COST Action CA18218
European Burden of Disease Network

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EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY

4th Working Group Meeting

National Institute for Health Development
Tervise Arengu Instituut (TAI)

Hiu 42, Tallinn, Estonia

14–15 September 2023

https://www.burden-eu.net/wg4

Tervise
Arengu
Instituut

Tallinn

4th Working Group Meeting

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Program

Thursday 14 September 2023

8h30	Bus leaves at Mere pst 5 (pick-up point)
9h00	Registration
9h30	Welcome & Presentation of COST action CA18218 burden-eu
10h00	Updates from the European Burden of Disease Network
10h30	Coffee break
11h00	**Future of European Burden of Disease Network**
12h00	Lunch
13h00	**Presentations network members (1) - Social inequalities**
	Updates of the Social Inequalities Task Force — *Elena von der Lippe, Robert Koch Institute, Germany*
	Inequalities in the burden of non-communicable diseases across European countries: A systematic analysis of the Global Burden of Disease 2019 study — *Orsolya Varga, Hungary*
	Subnational inequalities in years of life lost and socioeconomic associations in pre-pandemic Europe, 2009-2019: A burden of disease study — *José Chen-Xu, NOVA National School of Public Health, Portugal*
	Measuring social inequalities in the burden of environmental stressors — *Carl Michael Baravelli, Norwegian Institute of Public Health, Norway*
14h00	**Presentations network members (2) - Rare diseases**
	Updates of the Rare Diseases Task Force — *Juanita Haagsma, Erasmus MC, Netherlands*
	Status of rare diseases in burden of disease studies: A bibliometric analysis — *Ferit Sevim, Karadeniz Teknik Üniversitesi, Turkey*
	Rare disease indicators: an exploratory survey of European registries — *Diana Grad, Babes-Bolyai University, Romania*
	Presentations network members (3) - Air pollution
	Updates of the Air Pollution Task Force — *Juanita Haagsma, Erasmus MC, Netherlands*
	Burden of cardiovascular disease attributable to PM2.5 exposure in Portugal: Trends of mortality, 2011-2020 — *Mariana Corda, NOVA National School of Public Health, Portugal*
	PM2.5 intake and burden of Disease: Effect factors for Europe — *Heli Lehtomäki, National Institute for Health and Welfare, Finland*

	Local approach to attributable disease burden: Case study for air pollution and mortality in Belgium — *Arno Pauwels, Sciensano, Belgium*
15h00	Coffee break
15h30	**Presentations network members (4) - COVID-19**
	Updates of the COVID-19 Task Force — *Elena von der Lippe, Robert Koch Institute, Germany*
	Burden of COVID-19 in Luxembourg over three years of pandemic: 15 March 2020 until 14 March 2023 — *Jérôme Weiss, Direction de la Santé, Luxembourg*
	Years of Life Lost Due to COVID-19 in Serbia: Registered District-level Differences — *Aleksandar Stevanović, University of Belgrade, Serbia*
	Initial estimates of the Years lived with disability due to acute and long COVID-19 in 2021 in Belgrade — *Nataša Rosić, Institute of Public Health of Belgrade, Serbia*
	COVID-19 DALY in Germany in 2020, 2021 and 2022: initial findings — *Caoimhe Cawley, Robert Koch Institute, Germany*
16h30	Closure day 1

burden-eu dinner

19h00	Group dinner at the <u>Tavern Kochi Ait</u>.

Friday 15 September 2023

8h30	Bus leaves at Mere pst 5 (pick-up point)
9h00	Welcome
9h30	**Initial insights from the Global Burden of Disease 2021 study** — *Prof Theo Vos, Institute for Health Metrics and Evaluation, WA, USA*
10h30	Coffee break
11h00	**Presentations network members (5) - Methods**
	Concurrent validity of the Global Burden of Disease study Frailty Index (GBD-FI): external validation using the Survey of Health, Ageing and Retirement in Europe — *Mark O'Donovan, University College Cork, Ireland*
	Applicability of relevance index as a burden of disease indicator: Correlation between relevance index and disability adjusted life year — *Jeehee Pyo, University of Ulsan, Korea*
	Methodological issues in estimating the burden of disease due to patient safety incident — *Minsu Ock, University of Ulsan, Korea*

	Reporting practices for burden of disease studies — *Periklis Charalampous, Erasmus MC, Netherlands*
	Health impact of selected interventions to address unhealthy food environments in Belgium: use of population impact fractions — *Vanessa Gorasso, Sciensano, Belgium*
12h00	Lunch
13h00	**Towards a BOD research agenda** — *Vanessa Gorasso, Sciensano, Belgium*
14h30	**Wrapup and Closure** — *Brecht Devleesschauwer, Action Chair, Sciensano, Belgium*
15h00	Coffee break
15h30	Closure day 2

Invited speaker

Prof Dr Theo Vos, Institute for Health Metrics and Evaluation, USA

Professor Dr Theo Vos, MD, MSc, PhD, is a Professor of Health Metrics Sciences at the IHME at the University of Washington. He is a key member of the research team for the landmark GBD study, which is coordinated by IHME. In this role, he is working to improve the GBD methods, update sources of data, and develop partnerships with countries and disease experts to produce GBD estimates that are most relevant to policy decision-making. He is also focused on linking the epidemiological estimates from GBD to information on health expenditure and cost-effectiveness.

Professor Dr. Vos received his PhD in Epidemiology and Health Economics from Erasmus University and his medical degree from State University Groningen, both in the Netherlands. He also studied at the London School of Hygiene and Tropical Medicine, where he obtained an MSc in Public Health in Developing Countries.

Abstracts

Oral presentations

Poster presentations

Oral presentations

Inequalities in the burden of non-communicable diseases across European countries: a systematic analysis of the Global Burden of Disease 2019 study

Orsolya Varga[1], Nour Mahrouseh[1], Periklis Charalampous[2], Sarah Cuschieri[3], Diana Alecsandra Grad[4,5], Brigid Unim[6], Enkeleint A. Mechili[7,8], José Chen-Xu[9,10], Gaetano Isola[11], Elena von der Lippe[12], Carl Michael Baravelli[13], Florian Fischer[14], Nanna Weye[13,15], Romana Haneef[16], Mary Economou[17], Jonila Gabrani[18], Juanita A. Haagsma[2], Carlos Alexandre Soares Andrade[1]

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Background

Despite improvements in overall health in recent decades, health inequalities persist in European countries. This study aimed to quantify health inequalities in age-standardized disability-adjusted life years (DALY) rates for non-communicable diseases (NCDs) in general and 12 specific NCDs, across 30 countries of the European Economic Area (EEA) from 1990 to 2019.

