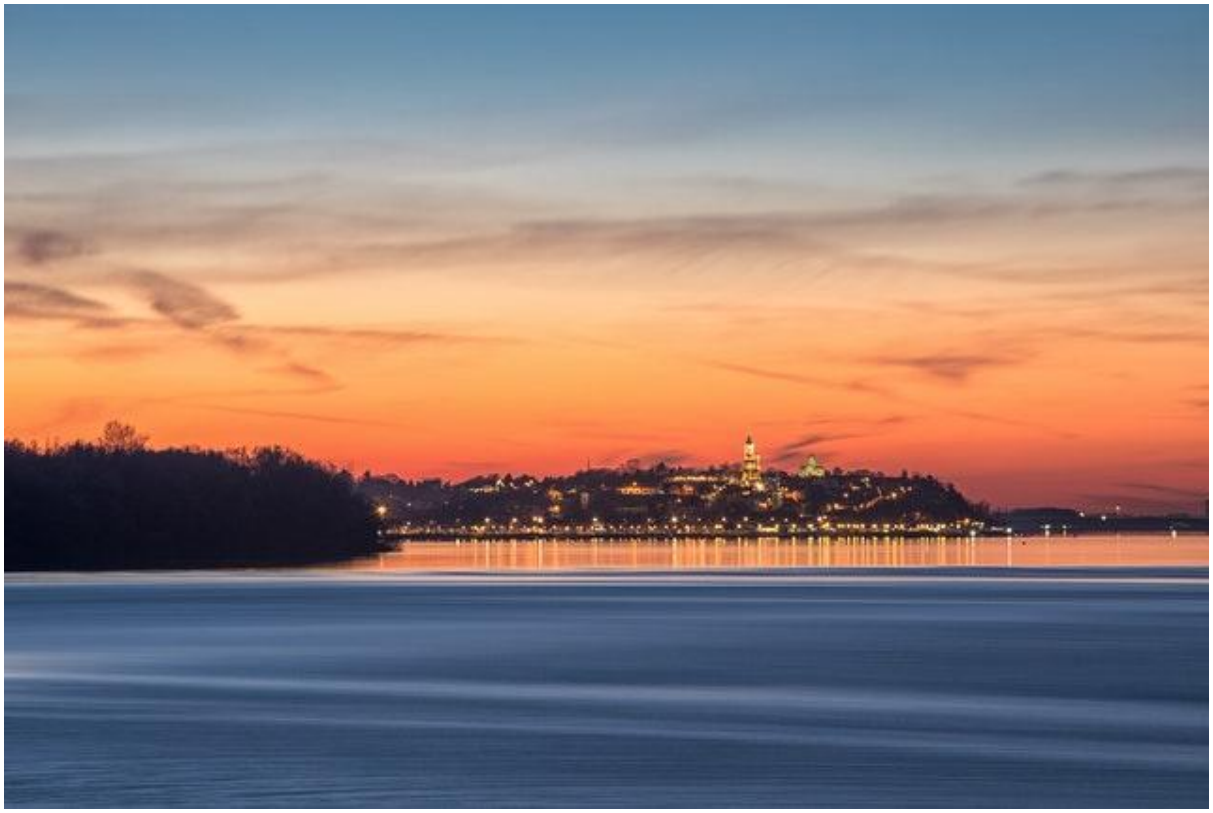
COST Action CA18218
European Burden of Disease Network

International Burden of Disease Conference

Golden Tulip Zira Belgrade, Belgrade, Serbia
15-16 September 2022



https://www.burden-eu.net/conference2022

УНИВЕРЗИТЕТ У БЕОГРАДУ
МЕДИЦИНСКИ
ФАКУЛТЕТ

UNIVERSITY OF BELGRADE
FACULTY OF
MEDICINE

International Burden of Disease Conference

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Program

Thursday 15 September 2022

9h00	Registration
9h30	Welcome & Presentation of COST action CA18218 burden-eu
10h00	Updates from the European Burden of Disease Network
10h30	Coffee break
11h00	**Global Health Estimates: WHO's monitoring of global health and burden of diseases** *— Bochen Cao, World Health Organization*
11h30	**Development of the national burden of disease study: Thailand's experiences during 1999-2014 and challenges beyond** *— Kanitta Bundhamcharoen, Ministry of Public Health, Thailand*
	Burden of Disease in Korea, 2008-2019: results from the National burden of disease study *— Seok-Jun Yoon, Korea University, Korea*
12h00	**The burden of disease in Germany and its regions - disability-adjusted life years (DALY) from the BURDEN 2020 study** *— Annelene Wengler, Robert Koch Institute, Germany*
	Changes in health situation in Turkey, 1990-2019: based on the Global Burden of Disease Study 2019 *— Vahit Yiğit, Süleyman Demirel University, Turkey*
	Results from GBD 2019 in Montenegro *— Lidija Šćepanović, Institute of Public Health of Montenegro, Montenegro*
12h30	Lunch
13h30	**Updates of the COVID-19 burden Task Force** *— Sara Monteiro Pires, National Food Institute, Denmark*
14h00	**BoCO-19 – The harmonized calculation of the Burden of COVID-19 within 14 regions** *— Aline Anton, Robert Koch Institute, Germany*
	COVID-19 statistics in 47 European countries: How do relate the number of conducted tests, the number of cases and the number of deaths? *— Milena Šantrić Milićević, University of Belgrade, Serbia*
	Years of life lost to COVID-19 in Federation of Bosnia and Herzegovina during 2020-2021 *— Šeila Cilović Lagarija, Public Health Institute of the Federation of Bosnia and Herzegovina, Bosnia and Herzegovina*
14h30	**The changes of mortality pattern in a capital of Serbia in 2020** *— Natasa Rosic, Institute of Public Health of the City of Belgrade, Serbia*

	Direct impact of COVID-19 by estimating disability-adjusted life years at national level in France in 2020 *— Romana Haneef, Santé Publique France, France*
	The disease burden of COVID-19 in Belgium during the year 2020 and 2021 *— Robby De Pauw, Sciensano, Belgium*
15h00	**Updates of the rare diseases burden Task Force** *— Juanita Haagsma, Erasmus MC, Netherlands*
15h30	Coffee break

burden-eu dinner

19h00	"Zlatar" restaurant

Wednesday 19 February 2020

9h00	Welcome
9h30	**National disability weights in Japan: finding from the Japanese disability weight measurement study** *— Shuhei Nomura, Keio University, Japan*
10h00	**Deriving disability weights for environmental noise-related health states** *— Periklis Charalampous, Erasmus MC, Netherlands*
10h15	**An approach to rate the quality of Global Burden of Disease 2019 prevalence estimates for three musculoskeletal conditions** *— Javier Muñoz-Laguna, Universidad Autonoma de Madrid, Spain*
10h30	Coffee break
11h00	**Updates of the PFAS burden Task Force** *— Lea Sletting Jakobsen, National Food Institute, Denmark*
11h30	**Methodological challenges to assess the environmental burden of disease for children in Germany – Findings of the UKAGEP-project** *— Myriam Tobollik, Federal Environmental Agency, Germany*
11h45	**Assessing the environmental burden of disease due to road traffic noise in Hesse, Germany** *— Matthias Lochmann, Hessian Agency for Nature Conservation, Environment and Geology, Germany*
12h00	**Burden of lung cancer associated with occupational exposure to hexavalent chromium** *— José Chen-Xu, NOVA University of Lisbon, Portugal*
12h15	**Use of DALYs in Risk Benefit Assessment modeling to evaluate edible insects as red meat replacers (the NovRBA Project)** *— Ermolaos Ververis, EFSA & National and Kapodistrian University of Athens, Italy/Greece*
12h30	Lunch

13h30	**A social global burden of disease: the risk of low education** *— Mirza Balaj, Centre for Global Health Inequalities Research, Norway*
14h00	**Updates of the Social Inequalities Task Force** *— Elena von der Lippe, Robert Koch Institute, Germany*
	Inequalities in the burden of disease of 44 European countries from 1990 to 2019 *— Orsolya Varga, University of Debrecen, Hungary*
14h30	**Effectiveness of intervention to manage and prevent NCDs in Kyrgyzstan measured with DALYs averted** *— Tolkun Djamangulova, GFA Group, Kyrgyzstan*
15h00	**Closure of the International Burden of Disease Conference** *— Milena Šantrić Milićević, Action Vice-Chair, University of Belgrade, Serbia* *— Brecht Devleesschauwer, Action Chair, Sciensano, Belgium*
15h30	Coffee break

Invited speakers

Dr Mirza Balaj, Centre for Global Health Inequalities Research, Norway

Dr Mirza Balaj is the Scientific Coordinator of the Centre for Global Health Inequalities Research (CHAIN). The mission of CHAIN is to create a global transformation in actionable health inequalities research. Dr. Balaj has been contributing to this mission over the last 7 years through data collection from all world regions, evidence-based research and dissemination to the larger public and to national and international policymaking institutions. Her research interest is to examine how health outcomes and behaviors are shaped by the interaction of socioeconomic position and social structural forces. Currently in her research she is exploring the association between education and mortality globally. The aim is to provide the first systematic global evidence on the impact education on all-cause and cause-specific mortality including COVID-19 mortality. Her research is published in leading journals such as The Lancet, Sociology of Health and Illness, Social Theory and Health and European Journal of Public Health.

