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No.YU/REG/PA/BOM-45/Not/2019 Date: 20.02.2019

NOTIFICATION - 6

Sub: University policy on payment of publication charges - reg.

Ref: 1. Proceedings of YURC meeting held on 21st Aug 2018.
2. 45th meeting of BoM held on 9.2.2019 – Agenda 14.

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The **Board of Management** at its meeting held on 9th February 2019, vide Agenda 14, **approved** the revision of existing policy on publication charges (copy enclosed) and is hereby notified.

Registrar
Yenepoya (Deemed to be University)

To:
The Principals of all the constituent colleges

Cc to:
All the Statutory Officers
Deputy Director, YRC
Academics

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Policy on payment of publication charges

"PUBLICATION CHARGES" for the publications made by Yenepoya University faculty

'Publication charges' means charges levied by the publishers for publishing the accepted research papers.

"Faculty" means a regular teaching employee of the Yenepoya University.

"Journal Impact factor" means impact factor provided in Journal Citation Reports[1] (JCR) for the SCI (Science Citation Indexed) journals.

Guidelines

As far as possible, the research work should get published in journals with optional open access, payment of publication charges shall be encouraged in limited cases.

1. Publication charges shall be paid for publications in journals with impact factor as per JCR only.
2. Charges claimed by the publishers towards "open access[3]" of the articles shall be paid after due consideration is made on the possible impact of the article[2].
3. Publication charges shall be paid only for original research articles and no publication charges shall be paid for publishing case reports, review articles, letter to editors etc., irrespective of the impact factor of the journal.
4. Papers published by payment of charges shall not be considered for 'publication incentives' of the University.
   i) Upper limit for the payment is Rs. 30,000 for journals with impact factor between 1 and 3
   ii) Rs. 60,000 for journals with impact factor 3- 7
   iii) Actual cost of article processing charge for journals with impact factor above 7.
5. All the claims for publication charges shall be made after acceptance of the papers along with the copy of the accepted manuscript, journal details and payment details to the Registrar.
6. The payment of the charges shall be made by the finance officer of the University.

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[1]Journal Citation Reports® offers a systematic, objective means to critically evaluate the world's leading journals, with quantifiable, statistical information based on citation data. By compiling articles' cited references, it measure research influence and impact at the journal and category levels.
(http://thomsonreuters.com/products_services/science_products/a-z/journal_citation_reports/)

[2]The possible impact of the research article shall be evaluated by the Yenepoya University Research Council along with the expert members.

[3]Open access is the format of providing unlimited access to peer reviewed scholarly Journal papers. The articles can be obtained more quickly than the one in conventional journal. So the faculties are encouraged to publish in high impact open access journals.

Date: 20.02.2019

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Yenepoya (Deemed to be University adopted and lunched Indian Research Information Network System (IRINS) on 12-10-2020

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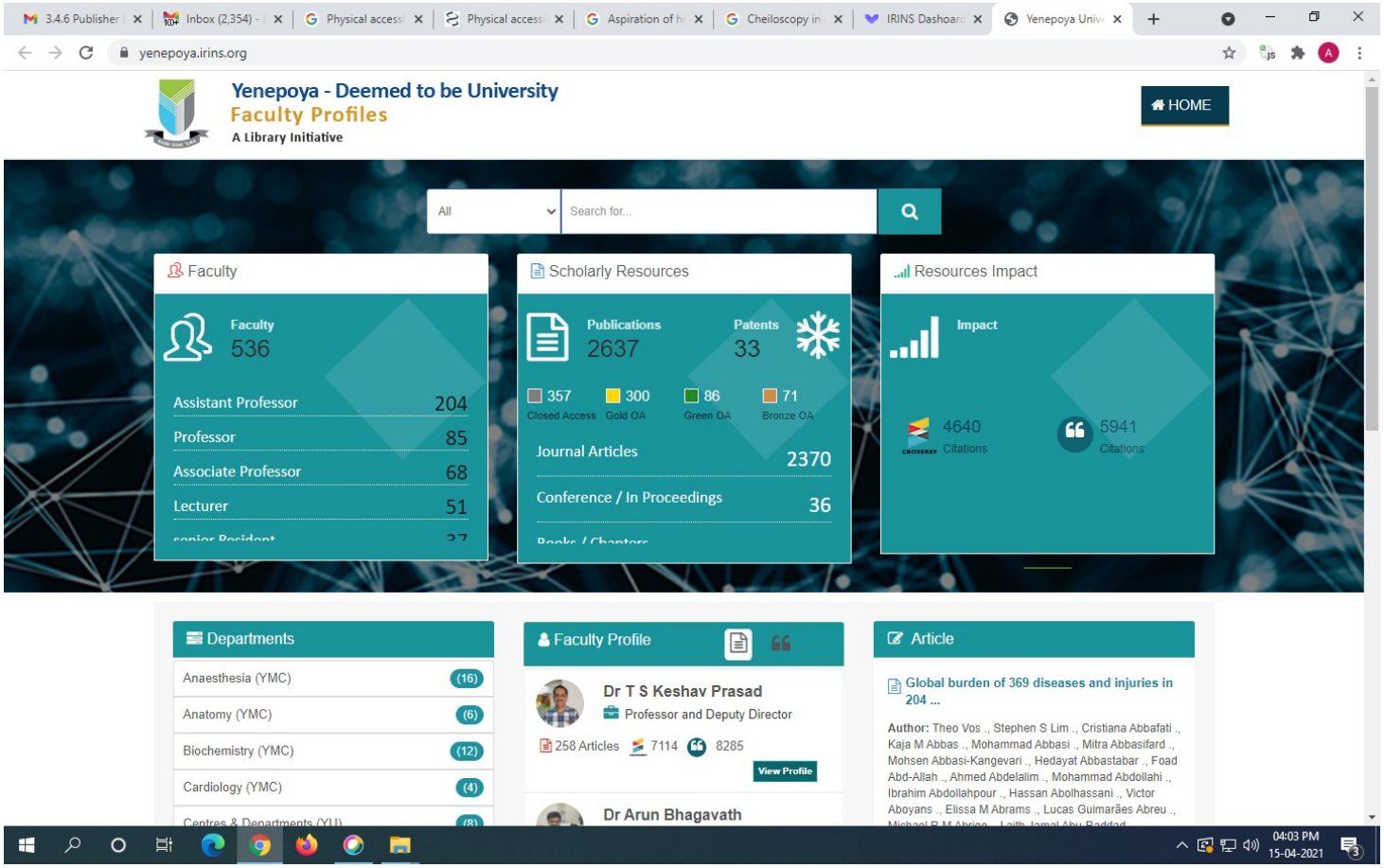