Methods

DALY rate ratios were calculated to assess and compare disparities among the 30 countries, considering both sexes and temporal variations. To examine the fluctuations in DALY rates between 1990 and 2019, the annual rate of change was utilized. The Gini Coefficient (GC) was used to assess inequalities in DALY rates, and the Slope Index of Inequality (SII) to estimate the average absolute inequality in DALY rates among countries.

Results

Between 1990 and 2019, there was an overall declining trend in DALY rate, mostly for females. Bulgaria had the highest NCD DALY rate for both sexes in 2019. The highest inequality ratios throughout the entire period were found for digestive diseases, substance use disorders, and cardiovascular diseases. In 2019, the highest DALY rate ratio was observed between Bulgaria and Iceland, for males. The GC and SII highlighted that CVD contributed the most to inequalities in the study period, although inequality remained relatively low.

Conclusion

In the EEA countries, the DALY rate from NCDs has fallen significantly in recent decades. However, some NCDs, in particular cardiovascular diseases, continue to show high DALY rates, especially among men. Targeted preventive measures need to be implemented and access to health services improved.

Key messages

- Between 1990 and 2019, there was a notable decline in the DALY rate for NCDs in EEA.
- CVDs and other NCDs still show significant inequality across EEA.

Subnational inequalities in years of life lost and socioeconomic associations in pre-pandemic Europe, 2009-2019: a burden of disease study

José Chen-Xu[1,2], Orsolya Varga[3], Nour Mahrouseh[3], Romana Haneef[4], Juanita A. Haagsma[5], Periklis Charalampous[5], Diana Alecsandra Grad[6], Brigid Unim[7], Mary Economou[8], Enkeleint A. Mechili[9,10], Andreea C. Badache[11], Mirza Balaj[12], Terje Andreas Eikemo[12], Elena von der Lippe[13], Grant Wyper[14], Carl Michael Baravelli[15]

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Background

Health inequalities are an unjust and unfair issue, demanding concerted efforts to tackle them. This study aimed to determine subnational differences in years of life lost (YLLs) and the level of relative and absolute subnational geographical inequalities in YLLs and the association of socioeconomic factors with all-cause YLLs by regions of European Economic Area (EEA) countries.

Methods

Demographic and socio-economic data for 31 EEA countries were extracted from Eurostat. Age-standardised YLLs were estimated for Eurostat NUTS 2 level between 2009 and 2019. Inequalities were assessed using Gini coefficient (GC) and slope index of inequality (SII). The association between YLLs by household income and educational attainment was assessed using negative binomial mixed effect regression models.

Results

Over the period 2009-2019, YLLs have decreased in almost all subnational regions. The GC of YLLs across subnational regions was 14% for females (95%CI=13.5-14.6%) and 17% for males (16.1-17.5%). For women, Greece (GC=10.1%, 7.8%-2.5%) had the highest intra-country relative geographical inequalities in YLLs, while Belgium (GC=10.8%, 9.5-12%) had the highest relative inequality for men. The NUTS 2 regions with the lowest income per capita (incident rate ratio (IRR)=1.39, 1.23-1.58) and the highest proportion of persons with less than upper secondary education (IRR=1.66, 1.34-2.06) were associated with a significant increase in YLLs.

Conclusion

Significant differences in YLLs remain within EEA countries, with a strong association between regional socioeconomic factors and YLLs, highlighting the need to increase

national and local stakeholders' attention in improving education and income of the most vulnerable regions to tackle health inequalities.

Key messages

- Between 2009 and 2019, YLLs had a widespread decrease across subnational regions.

- Geographical relative and absolute disparities in YLLs remain a concern in the EEA.

Measuring social inequalities in the burden of environmental stressors

Vanessa Gorasso[1,2], Martina Otavova[1,3,4], **Carl Michael Baravelli**[5], Anette Kocbach Bølling[6], Jurgen Buekers[7], Susanne Breitner[8], Jane Idavain[9], Brigit Staatsen[10], Terje Andrea Eikemo[11], Alberto Castro[12], Brecht Devleesschauwer[1,13]

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Background

To design equitable policies addressing the burden of environmental stressors, monitoring how socially disadvantaged communities may endure disproportionate exposure and health impact to environmental pollutants is essential. However, such inequalities are currently not routinely considered when designing mitigation measures, due, in part, to the absence of a coherent methodological framework. The project BEST-COST aims to develop and implement an innovative framework for assessing social inequalities in the socioeconomic impact of ambient air pollution and noise.

Methods

In order to establish a standardised measure of multiple deprivation across European countries, we conducted a scoping literature review using the Embase and Medline databases. We aimed to identify a reliable and effective index that can be applied and compared across Europe. The index of multiple deprivation is subsequently associated with estimates of the health impact of environmental stressors at the smallest available geographical level.

Results

The framework is tested in five European countries (Belgium, Estonia, France, Norway, and Portugal) and is documented in a protocol to facilitate the transferability and reproducibility of our methodology. Details of the methodology and some examples will be presented.

Conclusion

Overall, the BEST-COST project provides a novel and robust framework for assessing social inequalities in the health burden attributable to environmental stressors. By identifying of the effects of environmental stressors on vulnerable communities, policymakers can formulate targeted group policies grounded in evidence, promoting equity and safeguarding public health.

Key messages

- The BEST-COST project offers a novel and robust framework to evaluate social inequalities in the health burden of environmental stressors.
- By identifying the impact of environmental stressors on vulnerable communities, policymakers can develop evidence-based targeted group policies that promote equity and protect public health.

Status of rare diseases in burden of disease studies: a bibliometric analysis

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Background

Political decision-making in health care, when resources are limited, requires several analyses to distribute resources most suitably. Decision-makers have considerable challenges in properly allocating resources to rare diseases with low frequency and high complexity. As a result, approaching the issue from a broad viewpoint based on a bibliometric study of the literature will minimize uncertainties and provide a broad perspective on the subject.

Methods

In the study, three steps of the bibliometric mapping method, which is one of the bibliometric analysis methods, study design, data collection and data analysis steps were followed. The Web of Science database, one of the bibliographic databases commonly used in the data collection process, was used according to the determined scanning strategy. As a result of the search, 138 studies were reached. R-based bibliometrix program was used for data analysis.

Results

As a result of the analyzes made, it has been seen that the annual scientific production of the studies on the subject has increased since 2010, the annual growth rate is 11.96% and the average article age is 5 years. International co-authorship was found to be 40.98%. Cooperation between countries was mostly between USA and UK (n=16). The most cited countries are the USA and the UK, respectively. The first three most frequently used keywords are orphan drugs (n=16), quality-of-life (n=14), rare diseases (n=14).

