78.7%	-70.7%	
Neurosyphilis						
DALYs	2	0.03	0.02	-23.1%	-43.6%	
Prevalence	45	0.52	0.46	-13.0%	-11.7%	
YLDs	2	0.03	0.02	-23.1%	-43.4%	
Other neurological disorders						
DALYs	6,395	68	62	-7.6%	25.8%	
Deaths	146	1.36	1.25	-8.1%	45.0%	
YLDs	2,083	12	21	77.0%	62.9%	
YLLs	4,292	56	41	-25.5%	14.2%	
Parkinson's disease						
DALYs	12,161	93	91	-3.0%	5.6%	
Deaths	636	5.02	4.56	-9.2%	4.0%	
Prevalence	26,275	164	200	21.4%	21.9%	
YLDs	3,707	23	28	21.4%	21.4%	
YLLs	8,454	70	62	-11.1%	2.0%	
Spinal cord injury						
DALYs	9,007	97	92	-5.6%	-26.9%	
Prevalence	32,475	326	328	0.7%	-21.9%	
YLDs	9,007	97	92	-5.6%	-26.9%	

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	1990	2021	Israel	WHO Europe
Stroke					
DALYs	54,340	1,203	426	-64.5%	-52.6%
Deaths	2,837	62	20	-67.2%	-55.6%
Prevalence	91,775	1,101	775	-29.6%	-19.2%
YLDs	13,215	156	109	-29.7%	-18.9%
YLLs	41,125	1,047	317	-69.7%	-55.3%
Tension-type headache					
DALYs	6,754	69.94	69.80	-0.2%	-1.6%
Prevalence	3,094,744	32,420	32,401	-0.1%	-0.8%
YLDs	6,754	69.94	69.80	-0.2%	-1.6%
Traumatic Brain Injury					
DALYs	4,653	52	45	-14.1%	-28.2%
Prevalence	35,075	392	336	-14.3%	-28.0%
YLDs	4,653	52	45	-14.1%	-28.2%

Table 1: National total counts for DALYs, YLDs, YLLs, prevalence, and deaths, age-standardised rates by neurological disorder category for 1990 and 2021, and percentage change of 1990-2021. Diseases with counts less than one have been excluded and the number of decimal points has been adjusted individually for each disease.

Neurological conditions

In figure 1 below, the top 20 neurological disorders are ranked based on the national age-standardised rate of DALYs per 100 000 population in 2021 for all age groups.