Screenshot of IRINS@Yenepoya (updated on 15-04-2021)

Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019

*GBD 2019 Diseases and Injuries Collaborators**

Lancet 2020; 396: 1204–22

This online publication has been corrected. The corrected version first appeared at thelancet.com on October 23, 2020

*For the list of Collaborators see **Viewpoint** *Lancet* 2020; 396: 1135–59

Correspondence to: Prof Christopher J L Murray, Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA 98195, USA
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Summary

Background In an era of shifting global agendas and expanded emphasis on non-communicable diseases and injuries along with communicable diseases, sound evidence on trends by cause at the national level is essential. The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) provides a systematic scientific assessment of published, publicly available, and contributed data on incidence, prevalence, and mortality for a mutually exclusive and collectively exhaustive list of diseases and injuries.

Methods GBD estimates incidence, prevalence, mortality, years of life lost (YLLs), years lived with disability (YLDs), and disability-adjusted life-years (DALYs) due to 369 diseases and injuries, for two sexes, and for 204 countries and territories. Input data were extracted from censuses, household surveys, civil registration and vital statistics, disease registries, health service use, air pollution monitors, satellite imaging, disease notifications, and other sources. Cause-specific death rates and cause fractions were calculated using the Cause of Death Ensemble model and spatiotemporal Gaussian process regression. Cause-specific deaths were adjusted to match the total all-cause deaths calculated as part of the GBD population, fertility, and mortality estimates. Deaths were multiplied by standard life expectancy at each age to calculate YLLs. A Bayesian meta-regression modelling tool, DisMod-MR 2.1, was used to ensure consistency between incidence, prevalence, remission, excess mortality, and cause-specific mortality for most causes. Prevalence estimates were multiplied by disability weights for mutually exclusive sequelae of diseases and injuries to calculate YLDs. We considered results in the context of the Socio-demographic Index (SDI), a composite indicator of income per capita, years of schooling, and fertility rate in females younger than 25 years. Uncertainty intervals (UIs) were generated for every metric using the 25th and 975th ordered 1000 draw values of the posterior distribution.

Findings Global health has steadily improved over the past 30 years as measured by age-standardised DALY rates. After taking into account population growth and ageing, the absolute number of DALYs has remained stable. Since 2010, the pace of decline in global age-standardised DALY rates has accelerated in age groups younger than 50 years compared with the 1990–2010 time period, with the greatest annualised rate of decline occurring in the 0–9-year age group. Six infectious diseases were among the top ten causes of DALYs in children younger than 10 years in 2019: lower respiratory infections (ranked second), diarrhoeal diseases (third), malaria (fifth), meningitis (sixth), whooping cough (ninth), and sexually transmitted infections (which, in this age group, is fully accounted for by congenital syphilis; ranked tenth). In adolescents aged 10–24 years, three injury causes were among the top causes of DALYs: road injuries (ranked first), self-harm (third), and interpersonal violence (fifth). Five of the causes that were in the top ten for ages 10–24 years were also in the top ten in the 25–49-year age group: road injuries (ranked first), HIV/AIDS (second), low back pain (fourth), headache disorders (fifth), and depressive disorders (sixth). In 2019, ischaemic heart disease and stroke were the top-ranked causes of DALYs in both the 50–74-year and 75-years-and-older age groups. Since 1990, there has been a marked shift towards a greater proportion of burden due to YLDs from non-communicable diseases and injuries. In 2019, there were 11 countries where non-communicable disease and injury YLDs constituted more than half of all disease burden. Decreases in age-standardised DALY rates have accelerated over the past decade in countries at the lower end of the SDI range, while improvements have started to stagnate or even reverse in countries with higher SDI.