Dr Kanitta Bundhamcharoen, Ministry of Public Health, Thailand

Dr Kanitta Bundhamcharoen, DDS, PhD, has served as a senior researcher and the head of the Burden of Disease Program at the IHPP. She has substantial experience working on mortality and morbidity data for the national burden of disease study since the first round in 2000. In addition, she has worked as a plan and policy analyst in the Ministry of Public Health. Her research interests include cause of death analysis, non-fatal burden estimation, health disparity, health outcome indicators, and ageing policy. Recently, she led the study on cause-of-death of Thai population and act as a focal point in collaboration with the Vital Strategies on the Thailand CRVS System Improvement Program. She currently undertakes a lead role in the study on indirect impact of COVID-19 on excess mortality. In addition, she is appointed member of the cause of death Task Force in the WHO Reference Group on Global Health Statistics (RGHS).

Dr Bochen Cao, World Health Organization

Dr Bochen Cao is a Technical Officer in the Department of Data and Analytics of the World Health Organization in Geneva, Switzerland. He is responsible for producing WHO's regular estimates for all-cause mortality, causes of death and burden of diseases for WHO's Member States. His work also involves analyzing health-related data and drafting WHO's annual flagship reports for monitoring the Sustainable Development Goals (SDGs) including the World Health Statistics. He holds a PhD degree in Demography from the University of Pennsylvania in the US, and has worked in the International Agency for Research on Cancer in Lyon, France, before joining WHO.

Dr Juanita Haagsma, Erasmus MC, the Netherlands

Dr Juanita Haagsma, PhD in health sciences, works as Assistant Professor at the Department of Public Health at the Erasmus MC, University Medical Center Rotterdam, The Netherlands. Her research focuses mainly on burden of disease estimates of injury and quantifying long-term consequences of injury in particular. For several years, she worked as Assistant Professor at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, where she was a member of the injuries team of the Global Burden of Disease study. She was responsible for the development and implementation of methods to calculate the global burden of injury. In addition, she has conducted several studies on disability weights, including a large disability weight study that collected responses from more than 30,000 people from four European countries.

Prof Dr Shuhei Nomura, Keio University, Japan

Prof Dr Shuhei Nomura is Associate Professor of Health Policy and Management at the Keio University School of Medicine and Assistant Professor of Global Health Policy at the University of Tokyo Graduate School of Medicine. Dr Nomura is currently engaged in the Global Burden of Diseases Study, acting as the Japanese focal point. Dr Nomura is also actively involved in the national and local government's efforts to combat COVID-19 in Japan, analysing a combination of government survey statistics and private sector data to provide critical intelligence and evidence on the spread of infection for the planning of countermeasures. Dr Nomura’s specific areas of expertise include biostatistics, global health policy, official development assistance, comparative risk assessment, and disaster risk management.

Dr Sara Monteiro Pires, National Food Institute, Denmark

Dr Sara Pires is a senior scientist at the National Food Institute, Technical University of Denmark. Her main areas of research are the burden and control of foodborne diseases. She has developed and applied methods to assess the burden of food-associated diseases at national and international level, and to provide evidence to guide public health policy for disease prevention. She is the chair of the Working Group on Infectious Diseases of the European Burden of Disease Network.

Dr Lea Sletting Jakobsen, National Food Institute, Denmark

Dr Lea Sletting Jakobsen is a senior scientist at the National Food Institute, Technical University of Denmark. Dr Jakobsen holds a Master of Science in Food Safety and PhD in disease burden of foodborne chemicals. Her main areas is the burden of food-associated diseases including chemicals and toxins and dietary risk factors. She has contributed to WHO/FAOs guiding principles on sustainable healthy diets, and served as an expert in the Norwegian Scientific Committee for Food and Environments initiative to estimate the health impact of fish in the Norwegian diet. She is a project leader under the Danish Veterinary and Food Administration's funding programme, providing scientific advice on the health impact of sustainable diet focusing on dietary chemical exposures. Dr Jakobsen is a member of the WHO Foodborne Disease Epidemiology Reference Group and serves as chair of the Chemicals and Toxins taskforce. Besides, she lectures on foodborne burden of disease indicators at the PhD level and supervises undergraduate and graduate students.

Dr Orsolya Varga, University of Debrecen, Hungary

Dr Orsolya Varga earned her medical (MD) degree in 2003 and a degree in law (ML) in 2007, and received her PhD in Health Sciences in 2008 at the University of Debrecen, Hungary. She worked as a post-doctoral fellow in the Institute for Molecular and Cell Biology, Porto, Portugal and Danish Centre for Bioethics and Risk Assessment, Copenhagen, Denmark between 2008 and 2013. Her research interests focus on policy impact analysis, research prioritization and legal mapping of policies on non-communicable diseases. Orsolya Varga received the Premium postdoctoral researcher fellowship in 2019 and she currently holds a part-time position as a senior lecturer at the Department of Public Health and Epidemiology of the Faculty of Medicine, University of Debrecen. Orsolya serves as the national contact point for Hungary of the European Association of Health Law.

Abstracts

Keynote lectures

Oral presentations

Poster presentations

Keynote lectures

Global Health Estimates: WHO's monitoring of global health and burden of diseases

Bochen Cao[1]

[1] *World Health Organization, Division of Data, Analytics and Delivery for Impact, Department of Data and Analytics*

In this presentation, an overview will be provided of the Global Health Estimates (GHE), WHO's flagship product for monitoring population health outcomes at national, regional and global levels, with a comprehensive and comparable assessment of mortality and loss of health by country, sex, age, year, and cause. GHE consolidates and harmonizes the best quality data available and use a broad spectrum of demographic, statistical and epidemiological methods to generate the estimates. The sources of data inputs, estimation processes, along with the major findings from the last GHE release and the use of GHE data for informing health policy will be presented.

Development of the national burden of disease study: Thailand's experiences during 1999-2014 and challenges beyond

Kanitta Bundhamcharoen[1], Viroj Tangcharoensathien[1], and Thailand Burden of Disease Team

[1] *International Health Policy Program, Ministry of Public Health, Nonthaburi, Thailand*

Background

We describe experiences in Thailand on the development of the national Burden of Disease (BOD) from 1999 and draw lessons learned.

Methods

We reviewed the work of Thailand BOD from 1999 through 2014. Information was synthesized in terms of technical and policy aspects, followed by discussions on future development.

Results

We learned that through training and technical support by external partners, local capacities are gradually strengthened and institutionalized to enable regular updates of BOD at national and sub-national levels. Initially, the quality of cause of death data reporting in the death certificates was inadequate, especially for deaths occurring outside hospitals, in the community; verbal autopsies were conducted, using domestic resources, to determine probable causes of deaths for these community deaths. This helped improve the estimation of years of life lost. Morbidity data were derived from various sources and since the achievement of universal health coverage in 2002, coverage and quality of hospital data also considerably improved. There are significant discrepancies between the Global Burden of Diseases (GBD) estimates for Thailand and the nationally generated BOD, especially for years of life lost due to HIV/AIDS, and the ranking of priority diseases.

Conclusion

Achievements and challenges of producing national BOD estimates are discussed including our attempts to develop an ASEAN BOD network.

Key messages

- Experiences in the development of a national BOD study
- Quality data is essential for BOD estimation

National disability weights in Japan: finding from the Japanese disability weight measurement study

Shuhei Nomura[1,2,3]

[1] *Department of Health Policy and Management, School of Medicine, Keio University, Tokyo, Japan*
[2] *Department of Global Health Policy, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan*
[3] *Tokyo Foundation for Policy Research, Tokyo, Japan*

Background

Disability weights (DWs) are important indicators that reflect the severity of health conditions in the estimation of disability-adjusted life years (DALYs). The Global Burden of Diseases (GBD) study uses DW sampled from various regions of the world, but includes few data from East Asian countries, including Japan. This study aimed to measure DW in Japan using the same method as in the GBD and compare the results with GBD estimates of DW.

Methods

Using a quota sampling method based on age, gender, and prefecture population ratios obtained from the 2015 National Census, an online survey was conducted in 2019 to estimate DWs for 231 health conditions for a nationally representative sample of 37318 Japanese. The survey consisted of 15 paired comparisons (PC) and three population health equivalents (PHE) questions per respondent; PC data were analyzed with probit regression and results were rescaled to DW units between 0 (equivalent to perfect health) and 1 (equivalent to death).

Results

The results showed a high correlation between the Japanese DWs and the GBD DWs, with some discrepancies. Of the 226 comparable health conditions, 55 (24.3%) showed more than double the difference, 41 (74.6%) of which were higher in the Japanese DWs. The most common health conditions for which Japanese DWs was higher than GBD DWs were amputations, fractures, and other injuries, and hearing and visual impairments, while mental, behavioral, and substance use disorders were generally lower.

Conclusion

The results of this study on Japanese population suggest that there may be contextual differences in the assessment of health status severity compared to previous studies conducted in other countries.