Conclusion

The study reveals the status of the existing literature on the subject, information on the citations of the studies, the keywords used, the authors of the studies and their relationship networks, and analyzes such as cross-country cooperation. The results of the analysis show that the concepts of burden of disease and rare diseases have started to be used together in the last five years and the importance of the subject is gradually increasing.

Key messages

- Rare diseases present significant challenges for policy decision makers in allocating resources.
- In this respect, it is important to present a picture of the current developments in the field to provide evidence to decision makers.

Rare disease indicators: an exploratory survey of European registries

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Background

Although rare diseases affect approximately 6% of global population, their burden is poorly investigated. Considering the lack of rare diseases categories within the Global Burden of Disease study, rare diseases registries represent an essential alternative in covering this gap for some of the elements employed when calculating the burden of diseases. Data collected by registries are either focusing exclusively on a specific rare disease or group of rare diseases or on common diseases, but also include rare forms. In Europe, the situation of registries containing data on rare diseases is regularly updated by ORPHAnet. The aim of this preliminary analysis is to explore the situation of registries covering rare diseases in Europe.

Methods

Data provided by ORPHAnet, containing ongoing and terminated registries, updated until April 2023, has been descriptively analyzed.

Results

Most registries are using ORPHAcodes for disease classification (the number included within one registry ranges between 1 and 56). These registries are collecting data at the national level and most of them are located in high-income countries (Germany, France, and Italy).

Conclusion

A questionnaire will be disseminated by email to registry administrators in order to gather data on the types of elements included and on the data collection and quality appraisal process.

Key messages

- Registries, although unequally distributed in Europe, are valuable resources for rare disease research and clinical translation but require adequate resources to function effectively and deliver maximum impact.
- More information on the data collection and quality appraisal processes is needed.

Burden of cardiovascular disease attributable to PM$_{2.5}$ exposure in Portugal: trends of mortality, 2011-2020

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Background

Particulate Matter with a diameter of 2.5 μm or less (PM$_{2.5}$) is an air pollutant harmful to human health, with evidence for a causal relationship with cardiovascular mortality and morbidity.

Methods

National Statistics Institute databases were used to collect the number of cardiovascular deaths between 2011 and 2020. The atmospheric levels of PM$_{2.5}$ and PM$_{10}$ were obtained from Online Database on Air Quality of the Portuguese Environment Agency. The Years of Life Lost (YLL) (2011- 2020) due to PM$_{2.5}$-associated stroke and IHD in the Portuguese population, ≥30 years, were determined using the population-attributable fraction.

Results

For 2011-2020, 395,196.47 and 268,470.72 YLL, for stroke and for IHD respectively, were estimated for mainland Portugal. For IHD, males had the highest IHD YLL attributable to exposure to PM2.5 (170,658.02 YLL), compared to females (97,812.69 YLL), and for stroke, females had the highest stroke YLL attributable to exposure to PM2.5 (205,224.72 YLL), compared to males (189,971.75 YLL). Considering regions, the IHD YLL was higher in Lisbon Metropolitan Area (107,274.01 IHD YLL) and the stroke YLL was higher in North (125,842.40 stroke YLL).

Conclusion

These findings provide evidence of the impact of air pollution on human health, which is crucial for decision-making. Therefore, these results may sustain the implementation of policies to reduce air pollution, and consequently the health impact and associated costs.

Key messages

- A total of 395,196.47 stroke YLL was attributable to PM$_{2.5}$ exposure.
- A total of 268,470.72 IHD YLL was attributable to PM$_{2.5}$ exposure.

PM$_{2.5}$ intake and burden of disease: effect factors for Europe

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Background

Fine particle (PM$_{2.5}$) exposure is associated with several adverse health outcomes. Effect factors describe the health burden of PM$_{2.5}$ per kilogram of intake. This allows for moving from exposure as ambient concentration to more accurate exposure characterization. Effect factors are utilized e.g., in life-cycle analysis, and health impact assessments of policies.

Methods

We estimated the effect factors for 26 European countries using the latest burden of disease estimates for PM$_{2.5}$ from Global Burden of Disease (GBD2019) study, EEA air quality data, and modelled intake estimates considering time and physical activity patterns in different microenvironments by sex and five age groups. The model accounts for infiltration of ambient particles to indoor microenvironments and for breathing rate variability according to physical activity.

Results

The mean PM$_{2.5}$ effect factor for Europe was 182 DALY/kg intake for adults. The effect factor varied between countries from 69 to 396 DALY/kg. Age specific effect factors had large differences, effect factors being 28, 167 and 521 DALY/kg intake for 25-44, 45-64 and +65 years old, respectively. Effect factors were on average 19% lower for women than for men.

Conclusion

Our findings revealed that the effect factors are strongly age dependent with higher effect factors being associated with older age groups. The variation between age groups is mainly explained by the differences in the baseline health burden. In addition, we found that the effect factors were on average larger for men than for women due to higher intake as well as higher burden of disease.

Key messages

- PM$_{2.5}$ effect factors are strongly age dependent.
- Women had on average 19% lower effect factors than men.

Local approach to attributable disease burden: case study for air pollution and mortality in Belgium

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Background

Comparative risk assessment is commonly applied to derive the share of the burden of disease attributable to specific risk factors, including air pollution. This method is usually conducted at national level, meaning areas and population groups within the country cannot be compared. We propose a novel approach, where the burden attributable to air pollution is derived locally.

Methods

Mortality in Belgium due to long-term exposure to particulate matter with diameter <2.5 μm ($PM_{2.5}$) and nitrogen dioxide (NO_2) is derived for the year 2019. In the local method, the attributable burden is calculated at the statistical sector, the smallest territorial unit. Results for individual sectors with small populations are potentially biased when using a concentration-response function (CRF) for the general population. Therefore, the local method is validated by comparing the results, summed to the Belgian total, to estimates derived with a 'global' national-scale approach. The discrepancy between the two methods is compared with the uncertainty related to exposure (5th and 95th concentration percentiles) and to the CRF (95% confidence interval of the relative risk), where the central global estimate acts as a baseline.

Results

The difference due to methods is limited to under 2% for both pollutants: 8665 deaths derived globally vs. 8588 (-77) locally for $PM_{2.5}$, and 3688 globally vs. 3633 (-55) locally for NO_2. For $PM_{2.5}$, the method discrepancy and exposure uncertainty (-128, +236) are comparable in magnitude, while both are severely outweighed by CRF uncertainty (-2039, +990). For NO_2, the exposure uncertainty (-300, +735) is substantially higher, which could be expected given its greater spatial variability, although CRF uncertainty (-1819, +3495) is again greatest.

Conclusion

The local attributable burden method shows potential for comparing areas and population groups at subnational level, on the condition that the results are aggregated to a sufficiently large scale to compensate for possible bias.