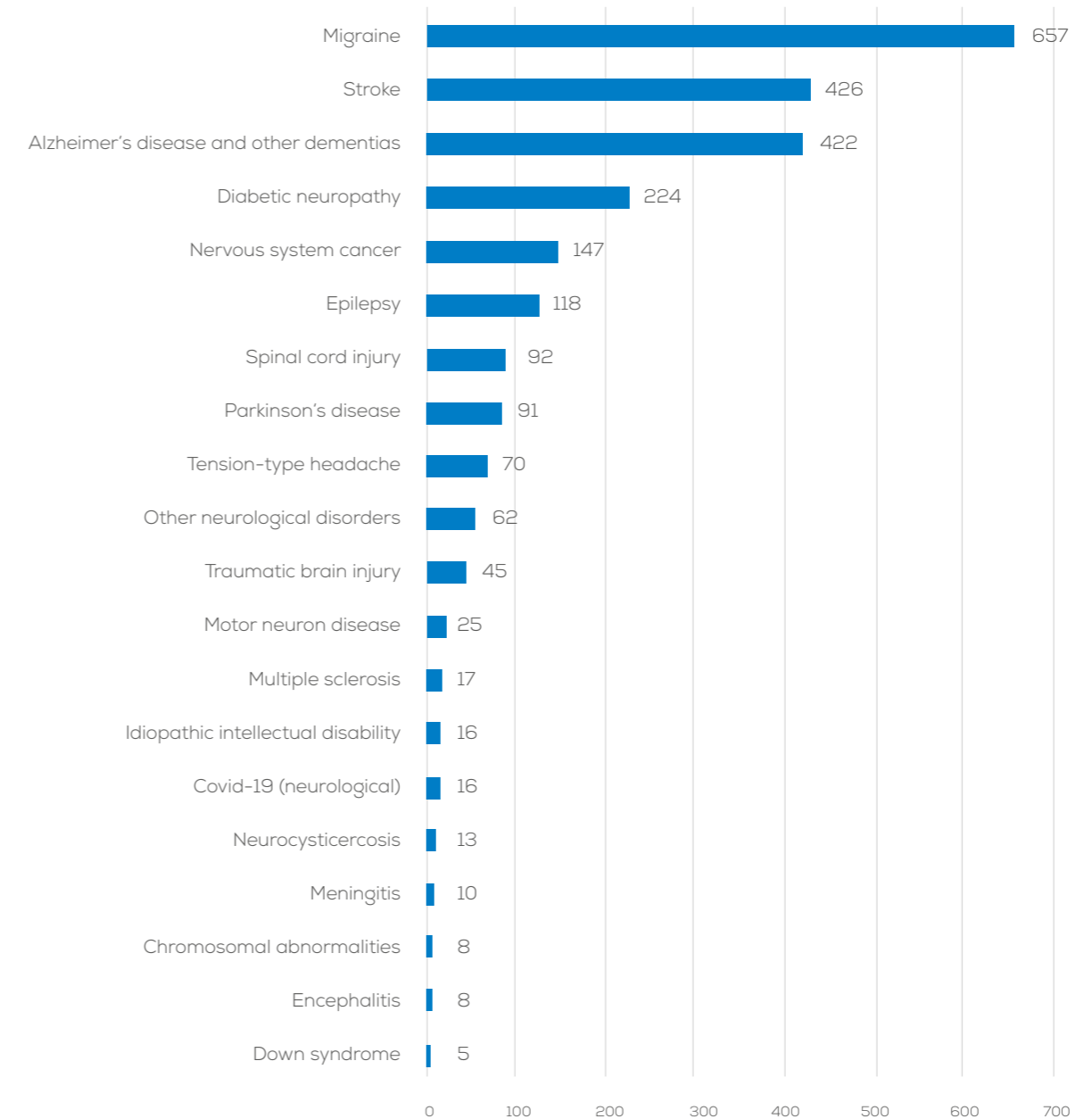


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

DALYs per 100 000 population

In order to show how the diseases are evolving both in **Israel** and the European Region, we present the temporal pattern of DALYs per 100 000 population over the last three decades in the figure below:

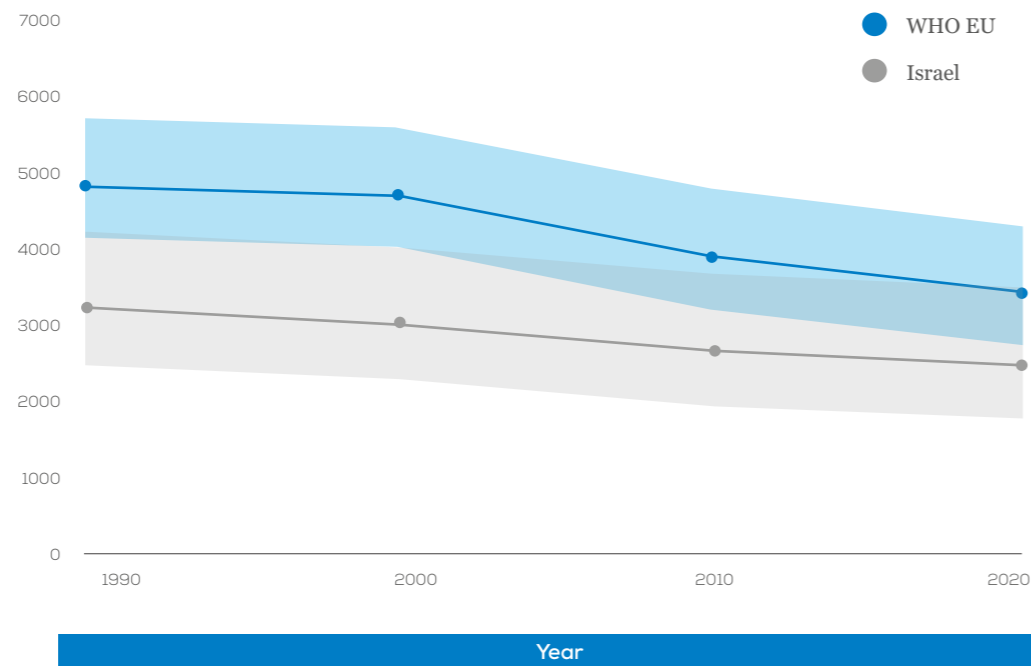


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

In figure 3 we show the distribution of DALYs rate per 100 000 population by age group divided in female and male:

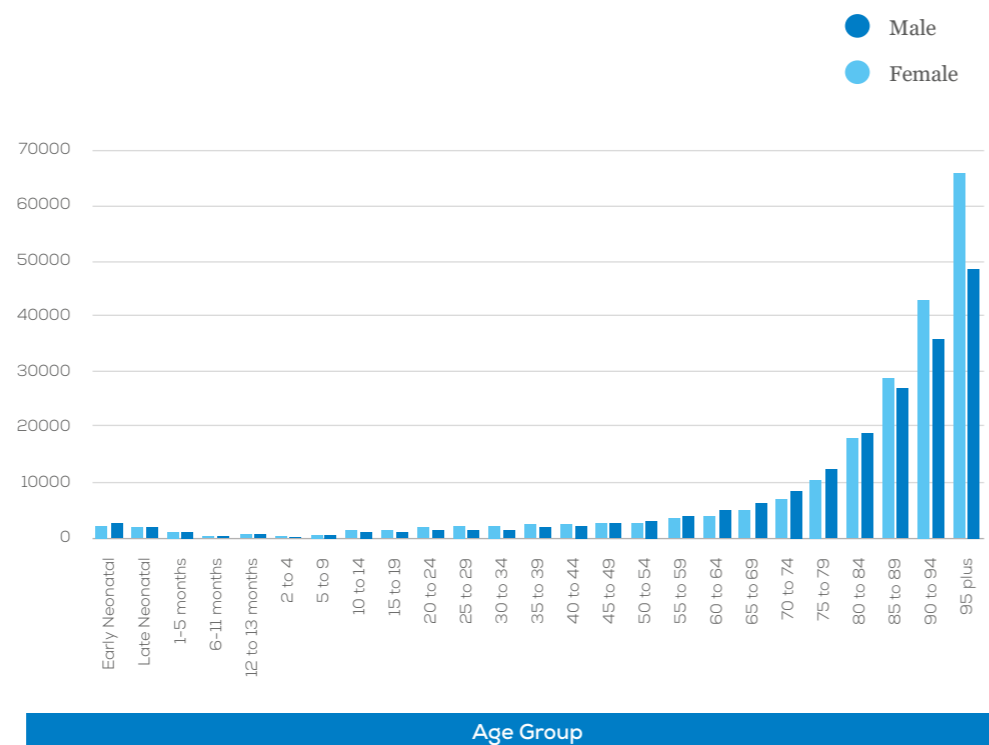


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

Extensive data and analyses are provided in the published paper and it will be communicated to the National Neurological societies.

COIN-EU (Cost of Illness in Neurology in Europe)

The Cost of Illness in Neurology in Europe (COIN-EU) project, which was launched in 2021, is run by EAN and led by Prof. Richard Dodel, Prof. Uwe Siebert and Prof. Günther Deuschl. This project is overseen at the EAN by Prof. Paul Boon, Prof. Claudio Bassetti and Prof. Thomas Berger.