Key messages

- For resource allocation decision-making in Japan, the set of Japanese DWs may be more appropriate than the GBD DWs
- However, for international comparisons of disease burden, it remains desirable to continue using a common set of DWs

Updates of the burden-eu COVID-19 Task Force

Sara Monteiro Pires[1]

[1] *National Food Institute, Technical University of Denmark, Copenhagen, Denmark*

Background

Quantifying the combined impact of morbidity and mortality is a key enabler to assessing the impact of COVID-19 across countries and within countries relative to other diseases, regions, or demographics. Differences in methods, data sources, and definitions of mortality due to COVID-19 may hamper comparisons. To develop harmonized methodology and support members to estimate the national-level burden of COVID-19 using disability-adjusted life years (DALYs), the European Burden of Disease Network created the Burden of Disease of COVID-19 Task Force (COVID-19 TF)

Methods

The COVID-19 TF was launched in April 2021 and has developed a consensus methodology, as well as a range of capacity-building activities to support burden of COVID-19 studies. Activities include publication and update of a protocol for burden calculations; regular TF meetings and ad-hoc meetings with country teams; technical support in online forums; and co-development of manuscripts. These activities have supported 11 national studies so far, with study periods between January 2020 and December 2021.

Results

The COVID-19 TF has supported 11 studies thus far. These studies dealt with various data gaps and different assumptions were made to face knowledge gaps. Still, they delivered broadly comparable results that allow for interpretation of consistencies, as well as differences in the quantified direct health impact of the pandemic. The estimated burden of COVID-19 at national level in studies ranged between 32 and nearly 2,000 DALYs per 100,000 inhabitants, and consistently estimated a large contribution of the mortality component to the burden.

Conclusion

Harmonized efforts and methodologies have allowed for comparable estimates and communication of results.

Key messages

- National burden of disease studies offer a means of monitoring the direct population health impact of COVID-19 infection in countries
- The COVID-19 TF promoted harmonization of methods, sharing of knowledge and international collaboration across countries and public health authorities worldwide

Updates of the burden-eu Rare Diseases Task Force

Juanita A Haagsma[1], Periklis Charalampous[1], Claudia Cruz Oliveira[1], Julien Delaye[2], Diane A Grad[3], Pavel Kolkhir[4], Enkeleint A Mechili[5,6]

[1] *Department of Public Health, Erasmus MC, Rotterdam, The Netherlands*
[2] *EURORDIS - Rare Diseases Europe, Brussels, Belgium*
[3] *Department of Public Health, Babeș-Bolyai University, Cluj-Napoca, Romania*
[4] *Institute of Allergology, Charité - Universitätsmedizin Berlin, Berlin, Germany*
[5] *Department of Health Care, University of Vlore, Vlore, Albania*
[6] *Clinic of Social and Family Medicine, School of Medicine, Crete, Greece*

Background

According to the definition used in the European Union (EU), a rare disease refers to any disease affecting fewer than 5 people per 10,000 in the EU. Few studies have assessed and reported the burden of disease (BoD) of rare diseases. However, the results of these few studies underlined the substantial BoD that is often imposed on an individual living with the rare disease. The aim of the Rare Diseases Task Force is to perform research together on the population impact of rare diseases, with the ultimate goal to make rare diseases more visible for policy makers, researchers and the general public.

Methods

The Task Force is currently working on a systematic literature review of studies that assessed the impact of one or more rare diseases in patients and caregivers, with a focus on methods and data input sources that were used for the calculations. Such an overview may help to flatten some of the barriers that researchers encounter when embarking on BoD calculations of a rare disease. In addition, the Rare Diseases Task Force members are devising a plan to map BoD indicators in rare disease registries across Europe. Finally, the Task Force will report on perspectives and unmet needs in rare diseases research.

Conclusions

Rare diseases often pose a large burden on the person living with rare disease and their family. The burden-eu Rare Diseases Task Force aims to make rare diseases and their impact more visible.

Key messages

- Rare diseases pose a substantial impact on individuals living with a rare disease and their caregivers
- The burden-eu Rare Diseases Task Force aims to make rare diseases and their impact more visible

Updates of the burden-eu PFAS Task Force

Lea Sletting Jakobsen[1]

[1] *National Food Institute, Technical University of Denmark, Copenhagen, Denmark*

Per- and polyfluoroalkyl substances (PFASs) comprise a group of man-made chemicals that has been used for decades due to their repellent properties towards water and oil as well as resistance to heat. More than 10 000 different PFASs exist today. Due to their strong carbon-fluoride bond, PFASs have accumulated in the environment, and humans are widely and consistently exposed through food, water, consumer products and workplaces. Exposure to PFAS has been associated with a wide range of health effects, such as disruption of immune and thyroid function, liver and kidney disease, reproductive impairments, as well as cancer.

While recent studies have investigated the monetary costs to society of PFAS exposure of humans and environment, either to highlight the cost of inaction or to counterbalance the potential costs to industry and society of restricted use of PFAS and mitigation strategies to reduce exposure, few studies have estimated the disease burden of exposure to PFAS. Estimating burden in disability adjusted life years (DALY) will provide an important indicator of public health impact of current exposure and support potential new interventions at technical and policy level

The European Burden of Disease Network created the Task Force of Disease Burden of PFAS exposure (PFAS TF) in 2022 with the overall aim to further the development of burden of disease studies on PFAS. Through regular meetings and co-development of manuscripts, the PFAS TF will work towards establishing a consensus methodology to estimate PFAS burden that will enable comparison across and within countries. This entails an overview of available exposure indicators, evidence of exposure-outcome associations as well as methodological choices within standardized approaches to estimate risk factor burden. The ambition is to enable disease burden indicators to supplement other indicators to support chemical policy decisions.

Key messages

- The disease burden of endocrine disruptors, including PFAS, is largely unknown
- The PFAS Task Force aims to develop and harmonize methodology to estimate the burden of PFAS to enable its use in chemical policy making

Updates of the burden-eu "Determinants of health inequalities" Task Force

Elena von der Lippe[1], Juanita Haagsma[2], Orsolya Varga[3]

[1] *Department of Epidemiology and Health Monitoring, Robert Koch Institute, Berlin, Germany*
[2] *Department of Public Health, Erasmus MC, Rotterdam, The Netherlands*
[3] *Department of Public Health and Epidemiology, University of Debrecen, Hungary*

Background

The European Burden of Disease Network (burden-eu) has been very active in the recent years in establishing dynamic scientific exchange among researchers and providing platforms for collaborative activities. The relatively new established Task Forces (TF) are smaller groups of burden-eu members and are dealing with special research topics.

Methods

The TF on determinants of health inequalities as a subgroup of the Working Group Methods was founded in the beginning of 2021 and has almost 30 active participants. The overall aim is to share experience in research on health inequalities as well as harmonize methodologies and indicators. The group meets online about every 6 weeks and discusses ongoing projects and outlines possible cooperation, joint activities and publications.

Results

Within the TF there are several sub-working groups. The main activities are participating in an ongoing international project on COVID-19 mortality inequalities, presenting research on conferences, and drafting papers using different index for inequality measures and applying them to estimated summary measures of population health. We are also involved in the development of new research directions, such as the analysis of health data at regional level.

Conclusion

The format of the TF has proved to be very productive and is giving an excellent opportunity for scientific exchange in a specific topic within the burden of disease research.

Key messages

- There is a limited cross-country comparison research on health inequalities
- There is a need of harmonization in indicators and methodological issues

Oral presentations

The burden of disease in Germany and its regions - disability-adjusted life years (DALY) from the BURDEN 2020 study

Annelene Wengler[1], Michael Porst[1], Janko Leddin[1], Aline Anton[1], Caoimhe Cawley[1], Elena von der Lippe[1], Alexander Rommel[1]

[1] *Epidemiology and Health Monitoring (Department 2), Robert Koch Institute, Berlin, Germany*

Background

Within the BURDEN 2020 project carried out by Robert Koch Institute, the German Environmental Agency, and the Scientific Institute of AOK burden of disease (BoD) estimates for Germany at the national and regional level become available for the first time. By focusing on Disability Adjusted Life Years (DALY) and comparing age-groups and regions we gain insight into the population health patterns in Germany.

Methods

DALY are quantified as the deviation of the population's health from an "ideal" health status in the unit of life years. They are calculated as the sum of years of life lost due to death (YLL) and years lived with disability (YLD). Calculations are based on different primary and secondary data sources, especially cause-of-death statistics, epidemiological survey data, and statutory health insurance data.

Results

For DALY-estimation 19 important diseases/injuries were considered. Ischemic heart disease contributes the most to the overall BoD, followed by lower back pain and lung cancer. In women, headache disorders and dementias account for more DALY as compared to men. Men have a higher BoD from lung cancer and alcohol use disorders. Pain disorders and alcohol use disorders are most relevant in younger adulthood. The burden due to cardiovascular disease, COPD, and diabetes mellitus increases with age, and also varies by region.

Conclusion

BoD estimates main aim is the inter-cause comparison by age, sex, and region. Accordingly, the DALY-results enable a broader insight into population health, better public health reporting and hence support health-policy decision making and its evaluation.

Key messages

- Disease-specific-DALY differ greatly by age, gender, and region
- DALY improve public health reporting and support health-policy decision making

Burden of Disease in Korea, 2008-2019: results from the National burden of disease study

Seok-Jun Yoon[1,2], Yoon-Sun Jung[2], Young-Eun Kim[3], Minsu Ock[4]

[1] *Department of Preventive Medicine, Korea University College of Medicine, Seoul, Republic of Korea*
[2] *Institute for Future Public Health, Korea University, Seoul, Republic of Korea*
[3] *Department of Big Data Strategy, National Health Insurance Service, Wonju, Republic of Korea*
[4] *Department of Preventive Medicine, University of Ulsan College of Medicine, Ulsan, Republic of Korea*

Background

This study aimed to elucidate the trends and differences in the burden of disease in South Korea during 2008-2019.