Key messages

- A local burden of disease method offers possibilities for comparing areas and population groups at subnational level.
- Validation by comparison with global results shows that potential local bias is mitigated after sufficient aggregation.

Burden of COVID-19 in Luxembourg over three years of pandemic: 15 March 2020 until 14 March 2023

Susanne Schmitz[1], **Jérôme Weiss**[1], Daniel Alvarez-Vaca[1], Martine Debacker[1], Guy Weber[1], Sara Monteiro Pires[2], Ala'a Alkerwi[1]

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Background

Burden of disease studies evaluate the impact of a disease in terms of morbidity, mortality and life expectancy over a given time horizon. This is the first study to evaluate the burden of COVID-19 in Luxembourg.

Methods

This study measured the burden of acute COVID-19 among the resident population of Luxembourg of any age, over 3 years (15 March 2020 – 14 March 2023) during the Public Health Emergency of International Concern, using the burden-eu consensus model. Data from the national epidemiological surveillance platform were used to estimate mortality, years lived with disability (YLD), years of life lost (YLL), and disability-adjusted life years (DALYs). In a sensitivity analysis, we take into account comorbidities among death cases to avoid overestimation of remaining life expectancy (RLE), using Charlson comorbidity index.

Results

As of 14 March 2023, we estimated 453,545 SARS-CoV-2 cases. Our study estimates a total of 11,679 DALYs, including 11,336 YLLs and 343 YLDs, or 612 DALYs per 100,000 per year. The largest burden was observed in the 2020, whereas the highest YLD was observed in 2022. Men carried a higher burden than women (6,979 vs. 4,700 DALYs). Taking into account comorbidities reduces the YLL on average by 7%.

Conclusion

COVID-19 has posed a significant burden to the Luxembourgish population during the pandemic. Further investigation is needed to assess the burden of long COVID-19.

Key messages

- YLL account for 97% of the DALY.
- The COVID-19 pandemic had an impact onto the national healthcare system.

Years of life lost due to COVID-19 in Serbia: registered district-level differences

Aleksandar Stevanović[1,2], Milena Šantrić-Milićević[1,2], Jovana Todorović[1,2], Stefan Mandić-Rajčević[1,2], Nataša Rosić[3], Gordana Bjelobrk[4], Elena von der Lippe[5], Brecht Devleesschauwer[6]

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Background

The effectiveness of Serbia's public health response to the COVID-19 pandemic depended on various factors, some of which were subject to notable regional disparities. We analyzed individual-level data to determine district variations in COVID-19 premature mortality, also considering where the death occurred and if it was laboratory confirmed.

Methods

We obtained data on COVID-19 deaths in 2020 and 2021 from the Statistical Office of the Republic of Serbia. This included disaggregated, anonymized information on individual cases, including age, sex, time and place of death, and the deceased's residential area. The analysis differentiated between cases where COVID-19 was laboratory confirmed (U07.1), and cases where it was clinically suspected (U07.2).

Results

The mean value of Years of Life Lost (YLL) in Serbia was 12.51±7.62. Among the 25 districts, *Zlatiborski* district performed the best with a mean YLL value of 11.35±6.76, whereas *Pčinjski* district had the poorest performance of 17.62±9.05. Out of all death cases, 6.4% (2437) occurred outside hospital settings, and *Pirotski* district had the highest percentage of such cases at 12.9%. Nationally, laboratory confirmation has been done for 92.7% (35,287) of all COVID-19 deaths, with *Zaječarski* district having the lowest percentage of confirmed cases at 68.7%.

Conclusion

A notable variance in premature mortality due to COVID-19 in Serbia has been registered at the district level. Along with the average YLL number, there are significant disparities in the share of deaths that occur outside of hospitals or have no laboratory confirmation. Additional analysis should try to explain these differences.

Key messages

- Premature COVID-19 mortality in Serbia significantly varied at the district level.
- Identifying district-level differences helps improve overall pandemic preparedness.

Initial estimates of the years lived with disability due to acute and long COVID-19 in 2021 in Belgrade

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Background

Investigating the burden of acute and long COVID-19 helps healthcare resource allocation and improves understanding of the population vulnerability. In 2021, more information was available about COVID-19 treatment, including vaccines, which might have helped to combat the disease better. The study objective was to provide initial estimates of the total YLD, including acute and long COVID-19, in 2021 in Belgrade.

Methods

Total and age and sex-disaggregated YLD and YLD per 100,000 population due to acute and long COVID-19 were calculated for Belgrade in 2021, Jan. 1 - Dec. 31. The City Institute of Public Health Belgrade provided surveillance numbers of cases of ICD-X: U07.1 and U07.2 and population size. The Burden EU model disability weights and severity distribution and duration of illness from the BoCO-19 study for 2020 were used

Results

In 2021, in Belgrade, 797.4 YLD were due to acute and long COVID-19 (298.2 for men and 499.2 for women), with the highest share recorded in the ages 70 to 74. The major contribution to total YLD had long COVID-19 (78.2% among men and 86.9% among women). The total YLD rate per 100,000 was higher among women than men (56.0 v 37.4) and was the highest for persons 80-84 years.

Conclusion

In 2021, initial estimates show that long-term COVID-19 largely contributed to the total YLD in Belgrade. Women and the elderly had higher YLD rates. Medical records should be reviewed to standardize reporting of symptoms and severity of acute and long COVID-19 and assist in health care planning.

Key messages

- The major share of total YLD was estimated for long COVID-19.
- Why long COVID-19 YLD prevailed in Belgrade needs to be investigated.

COVID-19 DALY in Germany in 2020, 2021 and 2022: initial findings

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Background

COVID-19 disability adjusted life years (DALY) have been published for Germany for 2020. However, the analysis is currently being updated to include Long COVID, and to cover the full period 2020 – 2022.

Methods

Numbers of COVID-19 cases and deaths are available from national surveillance data. For the calculation of years of life lost (YLL), national life expectancy estimates are used. For calculating years lived with disability (YLD) due to 'acute' COVID-19, the Burden-EU consensus model is used. Methods to estimate the burden due to Long COVID are being adapted, based on approaches suggested by the Global Burden of Disease Long COVID Collaborators.

Results

Preliminary results for YLL and acute YLD for all three years are available. Calculations of the burden due to Long COVID are ongoing. Fine grained monitoring over time is possible, because data are reported on a daily basis. Based on initial results available so far (YLL plus acute YLD), DALY rates per 100,000 population were 414.8, 874.5 and 442.5 in 2020, 2021 and 2022 respectively. YLL accounted for 99.2%, 99.0% and 96.7% of DALYs in 2020, 2021 and 2022 respectively. In all years, overall, YLL per 100,000 population were higher among men than women, while YLD per 100,000 population were similar among men and women.