Interpretation As disability becomes an increasingly large component of disease burden and a larger component of health expenditure, greater research and development investment is needed to identify new, more effective intervention strategies. With a rapidly ageing global population, the demands on health services to deal with disabling outcomes, which increase with age, will require policy makers to anticipate these changes. The mix of universal and more geographically specific influences on health reinforces the need for regular reporting on population health in detail and by underlying cause to help decision makers to identify success stories of disease control to emulate, as well as opportunities to improve.

Funding Bill & Melinda Gates Foundation.

Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019

*GBD 2019 Risk Factors Collaborators**

Summary

Background Rigorous analysis of levels and trends in exposure to leading risk factors and quantification of their effect on human health are important to identify where public health is making progress and in which cases current efforts are inadequate. The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019 provides a standardised and comprehensive assessment of the magnitude of risk factor exposure, relative risk, and attributable burden of disease.

Methods GBD 2019 estimated attributable mortality, years of life lost (YLLs), years of life lived with disability (YLDs), and disability-adjusted life-years (DALYs) for 87 risk factors and combinations of risk factors, at the global level, regionally, and for 204 countries and territories. GBD uses a hierarchical list of risk factors so that specific risk factors (eg, sodium intake), and related aggregates (eg, diet quality), are both evaluated. This method has six analytical steps. (1) We included 560 risk–outcome pairs that met criteria for convincing or probable evidence on the basis of research studies. 12 risk–outcome pairs included in GBD 2017 no longer met inclusion criteria and 47 risk–outcome pairs for risks already included in GBD 2017 were added based on new evidence. (2) Relative risks were estimated as a function of exposure based on published systematic reviews, 81 systematic reviews done for GBD 2019, and meta-regression. (3) Levels of exposure in each age-sex-location-year included in the study were estimated based on all available data sources using spatiotemporal Gaussian process regression, DisMod-MR 2.1, a Bayesian meta-regression method, or alternative methods. (4) We determined, from published trials or cohort studies, the level of exposure associated with minimum risk, called the theoretical minimum risk exposure level. (5) Attributable deaths, YLLs, YLDs, and DALYs were computed by multiplying population attributable fractions (PAFs) by the relevant outcome quantity for each age-sex-location-year. (6) PAFs and attributable burden for combinations of risk factors were estimated taking into account mediation of different risk factors through other risk factors. Across all six analytical steps, 30 652 distinct data sources were used in the analysis. Uncertainty in each step of the analysis was propagated into the final estimates of attributable burden. Exposure levels for dichotomous, polytomous, and continuous risk factors were summarised with use of the summary exposure value to facilitate comparisons over time, across location, and across risks. Because the entire time series from 1990 to 2019 has been re-estimated with use of consistent data and methods, these results supersede previously published GBD estimates of attributable burden.

Findings The largest declines in risk exposure from 2010 to 2019 were among a set of risks that are strongly linked to social and economic development, including household air pollution; unsafe water, sanitation, and handwashing; and child growth failure. Global declines also occurred for tobacco smoking and lead exposure. The largest increases in risk exposure were for ambient particulate matter pollution, drug use, high fasting plasma glucose, and high body-mass index. In 2019, the leading Level 2 risk factor globally for attributable deaths was high systolic blood pressure, which accounted for 10·8 million (95% uncertainty interval [UI] 9·51–12·1) deaths (19·2% [16·9–21·3] of all deaths in 2019), followed by tobacco (smoked, second-hand, and chewing), which accounted for 8·71 million (8·12–9·31) deaths (15·4% [14·6–16·2] of all deaths in 2019). The leading Level 2 risk factor for attributable DALYs globally in 2019 was child and maternal malnutrition, which largely affects health in the youngest age groups and accounted for 295 million (253–350) DALYs (11·6% [10·3–13·1] of all global DALYs that year). The risk factor burden varied considerably in 2019 between age groups and locations. Among children aged 0–9 years, the three leading detailed risk factors for attributable DALYs were all related to malnutrition. Iron deficiency was the leading risk factor for those aged 10–24 years, alcohol use for those aged 25–49 years, and high systolic blood pressure for those aged 50–74 years and 75 years and older.

Interpretation Overall, the record for reducing exposure to harmful risks over the past three decades is poor. Success with reducing smoking and lead exposure through regulatory policy might point the way for a stronger role for public policy on other risks in addition to continued efforts to provide information on risk factor harm to the general public.