Methods

We calculated the YLL, YLD, and DALY for Koreans from 2008 to 2019 using an incidence-based approach. For YLL and YLD measurement, we used the data on the cause of death from Statistics Korea and National Health Insurance Service claims data by year. DALY calculation results were expressed in units per 100,000 population by disease, sex, region, and income level.

Results

From 2008 to 2019, the DALY rate increased 19.3% (from 22,361 to 26,685). Since 2017, the burden of disease among men has been higher than that among women. Diabetes mellitus, low back pain, and ischemic heart disease were ranked high in the burden of disease. There were distribution and difference in DALY rate by region. With the exception of some diseases that have a higher burden of disease in the higher income groups, the burden of most diseases decreased as the income level increased. In the past 11 years, the DALY rate of Alzheimer's disease and other dementias increased by 303.3%, and glaucoma and benign prostatic hyperplasia also showed a steep increase.

Conclusion

The findings from this study can be used as a basis for establishing health policies tailored to the characteristics of the burden of disease in the future. It is necessary to identify rapidly increasing disease by continuously monitoring and to prepare countermeasures.

Key messages

- The findings of this study can provide valuable and quantitative data for setting national health policy goals and prioritization and evaluation of health policies
- Estimating the difference and characteristics in the burden of disease within a country can help understand the health equity and the scale of the problem

Changes in health situation in Turkey, 1990-2019: based on the Global Burden of Disease Study 2019

Vahit Yigit[1], Arzu Yigit[1]

[1] *Süleyman Demirel University, Department of Health Management, Faculty of Economics and Administrative Sciences, Isparta, Turkey*

Background

The burden of disease studies is analyzed in many countries to assess important health problems. The economic, political, and social changes experienced in recent years have affected the health status of the population in Turkey as well as in many other countries. As a result of the health policies implemented between 1990-2019 in Turkey, there has been an epidemiological transition that significantly improves health indicators. This research aims to compare the burden of diseases in Turkey between 1990-2019.

Methods

The burden of disease was calculated for the year 1990-2019 as years of life lost (YLLs), years lived with disability (YLDs), disability-adjusted-life-years (DALYs), and the contribution of major risk factors to DALYs in Turkey. We used the data from the Global Burden of Disease (GBD) 2019 study. The GBD project is an international epidemiological project. All GBD methods, data, codes, and estimates are publicly available through interactive and visualization tools.

Results

While YLLs showed a great decrease of 58.4% (95% UI 50.9–64.5) between 1990 and 2019 in Turkey, a very low decrease was observed in YLDs with 1.5% (95% UI 0.99-3.86). DALY, which is the sum of YLL and YLD, decreased by 43,9% (95% UI 37.5-49.7). In terms of the YLLs due to premature death in Turkey, ischemic heart disease, cerebrovascular disease, and congenital anomalies were the highest-ranking causes in 2019. The leading causes of YLDs in Turkey are major depressive disorder, low back pain, anxiety disorders, iron-deficiency anemia, and neck pain in 2019. The top causes of DALYs in 2019 were ischemic heart disease, neonatal disorders, stroke, and major depressive disorder in Turkey. The risk factors that account for the most disease burden in Turkey are tobacco, high body-mass index, and high blood pressure.

Conclusion

Despite significant progress in many communicable diseases and infant deaths between 1990 and 2019 in Turkey, non-communicable diseases continue to be the leading causes of death. A cost-effective, accessible, and sustainable health system and public health planning are needed in Turkey, taking into account major demographic changes.

Key messages

- The life expectancy at birth in Turkey has gradually increased since 1990 and reached 75.9 years for men and 81.3 for women in 2019. Child mortality in Turkey has gradually decreased since 1990 and reached 12.4 for under-1 and 15.4 for under-5 in 2019.
- It requires further efforts to improve health and reduce the burden of disease and the risks of disease in later life in young people in Turkey. Requires a health policy and strategy to overcome financial and technical barriers to transferring health risk factors and their determinants to health information systems.

Results from GBD 2019 in Montenegro

Lidija Scepanovic[1], Natasa Terzic[2]

[1] Center for Health Policy and Management, Institute of Public Health of Montenegro, Podgorica, Montenegro
[2] Center for Data Records and Research in Public Health, Institute of Public Health of Montenegro, Podgorica, Montenegro

Background

The global burden of disease (GBD) represents a powerful source of information for population health worldwide, contributing to better understand the true nature of the country's health challenges. We summarized the data of the health status for Montenegro in 2019 followed by the changes from 2009.

Methods

GBD 2019 estimated disease burden due to 369 diseases and injuries, and 86 risk factors and 54 new risk-outcomes. Mortality and DALYs, risk factors, and progress towards the Universal Health Coverage are presented.

Results

There were 6,793 deaths in Montenegro in 2019, with 64.34% of them aged 70+ years. NCDs were the main cause of death (94.02%), followed by Injuries (4.55%), and Communicable diseases (1.43%). The leading causes of death were: Stroke (27.72%), IHD (21.91%), Lung cancer (7.81%), Cardiomyopathy (3.83%) and Alzheimer's (2.72%). Greater increases in mortality were observed in Alzheimer's, other cancers, diabetes, other CVD compared to 2009. Stroke, IHD and LC remain the top causes of DALYs in 2019, while diabetes moved to 4th position. Tobacco is the most relevant risk factor, followed by HBP and increase in high BMI and HFPG. The UHC index was improved reaching 66 points in 2019, with average change per year of 0.4% since 2010.

Conclusion

Stroke, IHD and Lung cancer remain the top causes of death and disability in 2019 in Montenegro, followed by diabetes. Tobacco is still the main health issue to be addressed.

Key messages

- Tobacco and unhealthy lifestyles that causes HBP and obesity are the most important health-related risks to the Montenegrin population
- NCDs were the main cause of death in 2019, corresponding to 94% of all deaths

BoCO-19 – The harmonized calculation of the Burden of COVID-19 within 14 regions

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Background

The Burden of COVID-19 project was funded to build capacity in 14 regions of the Eastern Europe and Central Asia for estimating DALY due to COVID-19 in a transparent and harmonized way. The aim of the study is to present how data collection and methods are standardized within the expert network. Furthermore, how the results should be interpreted and communicated to various stakeholders.

Methods

The project was established with the help of regional coordination offices. Three subgroups working on data collection, methods and publications were formed. To collect data for the calculation of DALY data access and data collection templates were prepared, and so-called use cases were defined. It will be presented how the collection, analysis and processing of COVID-19 data is carried out within the 2-year framework.

Results

Decisions by the subgroups resulted in a consented data collection using the templates. Data for estimating DALY are disaggregated by 5-year age groups, sex and over time, and in some cases by region. The implementation of the harmonized methodological decisions takes place in two data labs, which are dedicated to the calculation and use of the data. They are shown in examples on mortality (YLL and excess mortality) that have been calculated based on the partners own data, also examples of visualization. A study protocol will be published.

Conclusion

DALY due to COVID-19 are enabled and simplified in a structured approach, with the creation of clear uniform templates and use cases. Furthermore, sufficient time for suitable visualization and communication strategies should be considered.

Key messages

- The better structured the data collection, the easier it is for the partners to collect the data and to carry out the calculations even within a short time frame
- The rationales for the use of BoD indicators and their usefulness in assessing the health situation should be well elaborated

COVID-19 statistics in 47 European countries: How do relate the number of conducted tests, the number of cases and the number of deaths?

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Background

Adequate testing for COVID-19 can prevent the spread of COVID-19, especially to populations at greatest risk of adverse outcomes, and help initiate timely and appropriate treatment of registered cases. The aim of this study was to examine the association between the cumulative number of tests conducted, cases of illness and death due to COVID-19, available for 47 European countries/territories.

Methods

From the Worldometer, a provider of global COVID-19 statistics for many countries around the world, the cumulative number of total registered COVID-19 cases, COVID-19 deaths and conducted COVID-19 tests, all calculated per 1,000,000 for 47 European countries/territories for the period from the beginning of COVID-19 outbreak until July 19th 2022 were analyzed with the Pearson correlation coefficient using the SPSS v 26.

Results

There is a significant positive correlation ($r=0.554$, $p<0.001$) between the cumulative number of cases per 1,000,000 (on average 351223.3, range: 103,984-703,830) and tests performed per 1,000,000 (on average 4,337,325.13; range 451,098-21,918,199), while a significant negative correlation ($r=-0.290$, $p<0.05$) between the cumulative number of registered cases per 1,000,000 and the number of deaths per 1,000,000 (on average 2,437.02; range 128 - 5,453)

Conclusion

Our results indicate a significant positive association between a country's capacity to test cases of COVID-19, expressed as the cumulative number of tests, and to register cases of COVID-19, expressed as the cumulative number of reported cases. Future studies should reveal whether higher death rates from COVID-19 in countries with fewer reported cases are also associated with more unreported cases of COVID-19.