Conclusion

Preliminary results show the greatest COVID-19 burden in Germany was in 2021. Inclusion of Long COVID may change some of the patterns seen, for example the age and sex distribution for YLD, though is unlikely to change overall trends in total DALY. Calculations incorporating the burden of Long COVID are expected soon.

Key messages

- Over the three pandemic years, results suggest the COVID-19 burden in Germany was greatest in 2021.
- Calculations incorporating the burden of Long COVID are expected soon.

Concurrent validity of the Global Burden of Disease study Frailty Index (GBD-FI): external validation using the Survey of Health, Ageing and Retirement in Europe

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Background

Frailty is a state of increased vulnerability in adults associated with ageing, comorbidity and physical symptoms. Comparable global estimates of frailty prevalence are not available. The Global Burden of Disease Frailty Index (GBD-FI) applies a common model of frailty (deficit accumulation) to generate a frailty tool using conditions available in the GBD study. The concurrent validity of this tool was compared with established frailty measures.

Methods

Data were obtained from the Survey of Health Ageing and Retirement in Europe (SHARE). A 20-item GBD-FI was generated and compared with the Clinical Frailty Scale (CFS), Frailty Phenotype (FP), SHARE-FI and a 70-item frailty index (FI-70). Diagnostic accuracy was assessed using area under receiver operating characteristic curves (AUC). Cross-sectional sampling weights were applied, and a survey-weighted bootstrapping approach (1000 replicates) was used for AUC comparisons.

Results

In total, 34,054 individuals aged ≥50 years from 15 countries were included (mean age 65 years, 54% female). The prevalence of frailty according to the GBD-FI was 22%, range: 8% (Switzerland) to 40% (Poland). The GBD-FI had good to excellent diagnostic accuracy for frailty, irrespective of the established measure used to define frailty. The AUC was 0.86 (95% confidence interval: 0.85-0.87) using the CFS, 0.87 (0.86-0.88) for the FP, 0.88 (0.87-0.89) for the SHARE-FI, and 0.94 (0.94-0.94) for the other frailty index (FI-70).

Conclusion

The GBD-FI demonstrated concurrent validity, suggesting it is a valid measure of frailty, and it is potentially an efficient, replicable, and consistent approach to comparing the epidemiology of frailty using GBD data.

Key messages

- The GBD-FI had good to excellent diagnostic accuracy for frailty.
- Frailty prevalence varied significantly between European countries.

Applicability of relevance index as a burden of disease indicator: correlation between relevance index and disability adjusted life year

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Background

Although disability adjusted life year (DALY) is commonly used to determine the ranking of burden of disease, it is necessary to consider whether DALY can fully capture the phenomenon of burden of disease. In this study, we tried to determine how relevance index (RI) helps in understanding the phenomenon of burden of disease by examining the relationship between RI and DALY.

Methods

RI is an indicator expressed as a percentage of residents' medical service utilization in a region relative to their total medical service utilization and indicates the status of inequality in medical use among regions. As of 2020 analyzed in the two previous studies, the relationship between RI and DALY (after applying natural log) by cause of disease in Republic of Korea was examined with the Pearson correlation coefficient. A total of 209 causes of disease overlapping in the two previous studies were analyzed.

Results

A positive correlation was determined between RI and DALY (r = 0.483, P-value <0.001). Among causes of disease with a RI of less than 50, causes of disease with a relatively high DALY include cancers, such as ovarian cancer, and maternal and neonatal diseases, such congenital heart malformations, and male infertility, were prominent.

Conclusion

Among cause of disease with relatively high DALY, rare cancers and maternal and neonatal diseases urgently need improvement in RI. Furthermore, even for causes of disease with a relatively small DALY, it is necessary to examine whether it is necessary to improve inequality in healthcare use using RI.

Key messages

- The burden of disease can be examined in a more diversified way by using the RI together with the DALY.

Methodological issues in estimating the burden of disease due to patient safety incident

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Background

Despite the importance and urgency of patient safety issues, no standard method has been established to measure disability adjusted life year (DALY) due to patient safety incident (PSI). In this study, we reviewed the methodological issues that should be kept in mind when estimating DALY due to PSI.

Methods

We reviewed the existing articles on estimating DALY due to PSI. In addition, it is organized by issue that must be considered in the process of calculating DALY, so that it can be used as a reference for developing the methodology for calculating DALY due to PSI and making a related reporting guideline.

Results

Articles that estimated DALY due to PSI were quantitatively insufficient. In particular, it seems that there is still a lack of agreement on how to operationally define and quantitatively measure patient safety issues, such as an adverse event. In addition, it is necessary to consider whether an adverse event can be compared with other cause of disease on the same line. Further discussions on what to consider the disability caused by adverse events, and what level (i.e., disability weight) and duration should be discussed. Finally, how to reflect the preventability of adverse events in DALY is also a major estimation issue.

Conclusion

Studies estimating DALY due to PSI are lacking despite their importance. Referring to the discussions summarized in this study, it is necessary to draw consensus from the standard methodology for estimating DALY due to PSI.

Key messages

- Estimating DALY due to PSI will broaden the scope of burden of disease study and increase its implications.

Reporting practices for burden of disease studies

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Background

The European Burden of Disease Network (burden-eu) launched a series of systematic reviews to explore methodological choices and assumption parameters used to quantify the burden of non-communicable diseases (NCDs), injuries, infections, and risk factors in studies across Europe. Findings from these reviews revealed wide variations and inconsistencies in the application and reporting of DALY methods. We aimed to develop guidelines for reporting DALY calculation studies which will enhance transparency and comparability of burden of disease (BoD) estimates.

Methods

A burden-eu working group of experts generated a list of potential reporting items based on existing literature, standards for developing guidelines, and consultations with BoD experts. To pilot the drafted product, we asked BoD experts and non-experts to apply it to existing disease burden studies. We received feedback and we revised the guidelines accordingly.

Results

The STROBOD statement consists of 25 items including information on study design, approaches for data corrections, methodological design choices regarding life tables, disease models, disability weights, and methods dealing with uncertainty. Interpretation and rationale of each reporting item along with examples of good reporting practices will soon be available online.

Conclusion

The STROBOD statement will serve as a standard protocol for reporting all necessary details of DALY calculations, as an educational tool, and help researchers to understand the different methodological choices and assumptions needed in the assessment process. The burden-eu will continue supporting interaction between researchers and future BoD activities across Europe and beyond.

Key messages

- By mapping disease burden activities and DALY methodological choices, the burden-eu has better defined the BoD landscape.
- The STROBOD statement will enhance usability of BoD estimates for decision-makers, as well as it can be used by authors, reviewers, and/or journal editors in order to promote consistencies in reporting DALY estimates.