Funding Bill & Melinda Gates Foundation.

Lancet 2020; 396: 1223–49

*For the list of Collaborators see **Viewpoint** *Lancet* 2020; **396:** 1135–59

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Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: a comprehensive demographic analysis for the Global Burden of Disease Study 2019

*GBD 2019 Demographics Collaborators**

Lancet 2020; 396: 1160–203

*For the list of Collaborators see **Viewpoint** *Lancet* 2020; **396:** 1135–59

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Summary

Background Accurate and up-to-date assessment of demographic metrics is crucial for understanding a wide range of social, economic, and public health issues that affect populations worldwide. The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019 produced updated and comprehensive demographic assessments of the key indicators of fertility, mortality, migration, and population for 204 countries and territories and selected subnational locations from 1950 to 2019.

Methods 8078 country-years of vital registration and sample registration data, 938 surveys, 349 censuses, and 238 other sources were identified and used to estimate age-specific fertility. Spatiotemporal Gaussian process regression (ST-GPR) was used to generate age-specific fertility rates for 5-year age groups between ages 15 and 49 years. With extensions to age groups 10–14 and 50–54 years, the total fertility rate (TFR) was then aggregated using the estimated age-specific fertility between ages 10 and 54 years. 7417 sources were used for under-5 mortality estimation and 7355 for adult mortality. ST-GPR was used to synthesise data sources after correction for known biases. Adult mortality was measured as the probability of death between ages 15 and 60 years based on vital registration, sample registration, and sibling histories, and was also estimated using ST-GPR. HIV-free life tables were then estimated using estimates of under-5 and adult mortality rates using a relational model life table system created for GBD, which closely tracks observed age-specific mortality rates from complete vital registration when available. Independent estimates of HIV-specific mortality generated by an epidemiological analysis of HIV prevalence surveys and antenatal clinic serosurveillance and other sources were incorporated into the estimates in countries with large epidemics. Annual and single-year age estimates of net migration and population for each country and territory were generated using a Bayesian hierarchical cohort component model that analysed estimated age-specific fertility and mortality rates along with 1250 censuses and 747 population registry years. We classified location-years into seven categories on the basis of the natural rate of increase in population (calculated by subtracting the crude death rate from the crude birth rate) and the net migration rate. We computed healthy life expectancy (HALE) using years lived with disability (YLDs) per capita, life tables, and standard demographic methods. Uncertainty was propagated throughout the demographic estimation process, including fertility, mortality, and population, with 1000 draw-level estimates produced for each metric.

Findings The global TFR decreased from 2·72 (95% uncertainty interval [UI] 2·66–2·79) in 2000 to 2·31 (2·17–2·46) in 2019. Global annual livebirths increased from 134·5 million (131·5–137·8) in 2000 to a peak of 139·6 million (133·0–146·9) in 2016. Global livebirths then declined to 135·3 million (127·2–144·1) in 2019. Of the 204 countries and territories included in this study, in 2019, 102 had a TFR lower than 2·1, which is considered a good approximation of replacement-level fertility. All countries in sub-Saharan Africa had TFRs above replacement level in 2019 and accounted for 27·1% (95% UI 26·4–27·8) of global livebirths. Global life expectancy at birth increased from 67·2 years (95% UI 66·8–67·6) in 2000 to 73·5 years (72·8–74·3) in 2019. The total number of deaths increased from 50·7 million (49·5–51·9) in 2000 to 56·5 million (53·7–59·2) in 2019. Under-5 deaths declined from 9·6 million (9·1–10·3) in 2000 to 5·0 million (4·3–6·0) in 2019. Global population increased by 25·7%, from 6·2 billion (6·0–6·3) in 2000 to 7·7 billion (7·5–8·0) in 2019. In 2019, 34 countries had negative natural rates of increase; in 17 of these, the population declined because immigration was not sufficient to counteract the negative rate of decline. Globally, HALE increased from 58·6 years (56·1–60·8) in 2000 to 63·5 years (60·8–66·1) in 2019. HALE increased in 202 of 204 countries and territories between 2000 and 2019.

Interpretation Over the past 20 years, fertility rates have been dropping steadily and life expectancy has been increasing, with few exceptions. Much of this change follows historical patterns linking social and economic determinants, such as those captured by the GBD Socio-demographic Index, with demographic outcomes. More recently, several countries have experienced a combination of low fertility and stagnating improvement in mortality rates, pushing more populations into the late stages of the demographic transition. Tracking demographic change and the emergence of new patterns will be essential for global health monitoring.

Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019

*GBD 2019 Universal Health Coverage Collaborators**

Lancet 2020; 396: 1250–84

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See Comment page 1130

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Summary

Background Achieving universal health coverage (UHC) involves all people receiving the health services they need, of high quality, without experiencing financial hardship. Making progress towards UHC is a policy priority for both countries and global institutions, as highlighted by the agenda of the UN Sustainable Development Goals (SDGs) and WHO's Thirteenth General Programme of Work (GPW13). Measuring effective coverage at the health-system level is important for understanding whether health services are aligned with countries' health profiles and are of sufficient quality to produce health gains for populations of all ages.