The aim of the study is to assess disease- and country-specific annual costs for 12 categories of neurological diseases in Europe with a focus on the prevalent adult patient population. Costs have been calculated in three main categories: a) direct health care costs (i.e., all goods and services related to the prevention, diagnosis and treatment of a disorder; e.g. physician visits, hospitalizations and pharmaceuticals), b) informal care costs (i.e. other goods and services related to the disorder; e.g. social services, special accommodation and informal care), and c) indirect costs (i.e., lost productivity due to work absence or early retirement).

As the literature review revealed many gaps in research for many diseases and many countries, the group has developed a method to provide estimations of the above cost categories for the cases where no data are available. Data are imputed for those countries which belong to the same GNI category with countries that do present data. In case none of the countries which belong to the same GNI category present data, then an imputation is not possible.

In the table below, costs for **Israel** have been calculated for the diseases with available data, in three main categories where the numbers represent millions € PPP 2019.

million € PPP
2019

Informal Care

	Total Costs	Direct Costs	Informal Care Costs	Indirect Costs
Neurological Disorder				
Headache disorders	8,582.0	2,835.1	1,028.1	4,718.9
Sleep disorders	4,105.1	1,503.0	-	2,602.2
Alzheimer's disease and other dementias	1,292.5	557.8	734.4	0.4
Traumatic brain injury	476.8	141.1	85.3	250.4
Polyneuropathies	469.5	181.3	-	288.2
Stroke	442.6	226.5	124.9	91.2
Parkinson's disease	154.3	100.1	40.2	13.9
Idiopathic epilepsy	140.0	47.8	-	92.1
Multiple sclerosis	68.3	33.3	7.6	27.3
Brain and central nervous system cancer	9.8	5.9	3.8	-
Motor neuron disease	6.6	3.4	1.8	1.4
Meningitis	0.9	0.9	-	-
Total Costs:	15,748.3	5,636.2	2,026.2	8,085.9

Table 2: Total, direct, informal care and indirect costs per neurological disorder. Number of diseases depends on the availability of original studies and imputation of data.

NNS Survey 2021

In December 2021, the EAN conducted a survey among the national neurological societies. By combining the data from the Burden of Disease in Europe study across all European Region countries, we can provide demographic data regarding the workforce of neurologists in Europe for the 37 countries who took part in the survey.

The figure below represents the number of neurologists, fully specialised and in training per 100 000 population.