Health impact of selected interventions to address unhealthy food environments in Belgium: use of population impact fractions

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Background

The exposure to an increasingly 'obesogenic' food environment increases the proportion of people consuming unhealthy foods and beverages. Being exposed to these environments leads to an increase in the burden of overweight and obesity and its related healthcare costs. In Belgium, there is no national nutritional physical activity plan. Public health authorities have different options to tackle a problematic environment.

Methods

We computed the potential impact fraction (PIF) of different interventions on the national body mass index (BMI) distribution. The following interventions were selected: tax based on sugar content of sugar and sweetened beverages (SSB), volumetric tax on SSB and front-of-pack nutrition labelling (Nutriscore). Baseline consumption of SSB and energy intake from ultra-processed food, as well as height and weight, were taken from the national Food Consumption Survey. The resulting PIF were then multiplied with the burden of the diseases of interest.

Results

The highest benefit was achieved by introducing a tax on sugar. This led to 1385 years of life lost due to disability (YLD) avoided every year from the burden of high BMI. A tax on SSB of 20% could avoid 1111 YLD for every year of implementation, whereas the Nutriscore 197 YLD. The burden of diabetes was the one reduced the most with a yearly burden of 788 YLD avoided with a tax on sugar, 634 YLD with a volumetric tax on SSB and 104 with the Nutriscore.

Conclusion

To reduce the burden of high BMI, a tax on SSB could be introduced. Health impact assessment is a powerful tool to guide evidence-based policy.

Key messages

- Introducing a tax on SSB seems to have the biggest effect on the morbidity burden of non-communicable diseases.
- Public health authorities need to act to control an increasingly 'obesogenic' food environment.

Poster presentations

Applying burden of disease methods to a whole diet risk-benefit assessment: a framework for assessing sustainable diets

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Background

Risk-benefit assessment (RBA) is a relatively new decision-support tool that weighs both risks and benefits against each other to determine if a change (e.g., a dietary transition) has net positive or negative health impacts in a given population. Often, impacts are quantified in burden of disease metrics, namely DALYs. Many RBAs have been conducted on singular food items or components, such as seafood. These have been done both with and without considering substitution foods. However, there has not yet been a whole-diet RBA published.

Methods

Following the RBA approach, a whole-diet RBA of sustainable diets is being conducted in the Danish population using the Danish National Survey on Diet and Physical Activity (DANSDA) data. Alternative dietary scenarios that reduce animal-based products, including a Danish-adapted EAT-Lancet diet, will be identified or defined and animal-derived products will be substituted with realistic plant-based consumptions using participants' recorded dietary patterns from DANSDA.

Results

Preliminary results from a Danish-adapted EAT-Lancet diet revealed that nearly 23,000 DALYs could be averted per year if the Danish population followed this diet. However, massive and possibly unattainable increases in certain food groups would be necessary for the general population (such as a 6400% increase in legumes and a 1000% increase in nuts).

Conclusion

Whole-diet RBA offers a promising opportunity to evaluate dietary changes in a population based on a holistic view. The novel approach should allow for a more realistic and culture-specific understanding of sustainable diets and would make RBAs more valuable for guiding policy and recommendations.

Key messages

- Whole-diet RBAs provide valuable health impact information for dietary transitions.
- Scenarios based on current consumption allow for more feasible dietary transitions.

Attribution of modifiable risk factors to the total burden of colon and rectum cancer

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Background

Colon and rectum cancer (CRC) is the second most common cancer among both men and women and the third leading cause of death among cancers worldwide. The majority of all cases of colon and rectum cancers is associated with the modifiable risk factors, such as: low physical activity, diet low in fiber, along with high intake of red or processed meat, alcohol consumption and smoking.

Methods

Within the EU CA 18218, we analyzed Disability-Adjusted Life-Years (DALY) rates of colon and rectum cancer per 100,000 among general population attributable to the six modifiable risk factors: Low physical activity, low fiber in diet, alcohol consumption, smoking of tobacco, high intake of red meat, and high intake of processed meat. Estimates were taken from the Global Burden of Disease Study 2019, for ten countries with the highest DALY rates of colon and rectum cancer in WHO European region in 2019: Hungary, Monaco, Bulgaria, Croatia, Serbia, Slovakia, Poland, Portugal, Czechia and Bosnia and Herzegovina

Results

The highest DALY rate was in Hungary (1189.75/100,000), followed by Monaco (1159.39/100,000). The highest attribution of six modifiable risk factors combined to total DALY was in Bulgaria (53.51%), closely followed by Czechia (52.30%). The average attribution in these countries of six examined modifiable risk factors was 47.89%. The highest attribution of low physical activity, diet high in red and diet high in processed meat was in Monaco (9.04%, 10.41% and 6.62%, respectively), the highest attribution of low dietary intake of fiber was in Bulgaria (3.48%), the highest attribution of smoking was in Bosnia and Herzegovina (20.11%).

Conclusion

Almost a half of total burden of colon and rectum cancer in ten countries with the highest burden can be attributed to the modifiable risk factors, to which we can direct preventive, population wide interventions.

Key messages

- Modifiable risk factors attribute significantly to the total burden of CRC.
- One fifth of the CRC burden in Bosnia and Herzegovina can be attributed to smoking.

Burden of chronic kidney disease in Türkiye

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Background

The increasing prevalence of chronic kidney diseases (CKD) has serious implications for health outcomes. Globally, it is estimated that 1 in 20 people have CKD. Globally, 1.4 million (95% CI; 1.3-1.5) people died in 2019 from CKD, and CKD was among the 11th leading causes of death worldwide. The aim of this study is to analyze the chronic kidney disease burden of economic and disease in Türkiye.

Methods

The data used for this study were extracted from the GBD 2019 study. We analysed age-standardised mortality rates, years of life lost (YLL) due to premature death, years lived with disability (YLD) and disability- adjusted life years (DALY), as well as the percentage of change of these indicators between 1990 and 2019. In this study, the human capital approach was used to financially evaluate premature deaths caused by chronic kidney disease and life years lost due to disability.

Results

It was determined that the burden of chronic kidney disease in Türkiye decreased by 34% in 2019 compared to 1990.The monetary value of the years of life lost due to DALY caused by chronic kidney disease was determined as 904.812,969 US$ (95% CI: 616.745.782-1.270.831.277). The monetary value of life years lost due to DALY caused by chronic kidney disease was determined as 0.12% (95% CI: 0.08-0.17) in GDP.

Conclusion

Diabetes, high blood pressure and glomerulonephritis are among the most important causes of chronic kidney disease burden in Türkiye. With this study, it was determined that more than half of CKD deaths in Turkey, as well as worldwide, were caused by diabetes and hypertension.