Methods Based on the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019, we assessed UHC effective coverage for 204 countries and territories from 1990 to 2019. Drawing from a measurement framework developed through WHO's GPW13 consultation, we mapped 23 effective coverage indicators to a matrix representing health service types (eg, promotion, prevention, and treatment) and five population-age groups spanning from reproductive and newborn to older adults (≥65 years). Effective coverage indicators were based on intervention coverage or outcome-based measures such as mortality-to-incidence ratios to approximate access to quality care; outcome-based measures were transformed to values on a scale of 0–100 based on the 2·5th and 97·5th percentile of location-year values. We constructed the UHC effective coverage index by weighting each effective coverage indicator relative to its associated potential health gains, as measured by disability-adjusted life-years for each location-year and population-age group. For three tests of validity (content, known-groups, and convergent), UHC effective coverage index performance was generally better than that of other UHC service coverage indices from WHO (ie, the current metric for SDG indicator 3.8.1 on UHC service coverage), the World Bank, and GBD 2017. We quantified frontiers of UHC effective coverage performance on the basis of pooled health spending per capita, representing UHC effective coverage index levels achieved in 2019 relative to country-level government health spending, prepaid private expenditures, and development assistance for health. To assess current trajectories towards the GPW13 UHC billion target—1 billion more people benefiting from UHC by 2023—we estimated additional population equivalents with UHC effective coverage from 2018 to 2023.

Findings Globally, performance on the UHC effective coverage index improved from 45·8 (95% uncertainty interval 44·2–47·5) in 1990 to 60·3 (58·7–61·9) in 2019, yet country-level UHC effective coverage in 2019 still spanned from 95 or higher in Japan and Iceland to lower than 25 in Somalia and the Central African Republic. Since 2010, sub-Saharan Africa showed accelerated gains on the UHC effective coverage index (at an average increase of 2·6% [1·9–3·3] per year up to 2019); by contrast, most other GBD super-regions had slowed rates of progress in 2010–2019 relative to 1990–2010. Many countries showed lagging performance on effective coverage indicators for non-communicable diseases relative to those for communicable diseases and maternal and child health, despite non-communicable diseases accounting for a greater proportion of potential health gains in 2019, suggesting that many health systems are not keeping pace with the rising non-communicable disease burden and associated population health needs. In 2019, the UHC effective coverage index was associated with pooled health spending per capita (r=0·79), although countries across the development spectrum had much lower UHC effective coverage than is potentially achievable relative to their health spending. Under maximum efficiency of translating health spending into UHC effective coverage performance, countries would need to reach $1398 pooled health spending per capita (US$ adjusted for purchasing power parity) in order to achieve 80 on the UHC effective coverage index. From 2018 to 2023, an estimated 388·9 million (358·6–421·3) more population equivalents would have UHC effective coverage, falling well short of the GPW13 target of 1 billion more people benefiting from UHC during this time. Current projections point to an estimated 3·1 billion (3·0–3·2) population equivalents still lacking UHC effective coverage in 2023, with nearly a third (968·1 million [903·5–1040·3]) residing in south Asia.

Interpretation The present study demonstrates the utility of measuring effective coverage and its role in supporting improved health outcomes for all people—the ultimate goal of UHC and its achievement. Global ambitions to

Mapping geographical inequalities in oral rehydration therapy coverage in low-income and middle-income countries, 2000–17

*Local Burden of Disease Diarrhoea Collaborators**

Lancet Glob Health 2020; 8: e1038–60

*Collaborators listed at the end of the Article

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Summary

Background Oral rehydration solution (ORS) is a form of oral rehydration therapy (ORT) for diarrhoea that has the potential to drastically reduce child mortality; yet, according to UNICEF estimates, less than half of children younger than 5 years with diarrhoea in low-income and middle-income countries (LMICs) received ORS in 2016. A variety of recommended home fluids (RHF) exist as alternative forms of ORT; however, it is unclear whether RHF prevent child mortality. Previous studies have shown considerable variation between countries in ORS and RHF use, but subnational variation is unknown. This study aims to produce high-resolution geospatial estimates of relative and absolute coverage of ORS, RHF, and ORT (use of either ORS or RHF) in LMICs.

Methods We used a Bayesian geostatistical model including 15 spatial covariates and data from 385 household surveys across 94 LMICs to estimate annual proportions of children younger than 5 years of age with diarrhoea who received ORS or RHF (or both) on continuous continent-wide surfaces in 2000–17, and aggregated results to policy-relevant administrative units. Additionally, we analysed geographical inequality in coverage across administrative units and estimated the number of diarrhoeal deaths averted by increased coverage over the study period. Uncertainty in the mean coverage estimates was calculated by taking 250 draws from the posterior joint distribution of the model and creating uncertainty intervals (UIs) with the 2·5th and 97·5th percentiles of those 250 draws.