Key messages

- Cumulative number of testing and cases of COVID-19 are positively correlated
- More research is needed on the mortality and incidence statistics of COVID-19

Years of life lost to COVID-19 in the Federation of Bosnia and Herzegovina during 2020-2021

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Background

The full health impact of the COVID-19 pandemic is critical for evaluating the potential policy responses. We have analyzed the impact of COVID-19 on premature mortality by calculating the Years of Life Lost (YLL) in the Federation of Bosnia and Herzegovina in 2020-2021.

Methods

YLLs are calculated by subtracting the age at death from the longest possible life expectancy for a person at that age. For calculation YYL used the number of COVID-19 deaths, obtained from the Institute for Statistics of the Federation of Bosnia and Herzegovina, multiplied by the life expectancy from Global Burden of Disease (GBD 2019), this allows comparisons by age groups as well as with other countries, and population size used to calculate YLL per 100 000.

Results

During the year 2020 39,511 years of life was lost by men, whereas women lost 19,910 years of life, and a total of 59,420 YLL, 2,720 YLL per 100 000 (total rate). In the year 2021 men lost 72,503 years of life, women lost 54,582 years of life, which is a total of 127,085 YLL, 5,860 YLL per 100 000 (total rate).In comparison with other results from studies in 81 countries, a total of 20,507,518 years of life have been lost to COVID-19, due to 1,279,866 deaths from the disease.

Conclusion

Conclusion: From a public health standpoint, years of life lost is crucial as it assesses how much life has been cut short for populations that have been affected by the disease. YLL is very closely associated with COVID-19 deaths in the country, and during the pandemic period, men lost 1.5 more YLL in comparison to women in the Federations of BiH.

Key messages

- During the pandemic period men lost 1.5 more YLL in comparison to women in the Federations of BiH

The changes of mortality pattern in a capital of Serbia in 2020

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Background

Current subject of widespread analysis is the influence of COVID-19 pandemic on mortality patterns and excess mortality. We aimed to identify the differences between the registered and expected mortality in 2020, in capital of Serbia, Belgrade.

Methods

A five-year period from 2015 to 2019 was considered as a baseline for estimating the expected number of deaths in 2020. The Statistical Office of Republic of Serbia provided the registered mortality data 2015 - 2020 disaggregated by cause and sex. Registered deaths were compared with estimates of all-cause mortality using percentage changes for all-causes and different causes of death for both sexes.

Results

Compared to expected, the increase in registered mortality from all causes in 2020 amounted to 3909 deaths (15.3%), of which 2224 (17.0%) in men and 1652 (13.0%) in women. Nine disease groups showed an increase in the number of deaths. Of the total increase, 68.8 percent, or 2,690 deaths, were registered as deaths from COVID-19, making it the third leading cause of death. Mental disorders had a significant increase of 30.6%. In the group of cardiovascular diseases, the increase in deaths was higher in women (576, 9.4%) than in men (331, 6.3%).

Conclusion

In 2020, COVID-19 has changed the expected pattern of leading causes of deaths in Belgrade. Further research is needed to comprehensively assess the influence of COVID-19 pandemic on the burden of cardiovascular, malignant and mental diseases among different population groups.

Key messages

- In Belgrade, COVID-19 had a higher than expected mortality rate for men in 2020
- Mortality from mental disorders during the pandemic in Belgrade requires further analysis

Direct impact of COVID-19 by estimating disability-adjusted life years at national level in France in 2020

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Background

The standardized approach of disability-adjusted life years (DALYs) allows quantifying the combined impact of morbidity and mortality of diseases, injuries and risk factors. The main objective of this study was to estimate the direct impact of COVID-19 in France in 2020, using DALYs to combine the population health impact of infection fatalities, acute symptomatic infections and their post-acute consequences.

Methods

National mortality, COVID-19 screening, and hospital admission data were used to calculate DALYs based on the European Burden of Disease Network consensus disease model. Scenario analyses were performed by varying the number of symptomatic cases and duration of symptoms, defining COVID-19 deaths using the underlying, and associated, cause of death.

Results

In 2020, the estimated DALYs due to COVID-19 in France were 990 710 (1472 per 100 000), with 99% of the contribution due to mortality (982 531 years of life lost, YLL) and 1% due to morbidity (8179 years lived with disability, YLD). The percentage of YLD due to acute symptomatic infections among people younger than 70 years was higher (67%) than among people aged 70 years and above (33%). Post-acute consequences contributed to 49% of the total morbidity burden.

Conclusion

COVID-19 had a substantial impact on population health in France in 2020. The majority of population health loss was due to mortality. Men had higher population health loss due to COVID-19 than women. Post-acute consequences of COVID-19 had a higher contribution to the YLD component of the burden than acute symptomatic infections.

Key messages

- The men younger than 70 have a higher health loss due to mortality than women in France in 2020
- Post-acute consequences of COVID-19 have a higher contribution to the YLD in France

The disease burden of COVID-19 in Belgium during the year 2020 and 2021

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Background

Since the outbreak of the severe acute respiratory syndrome coronavirus 2 in 2020, over 4 million cases of the virus-induced COVID-19 disease have been reported in Belgium. Researchers world-wide have tried to assess the impact of COVID-19 on the population health by estimating the disease burden in terms of disability-adjusted life years (DALYs). In this study, we have evaluated the DALYs due to COVID-19 in Belgium during the year 2020 and 2021.

Methods

The current study applied the European Burden of Disease Network consensus disease model for COVID-19 to estimate DALYs due to COVID-19. DALYs reflect the healthy life years lost due to diseases and constitute a morbidity component, i.e. years lived with disability (YLDs), and a mortality component, i.e. years of life lost (YLLs). Estimates of burden of disease indicators were calculated at the Belgian national level. Data inputs on the confirmed cases of COVID-19 and the COVID-19 deaths (both confirmed and suspected) covered the whole period of 2020 and 2021.

Results

In 2020, the total number of DALYs because of COVID-19 was estimated at 226,260 [225,401 – 227,237]. This is significantly higher compared to the DALYs in 2021, which were estimated at a total of 125,507 [124,018 – 127,213]. Around 98% of the DALYs in 2020 and 2021 are attributable to premature mortality because of COVID-19.

Conclusion

COVID-19 had a tremendous impact on the population health, specifically during the first year, comparable to the impact of cardiovascular disease in Belgium in 2020, and Alzheimer's disease in 2021.

Key messages

- The burden of COVID-19 in Belgium was higher in the first compared to the second year
- The disease burden of COVID-19 in Belgium is mainly attributable to premature mortality

Deriving disability weights for environmental noise-related health states: the NOISE-DW study

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Background

Disability weights are necessary to estimate the disability component (Years Lived with Disability; YLD) of Disability-Adjusted Life Years. The disability weight reflects the relative severity of a health state and has a value that is anchored between 0 (perfect health) and 1 (equivalent to death). Several sets of disability weights exist; however, there are a limited number of disability weights for environmental noise-related outcomes. The disability weights that are available have been elicited with various methods and, as a result, cannot be combined to assess YLDs. The objective of this study is to derive disability weights for approximately 70 environmental noise-related health states.

Methods

In this cross-sectional study, a web-based survey will be administered to 4000 panel members of the general population aged 18-75 years who reside in Hungary, Italy, Sweden and The Netherlands. The survey will consist of paired comparison, population health equivalence, and visual analogue scale questions. Using dedicated data analysis techniques, we will transform the responses to disability weights.

Results

This study is ongoing and results are not yet available.

Conclusion

This study yields a set of disability weights for environmental noise-related health outcomes that can be used to assess the burden of disease attributable to environmental noise. These assessments will allow policy makers to appraise, compare, and prioritize different environmental health impacts or possible intervention measures based on more precise disease burden estimates.

Key messages

- Currently, the disability weights used to assess the burden of disease due to environmental noise exposure are elicited with various methods
- The NOISE-DW study aims to derive disability weights for a range environmental noise-related health states using the same methods as in the Global Burden of Disease study

The Global Burden of Disease 2019 Study prevalence estimation of low back pain, neck pain, and knee osteoarthritis in Australia, Brazil, Canada, Spain, and Switzerland: an assessment of the primary data input studies and an approach to rate the quality of the GBD 2019 modelled prevalence estimates

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Background

Global Burden of Disease (GBD) metrics are widely used within musculoskeletal epidemiology. Yet, little is known about the primary data input studies that informed the GBD 2019 modelled prevalence estimates of low back pain (LBP), neck pain (NP), and knee osteoarthritis (knee OA). Furthermore, the quality of GBD modelled prevalence estimates has not yet been thoroughly explored.

Methods

Using the GBD 2019 study website, we identified all relevant primary data input studies, performed descriptive analyses, and assessed their risk of bias using a validated tool. We proposed an approach to rate the quality of the GBD 2019 modelled prevalence estimates of LBP, NP, and knee OA based on the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) Guidelines 30 – the GRADE approach to assessing the quality of modelled evidence.

Results

There were 67 primary data input studies for LBP, 2 for NP, and 3 for knee OA for GBD epidemiological estimates between 1990 and 2019, for Australia, Brazil, Canada, Spain, and Switzerland. Most studies were rated as moderate risk of bias due to concerns about generalizability bias (population representativeness), unclear case definitions with no verbal or diagram specification of anatomical pain location, and the use of assessment instruments with unknown psychometric properties and susceptible to misclassification bias. Based on GRADE criteria, the quality of the GBD 2019 modelled prevalence estimates varied between very low and low mainly due to risk of bias and indirectness.