Key messages

- Among the factors affecting the burden of chronic kidney disease, it is seen that there are problems such as different exposure to risk factors, insufficient health care financing, and access to health services. In order to reduce the burden of CKD disease, it is necessary to increase access to health services, use new health technologies, develop cost-effective health reforms and health policies.
- In Türkiye, making chronic kidney disease screening routine in primary care, especially for high-risk populations (people living with diabetes or hypertension), will contribute significantly to reducing the burden of this disease.

Burden of disease among older adults in Europe: trends in mortality and disability, 1990-2019

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Background

It is important to understand the effects of population ageing on disease burden and explore conditions that drive poor health in later life to prevent or manage these. We examined the development of disease burden and its components for major disease groups among older adults in Europe over the last thirty years.

Methods

Using data from the Global Burden of Disease 2019 Study we analyzed burden of disease trends between 1990 to 2019 measured by years of life lost (YLL), years lived with disability (YLD), and disability-adjusted life years (DALY) among older adults (65+ years) in Western, Central, and Eastern Europe using cause groups for diseases and injuries.

Results

Between 1990 and 2019, the crude numbers of DALYs for all causes increased substantially among older Western Europeans. In Eastern Europe, the absolute DALYs also increased from 1990 to 2005 but then decreased between 2006 and 2013. However, DALY rates declined for all European regions over time, with large differences in the magnitude by region and gender. Changes in the YLL rate was mainly driven by the contribution of cardiovascular diseases.

Conclusion

This study found an increased overall absolute disease burden among older Europeans between 1990 and 2019. The demographic change that has taken place in Eastern European countries implies a potential problem of directed resource allocation to the health care sector. Furthermore, the findings highlight the potential health gains through directing resources to health promotion and treatment to reduce YLDs and to prevent YLLs, primarily from cardiovascular diseases.

Key messages

- The decline in disease burden in Europe was mainly driven by a reduction in YLL.
- The rate of YLDs has not declined in Europe and only small improvements have taken place.

Burden of hepatitis B and C virus infections in Armenia: methodological challenges

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Background

Hepatitis B and C viruses (HBV and HCV) cause acute and chronic infections, with the latter having hepatic and extrahepatic manifestations and leading to cirrhosis and hepatocellular carcinoma (HCC). Up to 80% of HCC and two-thirds of cirrhosis cases are linked to these infections. Quantifying the health impact of HBV and HCV is important for efficient allocation of resources to fight them. Within the CATINCA project, this study estimated the burden of these viruses in Armenia.

Methods

A countrywide seroprevalence study among general adult population of Armenia conducted in 2021 provided data on the prevalence of chronic HBV and HCV. Data on acute infections, cirrhosis and HCC diagnosed during 2021 were taken from official data holders like ARMED and NIH. All data were disaggregated by age and sex. We followed the GBD study procedure with some modifications to calculate the burden of HBV and HCV.

Results

Methodological challenges were related to including chronic hepatitis in the calculations; lack of Armenia-specific attributable fractions of cirrhosis and HCC due to HBV and HCV; applying suitable severity/stage distribution for calculating YLD; and dealing with possible underreporting of cases. Preliminary calculations resulted in 155 YLD and 5,421.8 YLL (183.2 per 100,000 population) for HCV, and 75 YLD and 6,754.7 YLL (228.2 per 100,000 population) for HBV, with higher numbers for males and those aged 50-69.

Conclusion

This effort was aimed not only at estimating HBV and HCV burden in Armenia but creating a model for Burden of Disease estimation applicable for other countries.

Key messages

- Calculating disease burden using country data poses many methodological challenges.
- This work could yield a burden of disease estimation model applicable elsewhere.

Differential burden of functional decline and age-related chronic conditions among older people of both sexes in Italy: an analysis from the Global Burden of Disease 1990-2019

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Background

The rise in longevity is accompanied by an increasing amount of life with disability. We evaluated the disability burden of Italians aged ≥70, with a focus on sex differences, functional decline (FD) and chronic diseases (CD).

Methods

The following measures from the Global Burden of Disease Study 1990-2019 were used: Life Expectancy at age 70, LE-70; Proportion of Years in Ill Health at age 70, PYIH-70; Disability Adjusted Life Years, DALYs; Years Lived with Disability, YLD. Nineteen age-related conditions were selected from the leading 10 causes of death and/or YLD for older Italians to analyse the burden attributable to FD and CD. Results were stratified by sex and compared to Western Europe (WE).

Results

LE-70 was higher among women than men (2019 18.2 vs. 15.4) with an increasing trend especially for men (1990-2019 variation 20.3% vs. 27.4%), counterbalanced by a larger PYIH-70 for women (2019 29.0% vs. 27.5%) with a slight reduction over time. In WE the gender gap was smaller and showed an opposite trend in PYIH-70 (1990-2019 2.9% vs. 2.5%). DALYs were lower for women (2019 -19.3%) with a decreasing trend 1990-2019 (-20.4% vs. -28.9%). The YLD fraction was always higher among women (mean 5.8%; WE 8.6%). The 19 conditions analysed represented ~70% of total YLD, the majority attributable to FD (2019 45.7% vs. 41.1%). The burden of FD tended to a slow decrease in Italy, while in WE were constant for men and increased among women.

Conclusion

The disability burden was higher among women and mostly driven by FD.

Key messages

- Women spend a higher proportion of life with disability, mainly due to FD.
- Specific measures to face this inequality and promote wellbeing are urgently needed.

Disability-adjusted life years (DALYs) due to COVID-19 in the Federation of Bosnia and Herzegovina, 2020

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Background

During the COVID-19 pandemic in the Federation of Bosnia and Herzegovina (FB&H) in 2020, 72,188 cases of COVID-19 and a total of 2,339 deaths were recorded. Our aim was to estimate disability-adjusted life years (DALYs) due to COVID-19 in FB&H, during 2020. DALYs combine the impact of morbidity and mortality and can enable comparable assessments of health harms due to COVID-19 in our country.

Methods

We calculated DALYs based on the Burden-EU consensus model, including YLL, acute YLD and preliminary estimations for YLD due to Long COVID, based on approaches suggested by the Global Burden of Disease (GBD) Long COVID Collaborators. For YLL, we used the GBD 2019 reference life expectancy table. For acute YLD, the severity distribution was based on German data. For YLD due to Long COVID, we used an adapted version of the Long COVID Collaborators approach and results are still preliminary.

Results

During the year 2020, 39,511 years of life was lost by men, whereas women lost 19,910 years of life; the total YLL lost by men and women was 59,420. Estimates for total YLD by men was 407,9, whereas for women YLD 533,1 (estimates for Long COVID are preliminary), during the year 2020 initial. Our preliminary estimate DALY for the year 2020 in FB&H is therefore 60,361.