Findings While ORS use among children with diarrhoea increased in some countries from 2000 to 2017, coverage remained below 50% in the majority (62·6%; 12 417 of 19 823) of second administrative-level units and an estimated 6 519 000 children (95% UI 5 254 000–7 733 000) with diarrhoea were not treated with any form of ORT in 2017. Increases in ORS use corresponded with declines in RHF in many locations, resulting in relatively constant overall ORT coverage from 2000 to 2017. Although ORS was uniformly distributed subnationally in some countries, within-country geographical inequalities persisted in others; 11 countries had at least a 50% difference in one of their units compared with the country mean. Increases in ORS use over time were correlated with declines in RHF use and in diarrhoeal mortality in many locations, and an estimated 52 230 diarrhoeal deaths (36 910–68 860) were averted by scaling up of ORS coverage between 2000 and 2017. Finally, we identified key subnational areas in Colombia, Nigeria, and Sudan as examples of where diarrhoeal mortality remains higher than average, while ORS coverage remains lower than average.

Interpretation To our knowledge, this study is the first to produce and map subnational estimates of ORS, RHF, and ORT coverage and attributable child diarrhoeal deaths across LMICs from 2000 to 2017, allowing for tracking progress over time. Our novel results, combined with detailed subnational estimates of diarrhoeal morbidity and mortality, can support subnational needs assessments aimed at furthering policy makers' understanding of within-country disparities. Over 50 years after the discovery that led to this simple, cheap, and life-saving therapy, large gains in reducing mortality could still be made by reducing geographical inequalities in ORS coverage.

Funding Bill & Melinda Gates Foundation.

Introduction

Oral rehydration solution (ORS) is a simple treatment that can be prepared and used at home to prevent mortality due to dehydration and undernutrition in children with diarrhoea. This intervention is especially suitable in locations where intravenous fluids are scarce or unavailable,[1] and replaces indiscriminate and unnecessary use of antibiotics to treat diarrhoea.[2] ORS was discovered more than 50 years ago when a physician in Dhaka, Bangladesh, found that treating patients with cholera with glucose-electrolyte solutions in equivalent amounts to fluid losses could prevent the need for intravenous liquids in 80% of patients.[3] Shortly thereafter, its ability to prevent dehydration was shown in a trial in Kolkata, India,[4] and during a cholera outbreak among Bangladeshi refugees in India.[5] Since then,

Faculty from YDU-Dr. Jeevan Pereira, Dept. of Orthopedics

Five insights from the Global Burden of Disease Study 2019

*GBD 2019 Viewpoint Collaborators**

The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019 provides a rules-based synthesis of the available evidence on levels and trends in health outcomes, a diverse set of risk factors, and health system responses. GBD 2019 covered 204 countries and territories, as well as first administrative level disaggregations for 22 countries, from 1990 to 2019. Because GBD is highly standardised and comprehensive, spanning both fatal and non-fatal outcomes, and uses a mutually exclusive and collectively exhaustive list of hierarchical disease and injury causes, the study provides a powerful basis for detailed and broad insights on global health trends and emerging challenges. GBD 2019 incorporates data from 281 586 sources and provides more than 3·5 billion estimates of health outcome and health system measures of interest for global, national, and subnational policy dialogue. All GBD estimates are publicly available and adhere to the Guidelines on Accurate and Transparent Health Estimate Reporting. From this vast amount of information, five key insights that are important for health, social, and economic development strategies have been distilled. These insights are subject to the many limitations outlined in each of the component GBD capstone papers.

Lancet 2020; 396: 1135–59

*Collaborators are listed at the end of the paper

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For **GBD Compare** see https://vizhub.healthdata.org/gbd-compare/

For the **GBD Results Tool** see http://ghdx.healthdata.org/gbd-results-tool

For more on the **Guidelines on Accurate and Transparent Health Estimate Reporting** see **Statement** *Lancet* 2016; **388:** e19–23

Double down on catch-up development

In the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), a population's social and economic development status for each location-year is tracked on the basis of the Socio-demographic Index (SDI), which combines information on gross domestic product per capita, average years of schooling among individuals aged older than 25 years, and the total fertility rate among females under the age of 25 years (as a widely available inverse proxy for the status of girls and women in society).[1] SDI ranges from 0 to 100. Since 1950, global SDI has increased monotonically from 35 to 65. The average pace of progress accelerated from 1950 to 1980 and has stayed at around 0·5 units per year since then. For the 15% of countries with the fastest rate of increase, SDI has improved on average by 0·9 units per year since 1980, but it has improved by less than a third of this rate (0·3 units per year) for the bottom 15% of countries. Social and economic development can take centuries. Given what was reported from 1950 to 2019, the average country would take about 184 years to progress from an SDI of 0 to an SDI of 100; whereas, countries in the bottom 15% would take 357 years and those in the top 15% would take 110 years. From 1950 to 2000, the pace of improvement in SDI was positively correlated with the level of SDI, whereby high and high-middle SDI countries developed faster than did low and low-middle SDI countries. Since 2000, the correlation has become progressively more negative and is now around –0·5. In other words, since the Millennium Declaration,[2] low and low-middle SDI countries have had larger annual increases in SDI than have high and high-middle SDI countries. The inequality in SDI between countries, measured with the standard deviation of SDI, has been decreasing since 2000, showing catch-up development.