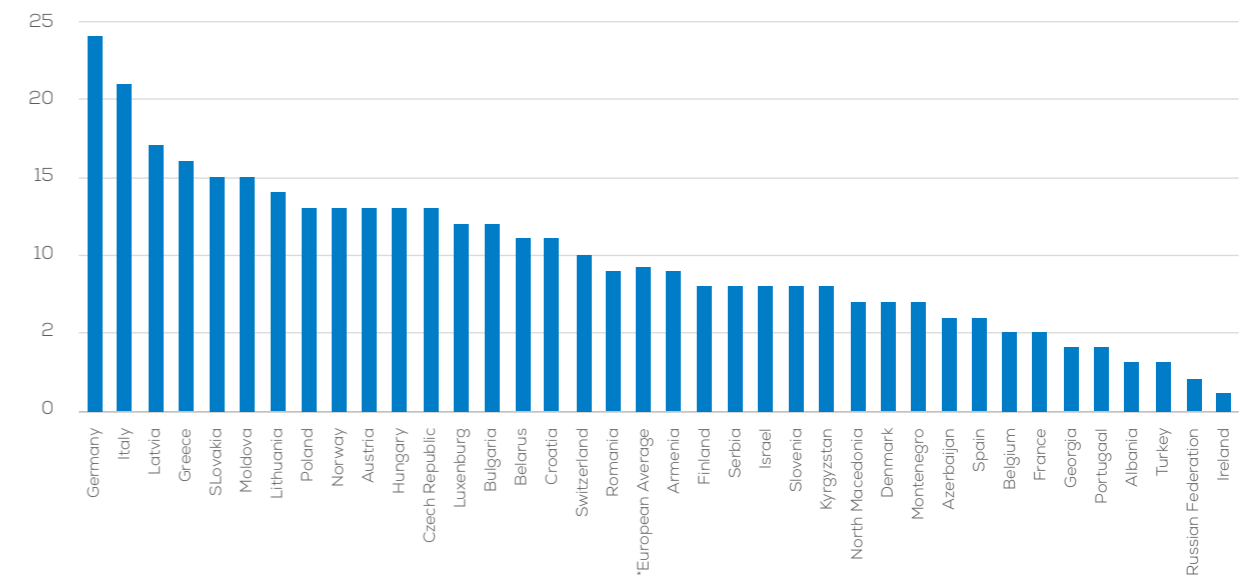


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

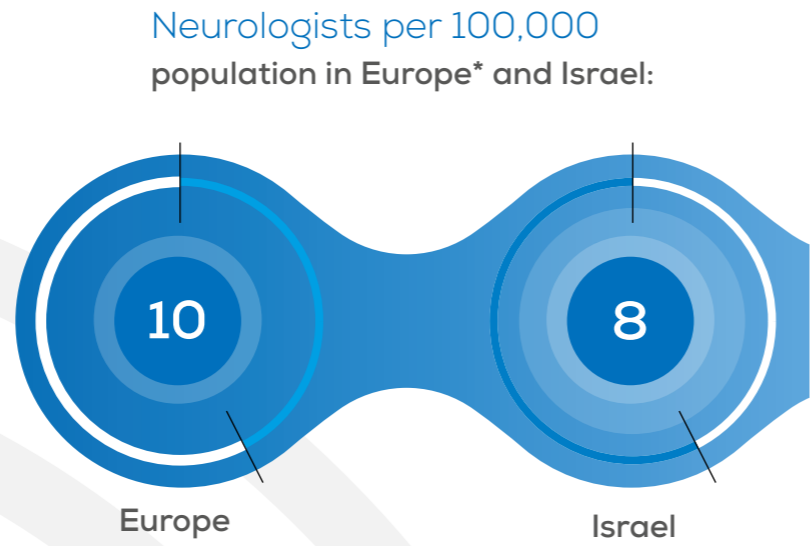
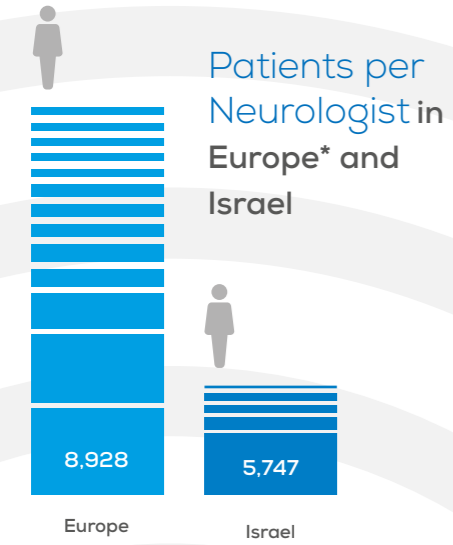
In the last figure the number of patients per neurologist is displayed:



Figure 5: Number of patients per neurologist (fully specialised and in training).