Conclusion

Essential health care has been interrupted because of measures during the first year of pandemic COVID-19 in FB&H. During 2020, men lost 1.5 more YLL in comparison to women in the FB&H, and the Long COVID-19 results are preliminary. DALY for FB&H is similar value to many countries.

Key messages

- Preliminary estimate DALY for the year 2020 in the Federation of Bosnia and Herzegovina is therefore 60,361.
- During 2020, men lost 1.5 more YLL in comparison to women in the Federation of Bosnia and Herzegovina.

Epidemiologic transition and the YLD/YLL ratio

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Background

The epidemiological transition is characterized by demographic, societal and health status changes in societies. The shift from acute to chronic diseases is the most visible effect on health of populations. High volume of years of life lost due to premature mortality is related to acute diseases (early phases of epidemiologic transition) whereas chronic diseases are responsible for larger burden of years lived with disability (later phases of epidemiologic transition).

Methods

Using the GBD data we propose a simple index based on ratio of two elements of DALY's as YLD/YLL. We used the data of the GBD study available at https://vizhub.healthdata.org/gbd-compare/ on 12/06/2019 to calculate the index for time of 1990-2019. The index was calculated for country groups using country categories based on SDI index.

Results

The value of the index has increased ranged from 0.68 to 1.12 in group of high SDI countries and from 0.17-0.31 within low SDU country group. The index shows consistently increasing values by five SDI based country groups with a clear and persistent difference among the groups.

Conclusion

Although the proposed index needs more research and validation studies, despite of all uncertainties, it seems to be robust to show progress in epidemiological transition. It can be used to adjust priorities within national health policies as well as global health actions. It can also help to predict future health system needs to tackle causes leading to YLD or YLL.

Key messages

- A simple index of YLD/YLL can be used to measure and forecast the progress of epidemiologic transition.
- The index, after more verification-oriented research, can be used to target future health policies both on global and national level.

Health impact assessment of future maize consumption scenarios in Europe: a risk-benefit case study

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Background

Increased consumption of whole grains, including maize, has been recommended as part of healthy and sustainable diets. Simultaneously, climate change is expected to influence the contamination of grains with mycotoxins. Due to increased temperatures, aflatoxin B1 and fumonisins are predicted to become a food safety issue in Europe with maize being one of the most susceptible crops. Thus, weighing the benefits with (emergent) risks is imperative when estimating the health impact of maize food system in European populations.

Methods

This risk-benefit assessment (RBA) case study is currently under planning phase and is part of the EU funded project HOLiFOOD. A quantitative RBA using Disability-Adjusted Life Years (DALY) as a metric will be applied to evaluate health impacts of consumption of maize in Denmark, France, and Hungary. This study will focus on evaluating the health impacts of different alternative scenarios that will be developed based on either an increased consumption of maize or on forecasting increased risks due to climate change while considering different exposure scenarios.

Results

The output of this case study is expected to inform decision-making when e.g., formulating and communicating future dietary recommendations or setting actions for risk preparedness and mitigation strategies. Data availability is a major challenge foreseen in this study.

Conclusion

This study will contribute to the body of evidence on health impacts of cereals, besides demonstrating the applicability of RBAs in different national contexts. It will also exemplify how emergent risks could be incorporated in the assessment of trade-offs related to food safety and nutrition.

Key messages

- Emerging risks might impact risk-benefit balance of maize consumption scenarios.
- Burden of disease methods are a fundamental element of RBA studies.

National burden of cardiocerebrovascular disease in Portugal from 2010 to 2018

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Background

Cardiocerebrovascular disease is the leading cause of disease burden globally, accounting for one third of all deaths and being a major contributor to disability. However, studies examining the burden of disease (BoD) in Portugal are scarce and outdated.

Methods

We estimated the BoD of Cardiocerebrovascular disease between 2010 and 2018 using the Hospital Morbidity Database, an administrative record of hospitalizations in all public hospitals in Portugal. We used data coded for acute myocardial infarction (AMI) and stroke, following the International Classification of Diseases (ICD-9/10-CM). BoD was estimated in DALYs, providing year-by-year estimates.

Results

Over the full time period, a total of 372,293 individuals were hospitalized due to cardiocerebrovascular disease in Portugal, with 114,372 (30.7%) cases for AMI and 257,921 (69.27%) for stroke. For AMI, we calculated 132,477 YLLs and 136,932 YLDs, resulting in a total of 269,409 DALYs lost. For stroke, we calculated 466,216 YLLs and 243,229 YLDs, corresponding to 709,445 DALYs. Collectively, these two diseases contributed to 978,855 DALYs lost in Portugal (averaging 108,761.7 DALYs/year). A decreasing trend was observed for both conditions over the years.

Conclusion

While AMI and stroke have a significant public health impact in Portugal, stroke represented nearly triple the BoD compared to AMI. The BoD estimates for both diseases offer policymakers and public health officials a valuable tool to assess the epidemiological trends associated with these conditions and make well-informed decisions to effectively address their impacts and support the implementation of preventive programs.

Key messages

- The burden of myocardial infarction and stroke has decreased in Portugal from 2010 to 2018.
- Stroke represented almost triple the burden of disease compared to myocardial infarction.

Premature mortality due to suicide in Serbia: a ten-year overview

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Background

The World Health Organization reports that suicide-related data is of poor quality globally, with 3 out of 4 suicides occurring in low and middle-income countries. In Serbia, 75% of suicides are committed by men. It is essential to evaluate the burden of suicides on the community as a significant factor in premature mortality.

Methods

We used the Statistical Office of the Republic of Serbia dataset on suicide cases and population estimates from 2012 to 2021, disaggregated by sex and 5-year age groups. Cases of unknown age were excluded from the analysis. To calculate the Years of Life Lost (YLL) we used the Global Burden of Disease Study 2019 Life Table. All cases aged 80 years or older were included in a single age group with the same remaining life expectancy.

Results

From 2012 to 2021, there were a total of 344,511 YLLs due to suicide. In 2012, the YLL rate per 100,000 was 1.43 times higher than in 2021 (414). Men had a higher YLL rate than women, with a gender ratio of 3.54 in 2012 and 3.59 in 2021. In 2021, the age group with the greatest burden of suicide was 60-64, with a total YLL of 3,240 and a rate of 687.3 YLL per 100,000.

Conclusion

Suicide rates in Serbia have decreased over the past decade, but gender disparities persist. Although older individuals have the highest suicide rates, younger people also have an important contribution to the overall burden of suicide.

Key messages

- Preventing suicide requests addressing factors that affect all age groups.
- Mental health care accessibility and reducing stigma are key to preventing suicide.

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