Conclusion

Beyond the limitations of primary data input studies for LBP, NP, and knee OA in the GBD 2019 Study, the quality of GBD modelled prevalence estimates is limited. Future

primary input studies with low risk of bias, and the optimal assessment of uncertainty in modelled outputs, will likely improve the quality of GBD modelled estimates in this field.

Key messages

- Primary data input studies that informed GBD 2019 modelled prevalence estimates of low back pain, neck pain, and knee osteoarthritis for five countries varied substantially in their key methodological characteristics and risk of bias
- Our current confidence in the GDB 2019 modelled prevalence estimates of low back pain, neck pain, and knee osteoarthritis for Australia, Brazil, Canada, Spain, and Switzerland is limited and further research is likely to have an impact on this assessment

Methodological challenges to assess the environmental burden of disease for children in Germany – Findings of the UKAGEP-project

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Background

Generally, children are a relatively healthy population. However, exposure to risk factors during childhood can lead to adverse health effects later in life. One main aim of the UKAGEP-project was to estimate the environmental burden of disease (EBD) attributable to a selected set of environmental risk factors for children aged 3 to 17 years in Germany.

Methods

We used the EBD-method and its core measure, the disability-adjusted life year. Where possible, current exposure and health data for children were derived from the population-representative German Environmental Survey (GerES V 2014-2017). For selected risk factors systematic literature reviews were performed to identify exposure-response functions (ERF).

Results

EBD quantifications could be performed for only four out of 18 risk factors: second-hand smoke, Bisphenol A, traffic noise, and particulate matter. This is due to several limitations encountered during the estimation process. One major issue was that we could hardly use the GerES V data for the assessments, because for several risk factors, the existing exposure levels were too low and thus would not result in any disease burden. Further, it was challenging to combine ERFs identified by the reviews with the GerES V data. Therefore, other exposure sources and health data were used, which, however, did not only focus on children but also on adults (traffic noise and particulate matter).

Conclusion

The research project showed that the application of the EBD approach differed between the four risk factors consequently hampering the direct comparisons of the results.

Key messages

- Comparing the calculated EBD of different risk factors should be done with caution
- A transparent description of the input data, the method used for EBD estimates and its limitations is crucial

Assessing the environmental burden of disease due to road traffic noise in Hesse, Germany

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Background

Road-traffic-noise exposition is widespread in Germany and can have harmful health effects. As guidance for informed decision-making, we estimated the environmental burden of disease attributable to road-traffic noise in Hesse.

Methods

In order to calculate the DALYs due to road-traffic noise in the endpoints cardiovascular diseases, depressive disorders, high annoyance and high sleep disturbance, we used

- detailed and low threshold road-traffic-noise exposure data provided by HLNUG
- dose-response functions and evidence published in the NORAH-study on disease risks and WHO reviews
- published disability weights
- where applicable: the Hessian proportion of the 2015 WHO DALY estimates for Germany.

Since no applicable code nor machine readable database for the mentioned calculations could be found, the presenting author suggests an R-project on github. He also suggests an alternative approach for the meta-analysis of the annoyance data as compared to the WHO publication.

Results

For Hesse, we estimated a total of 435 DALY per 100,000 persons attributable to road-traffic noise for the reference year 2015. We estimated that a hypothetic uniform road-traffic-noise reduction of 3 dB would prevent 23% of this burden of disease.

Conclusion

Our findings imply that the burden attributable to street-traffic-noise is of the same order of magnitude as, for example, the better researched environmental risk factor particulate matter. HLNUG is evaluating expanding the BoD-approach including uncertainty assessment to other environmental risk factors and its use for informing decision makers.

Key messages

- BoD estimate of road-traffic noise in Hesse intended for policy guiding
- Suggestions for refitting annoyance data and a project for EBoD calculations

Burden of lung cancer associated with occupational exposure to hexavalent chromium

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Background

Exposure to hexavalent chromium [Cr(VI)] occurs in several occupational activities, including welding and electroplating. This still occurs widely at EU level, and it has been associated with lung cancer. The occupational exposure limit is set to change to 5 µg/m^3 starting from 2025, however current limits are higher. This remained unchanged with the 2022 European Directive revision. This study aims at assessing the burden of lung cancer caused by occupational exposure to Cr(VI).

Methods

Data were extracted from Global Burden of Disease 2019 study, Eurostat and related literature. Estimates were made of the number of cases of cancer attributable to workplace exposure to Cr(VI) and related DALYs, with and without more stringent exposure limit levels.

Results

With current EU regulations remaining unchanged, 270 cases of lung cancer in EU in 2019 would be attributed to Cr(VI) exposure, resulting in 4942 DALYs. If the welding industry adopted the current 10 µg/m^3 limit, the burden would be 42 cases and 769 DALYs. By applying the limit of 5 µg/m^3, it is predicted a decrease of 156 cases and 2855 DALYs, still causing 114 lung cancer cases and 2086 DALYs. Lower limits would further prevent cases, with a 0.5 µg/m^3 limit preventing 259 cases, corresponding to 4733 DALYs.

Conclusion

Drawing scenarios with different limits of exposure to Cr(VI) allowed to understand the impact of EU regulatory policies in occupational health, making a strong case for adapting more protective exposure limits to prevent occupational cancer cases and reduce DALYs and associated costs.

Key messages

- Occupational exposure to hexavalent chromium still causes 270 lung cancer cases in EU workers
- Burden of disease assessment makes the case for stricter exposure limits to protect workers

Use of DALYs in Risk Benefit Assessment modeling to evaluate edible insects as red meat replacers (the NovRBA Project)

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Background

The NovRBA project (Novel foods as red meat replacers-an insight using Risk-Benefit Assessment methods) investigated the health impact of replacing red meat with an edible insect form (cricket powder) on the Danish, French and Greek healthy adult populations.

Methods

Food components of red meat and cricket flour linked to health outcomes were identified, prioritized, and selected. Epidemiological studies were used to identify causal associations between exposure to chemical hazards/dietary components and health outcomes, and the respective burden of disease was quantified through the estimation of DALYs per case, based on DALYs retrieved from the Global Burden of Disease (GBD) database and incidence rates from WHO databases. When available, country-specific DALY were used. Concentration and prevalence of microbiological hazards were estimated for the insect-based product, whereas the cases attributed to meat consumption were estimated based on disease burden and source attribution. Estimates for diet-disease associations were obtained from dose-response meta-analyses.

Results

The overall health impact was estimated in DALYs. Substitution could save around 6,572 DALYs (per 100,000 population) in Denmark, 21,972 DALYs (per 100,000 population) in France and 8,753 DALYs (per 100,000 population) in Greece, mainly due to the overall beneficial nutritional and microbiological impacts.

Conclusion

The NovRBA project developed and tested a harmonized RBA approach for dietary substitution. Each country had different DALY results due to differences in food intake and their current incidence of diseases. The absence of DALY values for specific health outcomes and the need of utilizing disability weights to estimate these values were among the knowledge gaps identified.

Key messages

- Risk-Benefit Assessment helps to study the health impact of dietary substitutions
- Addressing existing data gaps would increase robustness of the RBA outcomes

Disclaimer: *EV is employed with EFSA in the Nutrition and Food Innovation Unit that provides scientific and administrative support to the Panel on Nutrition, Novel Foods and Food Allergens. The NovRBA project was supported by EFSA [Grant number GP/EFSA/GP/EFSA/ENCO/2018/03-GA01] and was coordinated by NKUA. However, the present work is published under the sole responsibility of the authors and may not be considered an EFSA scientific output. The positions and opinions presented in this work are those of the authors alone and do not necessarily represent the views or scientific work of EFSA.*

Inequalities in the burden of disease of 44 European countries from 1990 to 2019

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Background

Health inequalities are unjust and avoidable disparities in health status between countries or sub-groups of a population. Comparing Disability Adjusted Life Years (DALYs) rates across populations can facilitate the understanding of health inequalities, serving as a basis for evidence based policy interventions. Insights into cause-specific inequalities across countries and over time, using the DALY metric are currently limited in Europe. The objective of this study was to assess inequalities in DALY rates between 44 countries in Europe over time, by all-cause and cause-specific category.

Methods

We performed a descriptive study using the Global Burden of Disease 2019 results on age-standardized DALY in 44 European countries from 1990 to 2019. Inequality between these countries was reported using the ratio of DALY rate for the highest-ranking country to the lowest-ranking country in each year expressing the difference between DALY experiences in Europe.

Results

From 1990 to 2019, the all-cause DALY rate ratio fluctuated between 2.4 in 1994 (highest ranking country: Russian Federation; lowest ranking country: San Marino) and 2.0 in 2019 (highest ranking country: Ukraine; lowest ranking country: Iceland). In 2019, high variation in DALY rates was observed for most diseases, especially for cardiovascular diseases (6.9 times higher in Ukraine compared to France) and HIV&AIDS and sexually transmitted infections (66 times higher in Ukraine compared to Finland).

Conclusion

Since health inequalities are mainly rooted in economic and social causes, they require a comprehensive solution. Still, the health sector's potential, especially prevention efforts targeting non-communicable diseases, should not be overlooked.