Neurological Diseases in Europe and Israel:

Key Data and Trends from 2021



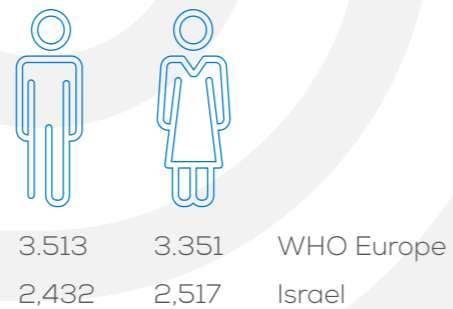
Percentage change of age-standardised DALYs, Deaths and prevalence from 1990 to 2021:

	WHO Europe	vs	Israel
DALYs	-28.98%		-23.98%
Deaths	-43.19%		-42.30%
Prevalence	0.34%		0.15%

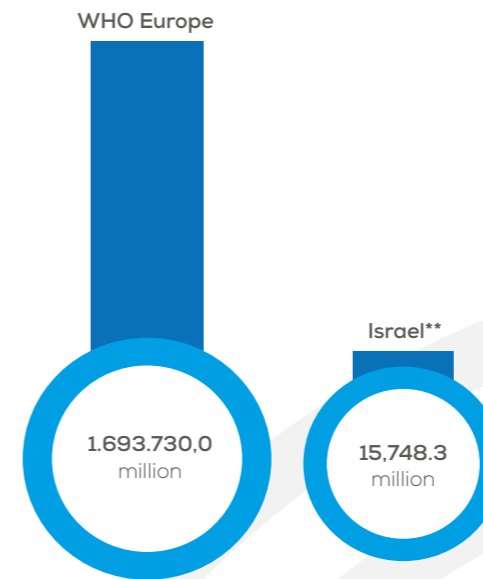
Most prevalent neurological diseases in Israel in

2021

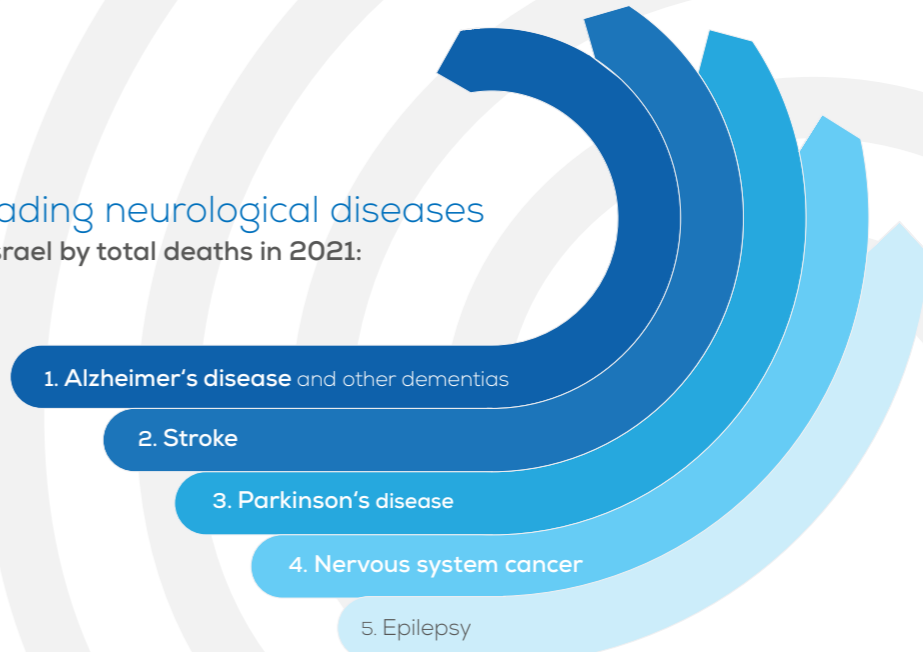
- 1 Tension-type headache
- 2 Migraine
- 3 Diabetic neuropaty
- 4 Stroke
- 5 Alzheimer's disease and other dementias



Age-standardised DALYs rate per 100,000 population in 2021 by sex



Leading neurological diseases in Israel by total deaths in 2021:



*Based on data from 37 countries of the WHO European region
**Cost estimates are derived from country-specific data available for specific diseases.