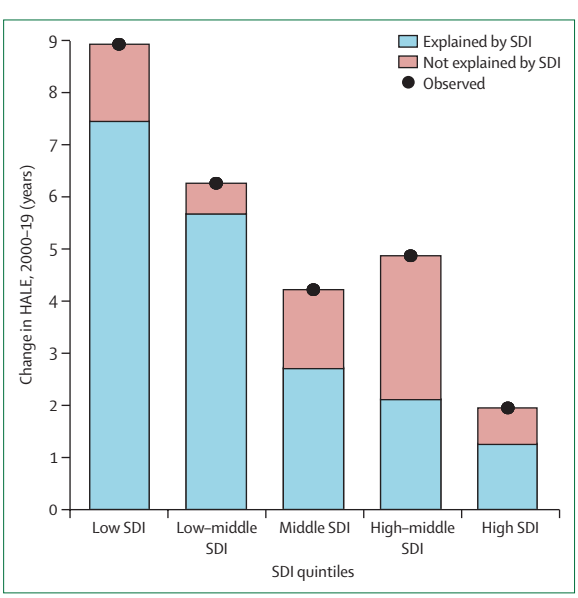

Figure 1: **Change in HALE disaggregated by SDI quintiles, 2000–19**
SDI quintiles as assessed in 2019. Expected change in HALE related to change in SDI is based on fitting spline functions to the relationship between age-specific mortality and SDI, and age-specific years lived with disability per capita and SDI. HALE=healthy life expectancy. SDI=Socio-demographic Index.

Social and economic development, measured with SDI, is highly correlated with health outcomes.[3] Figure 1 shows the increase in healthy life expectancy from 2000 to 2019, divided by what could be expected on the basis of SDI change alone and what is unexplained by SDI. These changes unexplained by SDI are likely to be explained by some combination of new technologies, prioritisation of societal resources for health, and the emergence of public health challenges, such as the HIV epidemic or alcohol consumption in eastern Europe and central Asia. Given the overwhelming impact of SDI on health progress, doubling down on policies and strategies that stimulate economic growth, expand access to primary and secondary schooling, and improve the status of women should be our collective priority. The catch-up social and economic development that has been clearly evident since the Millennium Declaration provides some optimism that maintaining focus on low SDI countries, and low SDI communities within countries, is not only possible but can also be expected to have profound health benefits. Further

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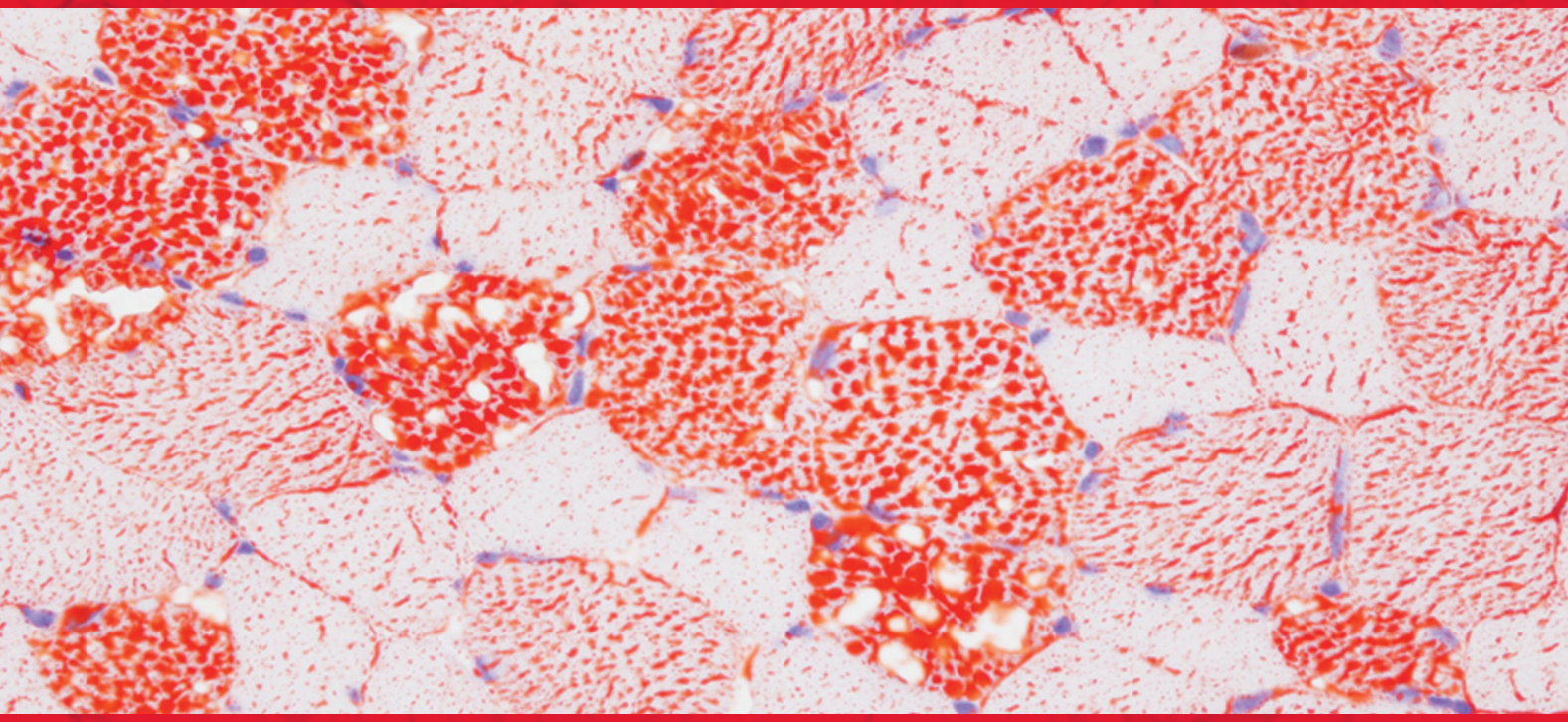