Key messages

- Need for disease-specific health inequality studies
- Need for policy interventions for non-communicable diseases and their risk factors

Effectiveness of intervention to manage and prevent NCDs in Kyrgyzstan measured with DALYs averted

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Background

Kyrgyzstan faces increasing burden of Non-communicable diseases (NCDs). Ischemic heart disease (IHD) and stroke are the top causes of deaths and disability. In 2017 the intervention: "Effective Management and Prevention of NCDs in Kyrgyzstan" was implemented in four regions. The research aims to estimate effectiveness of intervention, which included training of health professionals, implementing WHO PEN (package of essential NCDs interventions for primary health care), applying a method mix for health promotion to raise awareness and foster primary and secondary prevention.

Methods

Decrease in DALYs rate due to IHD and stroke was a main indicator measuring effectiveness of intervention. The study applied the Global Burden of Disease (GBD) methodology to measure percent change in the burden of IHD and stroke in target regions. Data on deaths and prevalence by sex, age groups and by region due to target causes in years 2017 – 2019 was taken from the routine statistics. Severity distributions from the GBD 2019 estimates were used for YLDs calculation. The GBD actual normative life table was applied for YLLs estimate. Percent changes of DALYs crude and age-standardized rates in 2019 compared to the 2017 were elicited.

Results

In 2019 in 4 target oblasts there were 126,153.8 DALYs due to IHD and stroke (YLL accounted for 98% of total DALYs). DALYs crude rate per 100,000 populations was 6,316.7 and has decreased compared to the baseline in year 2017 by 2.41%. A major decrease of DALYs crude rate was achieved in IHD (-5.4%). When the change in age-standardized DALYs rates is considered the intervention's effectiveness is higher: 5.8% decrease in DALYs rate due to IHD (7% decrease in males and 4.9% decrease in females) and 1.4% decrease in DALYs rate due to stroke (2.5% decrease in males and 0.4% decrease in females).

Conclusion

The intervention aiming to decrease burden of IHD and stroke in Kyrgyzstan has achieved the targets and can be evaluated as effective.

Key messages

- Intervention aiming to decrease burden of ischemic heart disease and stroke in Kyrgyzstan is effective in preventing years of life loss due to deaths and disability
- Higher number of DALYs averted was achieved among males

Environmental burden of disease estimates and their use for scientific policy consulting

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Background

In Germany, scientific policy consulting is an integral part of the pollical system. One public health method developed with the aim of providing scientific policy advice is the environmental burden of disease (EBD) method. The theoretical and scientific applications are diverse, but the knowledge gained with this method is hardly used in scientific policy advice.

Methods

As part of my doctorate studies, I examined the opportunities and limitations of the EBD method for scientific policy advice from a scientific point of view. Four application examples and a review article were assessed. In addition, two communication examples were developed.

Results

The comparability of EBD estimates is one of the advantages of the method, although this could only be proven to a limited extent on the basis of the researched examples. The differences in the input data and its availability, the level of detail and the geographical area hindered the comparability. For a political uptake it is necessary to describe the differences and the reasons for them. With regard to the communication of the complex calculations, it is necessary to create a basic understanding of the metrics through various communication media among decision makers.

Conclusion

Besides several limitations, such as comparability and intelligibility, EBD is a valid method for scientific policy advising. It can be used to give an order of magnitude of the impact of environmental risk factors on health.

Key messages

- The EBD method offers a source of information for scientific policy advice and can be incorporated as a criterion in political decision-making
- In order to use the results, it must be explained why the results for the same risk factor are different

Poster presentations

The impact of high fasting plasma glucose on the burden of lung cancer in the European Region

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Background

Lung cancer (LC) is the leading cause of cancer-related deaths worldwide. The role of high fasting plasma glucose (HFPG) in LC burden is still unclear. This study aimed to estimate disability pattern for LC attributed to HFPG in European Region.

Methods

A descriptive epidemiological study was done. Data were obtained from the database of the Global Burden of Disease 2019 study. The disability-adjusted life-years (DALYs) for HFPG as a risk factor for LC were presented. The age-standardized rates (ASRs) of DALYs were expressed per 100 000 population. Trends in LC attributable to HFPG in 1990-2019 were estimated using joinpoint regression analysis.

Results

The percentage of DALYs of LC attributable to HFPG was 8.6% in males (accounting for 641 718 DALYs) and 8.0% in females (accounting for 227 070 DALYs) in 2019 in the European Region. In 2019, Central Europe was the worst-affected subregion, with ASR of DALYs due to LC attributable to HFPG of 146.6 per 100 000 in males and 37.6 per 100 000 in females. The ASRs DALYs increased significantly in both sexes in Central Europe (by +0.8% per year in males and by 3.4% per year in females) from 1990 through 2019. In contrast, the ASRs of DALYs decreased significantly in males only in Western Europe (by -0.4% per year) and Eastern Europe (by -1.2% per year).

Conclusion

Our study noted sex differences in lung cancer burden due to high fasting plasma glucose, that need be evaluated in further analytical research.

Key messages

- Central Europe was the worst-affected region due to LC attributable to HFPG
- Contrary to a rise in women, trend in LC due to HFPG was stable in European men

Burden of eating disorders in the European Region, 1990-2019

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Background

Eating disorders (ED) are a public health issue due to the risk of increased mortality, disability, reduced quality of life, increased economic cost. This study aimed to assess the burden of ED in the European Region.

Methods

A descriptive epidemiological study design was used. Data about ED were obtained from the Global Burden of Disease 2019 study. This study addresses the burden of ED by evaluating the disability-adjusted life-years (DALYs). The age-standardized rates (ASRs, expressed per 100,000) were presented. Joinpoint regression analysis was applied to calculate the average annual percent change (AAPC) with 95% confidence interval (CI) to evaluate trends in 1990-2019.

Results

In both sexes together, the ASR of DALYs for ED in 2019 was the highest in Monaco (184.9 per 100,000), followed by Spain, Luxembourg and Austria (equally about 120.0), while the lowest rates were observed in Bosnia and Herzegovina, Republic of Moldova and Albania (equally about 20.0). Trend in ED DALYs significantly increased both in males (AAPC= +0.6%; 95%CI= 0.5 to 0.7) and females (AAPC= +0.7%; 95%CI= 0.6 to 0.7) in the European Region in 1990-2019. The highest rise of ED DALYs was observed in Western European countries (the Netherlands by +1.5% per year and Ireland by +1.3% per year), but an increasing trend was observed in almost all countries in the European Region, except Ukraine and Republic of Moldova, where stable trends were observed.

Conclusion

These results could help to better understand the burden of eating disorders which is crucial for improving their management.

Key messages

- Trend in ED DALYs significantly increased in the European Region in 1990-2019
- The highest burden of ED DALYs was observed in Western European countries

Population attributable fraction of high systolic blood pressure in burden of ischemic heart disease

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Background

Ischemic heart disease (IHD) is the top cause of years of life loss due to deaths and disability in Kyrgyzstan. The research aims to estimate what proportion of IHD burden is caused by the high systolic blood pressure risk factor.

Methods

Population attributable fraction (PAF) is the potential proportional reduction in population disease and mortality that would occur if exposure to a risk factor were reduced to an alternative ideal exposure scenario. To calculate the PAFs due to systolic blood pressure in the population the following was used for year 2017: (i) mean systolic blood pressure (observed risk factor distribution) during first visit to the primary health care doctor (by sex, age group and oblast), provided by the National eHealth Center, (ii) standard deviations of mean systolic blood pressure values calculated, (iii) theoretical minimum value for mean of systolic blood pressure (112.5 mmHg, based on literature review), (iv) highest and lowest mean systolic blood pressure values (250mmHg and 50 mmHg respectively), (v) relative risks from literature review.

Results

In 2017 44.2% of all deaths caused by IHD in males in Kyrgyzstan (in women 40.8%) were attributable to high systolic blood pressure. The greatest devastating impact of blood pressure on the health of people in Kyrgyzstan was observed in the age group 55-64 (PAF=0.54 in males and 0.53 in females), however in all age groups over the age of 35 the PAF was substantial.

2,330 deaths due to IHD attributable to high blood pressure in males accounted for 14.29% of total deaths in Kyrgyzstan in males aged 25 and over. In females 2,235 deaths due to IHD attributable to high systolic blood pressure accounted for 17.28% of total deaths from all causes among women aged 25 and over.

Conclusion

The intervention aiming to decrease burden of IHD trough earlier diagnosis of hypertension in people of Kyrgyzstan and appropriate treatment has a great opportunity to achieve this and to be effective.

Key messages

- The intervention containing earlier diagnosis of hypertension in people of Kyrgyzstan and implementing an appropriate treatment will achieve a substantial burden of ischemic heart disease decrease
- 14% of all deaths and DALYs due to ischemic heart disease in males (17% in females), which are attributable to high systolic blood pressure may be averted with effective public health programmes

The Burden of mental disorders in Iran, 1990-2019: Results from the Global Burden of Disease Study 2019

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Background

Mental disorders are increasing in Iran. A systematic analysis of the disease burden provides the basis for targeted health policies on mental health in Iran.

Methods

We used GBD 2019 study data to estimate the incidence, prevalence, years lived with disability (YLDs), years of life lost (YLLs) and disability-adjusted life-years (DALYs) from mental disorders from 1990 to 2019 in Iran. The mental disorders included in the GBD 2019 were depressive disorders, anxiety disorders, bipolar disorder, schizophrenia, autism spectrum disorders, conduct disorder, attention-deficit hyperactivity disorder, eating disorders, idiopathic developmental intellectual disability, and other mental disorders. We reported rates per 100,000 population, percentage changes in 1990-2019, and 95% Uncertainty Intervals (UIs) for the estimates.