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Front cover:

Background: Mitochondria and lipid metabolism regulate each other in the skeletal muscle. Altered lipid transport, metabolism and storage influence the tissue bioenergetics ultimately leading to cardiac and neurological diseases. Lipid storage disorders (LSDs) are neurometabolic disorders which display intramuscular lipid accumulation and impaired mitochondrial bioenergetics in the muscle, leading to progressive myopathy.

Main findings: To understand the relationship between lipid metabolism and mitochondria, we carried out morphological and biochemical analysis of mitochondrial function in muscle biopsies of LSD patients. Altered mitochondrial structure, impaired fatty acid and respiratory metabolism along with increased membrane permeability and elevated lipolysis entail mitochondrial dysfunction in LSD.

Implication: Many differentially regulated mitochondrial proteins in LSD are linked with other human diseases indicating that mitochondrial protection via targeted drugs could be a treatment modality in LSD and related metabolic diseases.

Image content: The cover image shows the transverse section of skeletal muscle tissue from a case of LSD, stained with Oli-red-O. Prominent multiple red deposits correspond to intracellular accumulation of lipids (magnification: X20).

Read the full article *'Mitochondrial dysfunction in human skeletal muscle biopsies of lipid storage disorder'* by B. Debashree, M. Kumar, T. S. Keshava Prasad, A. Natarajan, R. Christopher, A. Nalini, P. S. Bindu, N. Gayathri, M. M. Srinivas Bharath (*J. Neurochem.* 2018, vol. 145 (4), pp. 323–341) on doi: 10.1111/jnc.14318

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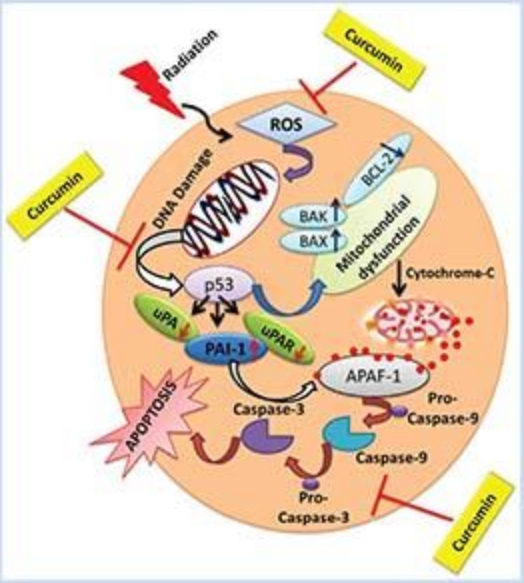

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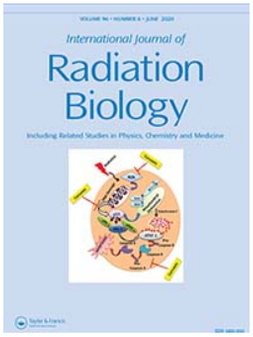

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Radiation induced apoptosis and pulmonary fibrosis: curcumin an effective intervention?

Shilpa Johnson, Sadiya B. Shaikh, Fatheema Muneesa, Barki Rashmi & Yashodhar P. Bhandary

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