Results

In 2019, 6.7 [95% uncertainty interval (UI): 5.8-7.8] million incident cases of mental disorders in Iran, 15.7 million (95% UI: 14.5-16.9) prevalent cases. and 2.05 (95% UI: 1.5-2.7) million DALYs were estimated. Between 1990 and 2019, the number of DALYs due to mental disorders increased from 1.1 million (UI: 0.85–1.5) to 2.05 (95% UI: 1.5-2.7). Age-standardized DALY rates increased 1.8% between 1990 (2,254 (95% UI 1,670–2,965)) and 2019 (2295.8 (95% UI 1702.2–3033.6)).

Conclusion

Strategies and providing appropriate mental health services for those with mental health disorders is necessary to combat their increasing burden. The COVID-19 pandemic has also adversely affected mental health. Policy change is needed to address the mental health impact of COVID-19 in Iran.

Key messages

- GBD 2019 showed that mental disorders are increasing and are in the top leading causes of burden in Iran
- National policies should strengthen mental health, and appropriate mental health services for those with mental health disorders should be provided

The changing pattern of trends in liver cancer burden in the European Region

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Background

Liver cancer (LC) remains one of the major public health issues worldwide. This study aimed to reveal the burden of LC attributable to five specific risk factors in the European Region in 1990-2019.

Methods

An ecological trend study was conducted. This study used the Global Burden of Disease Study 2019 data (including disability-adjusted life years - DALYs of LC, as well as LC due to alcohol use, hepatitis B, hepatitis C, nonalcoholic steatohepatitis, other causes). The DALYs are presented as age-standardized rates (ASRs) per 100,000 population. The trends in the LC burden were assessed using joinpoint regression analysis, by the average annual percent change (AAPC) with 95% confidence interval (CI).

Results

In both sexes together, the highest ASR of DALYs for LC in the European Region was attributed to alcohol use – 32.1 per 100,000 in 2019, followed by hepatitis C (28.2) and hepatitis B (19.2), and then nonalcoholic steatohepatitis and other causes (equally about 6.0). The DALYs for LC attributable to hepatitis C are concentrated in Western European countries (ASR=36.0), with a significantly increasing trend in the last three decades (AAPC=+0.5; 95%CI=0.3 to 0.6). The rising trends in ASRs of DALYs for LC in Eastern Europe are particularly worrying, both for LC due to alcohol use (AAPC=+2.9; 95%CI=2.6 to 3.3) and hepatitis C (AAPC=+2.4; 95% CI=2.2 to 2.7) and hepatitis B (AAPC=+2.2; 95%CI=1.8 to 2.5).

Conclusion

These epidemiological data indicate that additional preventive strategies for LC are needed to further reduce disease burden in the European Region.

Key messages

- The burden of liver cancer has been increasing in the European Region
- The major causes of the liver cancer burden vary considerably across Europe

National Burden of Cystic echinococcosis in Tunisia: A Disability Adjusted Life–year Approach

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Background

Echinococcosis/hydatidosis caused by Echinococcus granulosus has a widespread distribution in Tunisia, particularly in the north-west and centre-west of the country.

Methods

As its economic consequences have not been studied yet in Tunisia, this study estimated cystic echinococcosis (CE) impact in terms of monetary losses, disability-adjusted life years (DALY), and DALY for zoonotic diseases (zDALY) in the entire country and in specific regions for the 2014 to 2019 period. The direct monetary losses were related to organ seizure from infected animal in slaughterhouses, and to healthcare expenses as well as lost wages for infected humans. Animal production losses concerned milk yield, fertility, carcass weight, and wool production. Losses due to human infection were also composed of disability and productivity losses at work. Monte Carlo simulations were used to estimate monetary losses and zDALY values.

Results

Nationwide, the estimated DALY was 0.7 years per 100,000 persons per year, and the zDALY was 57 years per 100,000 persons per year. Total yearly losses were estimated at 93 million USD (54–112 million USD).

Conclusion

Losses differed significantly among regions. Most of the economic losses consisted of unperceived consequences, i.e. decreased animal production and reduced productivity of asymptomatic individuals.

Future studies should determine the socioeconomic and epidemiological factors underlying the differences in economic losses among regions to develop better adapted control programmes.

Key messages

- Combination methods brought information on the different CE-linked economic losses
- National CE control strategy did not result in a decrease of the disease burden

Disability-Adjusted Life Years for Occupational Cancer Diseases in 2010–2020: A data from regional Register of Occupational Diseases in Federation Bosnia and Herzegovina

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Background

This study aims to estimate the regional occupational cancer burden in Federation Bosnia and Herzegovina from 2010–2020 using the disability-adjusted life years data (DALYs) as a health measure.

Methods

Data from 50 carcinomas of workers out 135 (37%) of all verified occupational diseases (ODs) from the regional Register of ODS in Federation Bosnia and Herzegovina from 2010-2020. The years of life lost (YLL) were estimated with the remaining years lost of standardized expected years of life and mortality number incidence. The number of years lived with disability spent time in states of reduced health (YLD) do the multiplication of the numbers of incidence cases, duration, and disability weight. Disability-adjusted life years mean the years lived with disability (DALYs) were estimated using incidence data. The DALYs calculate as the arithmetic addition of YLL and YLD.

Results

In the study period, 26 deaths from all occupational cancers founded, and 23 cancer-attributable deaths were in male workers (88%). The prevalent malignant tumors were from the lower respiratory tract (16%), larynx (14%), and esophagus 12%. The most frequent cancers among female workers were breast, kidney, and vesicae urinary. For all malignant tumors, DALY estimated 5795,5. DALYs were higher among males than in females (1718,5 vs.1106,3). The computed YLD was lower among female individuals (155.6 vs. 568.6).

Conclusion

The present study provides the need to expand cancer prevention at the workplace, stop exposure to coke ovens emissions, RTG ionizing radiation, benzene or its homologs, and provide cancer screening and awareness programs

Key messages

- This study the first time explained cancer occupational disease burden with high incidence of mortality or early pensions among long-term exposure carcinogens in workplace ambient
- This topic need more study and international network team work. COST – network of scientist is optimal

Burden of rehabilitation in Serbia

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Background

Rehabilitation has often been construed to be as a very specialized and expensive service for the few. By comparing two studies on the burden of diseases in the world in 1990. and 2010. , it was shown that pain in the lumbar spine rose from eleventh to sixth place of diseases in terms of disability-adjusted life years (DALY). Considering the increasing age of the population, risk factors, increased incidence of musculoskeletal disorders in general, back pain with depression is becoming a leading cause of disability.

Methods

WHO, together with Institute for Health Metrics and Evaluation (IHME), has developed a Rehabilitation Need Estimator (RNE); a web-based tool that provides data visualizations of the estimated need for rehabilitation globally. In our work we analyzed key findings based on RNE, and the need for rehabilitation in Serbia.

Results

Global key findings showed that 310 million years have been lived with disability. There has been a 69.4% increase in years lived with disability between 1990 and 2019. Serbia key findings in 2019showed that approximately 7 in 15 people could benefit from rehabilitation; 4.1 million people experienced conditions that could benefit from rehabilitation; 1.2 million people have been affected by fractures; 490 thousand years have been lived with disability. There has been a 7.8% increase in years lived with disability between 1990 and 2019.

Conclusion

Rehabilitation should be integrated as an essential strategy in long-term care, as its main goal is to improve limitations in everyday functioning due to aging or underlying health conditions.

Key messages

- Optimizing functioning is the ultimate objective of rehabilitation, regardless of who the beneficiary is, who delivers it, or the context in which rehabilitation is delivered
- The traditional workforce in primary care settings need to be trained in assessing rehabilitation needs and in the delivery of rehabilitation interventions that address common health problems

Knowledge co-production thanks to public and Patient Involvement in Burden of Disease Scholarship

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Background

In Burden of Disease scholarship, there is a greater need than ever to consider knowledge co-production together with patients and caregivers. Given that patient participation causes improved health outcomes, enhanced quality of life, and delivery of more appropriate and cost effective services, if patients are regarded as equal partners in healthcare, they would actively participate in their own health care process, and more carefully monitor their own care.

Methods

Thinking points about Patient and Public involvement or how to make it work for both sides

Who is going to get involved in what research?

- Are people with a particular condition needed?
- Carers of people with the condition?
- Men/women, young/old? Or just the general public?
- Is there anyone definitely needed to exclude?

How will member of the public and patients reached out?

- If it is a patient group, can you recruit via a clinic?
- Can a charity help with recruitment?
- Are there local community groups you can approach for help?

How can they be supported in their role?

- Any training?
- Who is their key contact and how can they get in touch with them?

How will you pay expenses?

How and when can they offer feedback?

How will they be acknowledged for their input?

Practical issues (admin, language, directions)

- Who will take minutes, order refreshments etc.?
- Do you need extra resource people/ facilitators?
- Who will facilitate meetings? How will you make sure that everyone gets a say?

Key messages

- Part of the knowledge generating, transfer and dissemination can be done through involving members of the public and patients into different phases of research
- Involving members of public and patients requires adequate support put in place for reaping benefits in research

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