Relative health performance in BRICS over the past 20 years: the winners and losers

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Objective To determine whether the health performance of Brazil, the Russian Federation, India, China and South Africa – the countries known as BRICS – has kept in step with their economic development.

Methods Reductions in age- and sex-specific mortality seen in each BRICS country between 1990 and 2011 were measured. These results were compared with those of the best-performing countries in the world and the best-performing countries with similar income levels. We estimated each country's progress in reducing mortality and compared changes in that country's mortality rates against other countries with similar mean incomes to examine changes in avoidable mortality.

Findings The relative health performance of the five study countries differed markedly over the study period. Brazil demonstrated fairly even improvement in relative health performance across the different age and sex subgroups that we assessed. India's improvement was more modest and more varied across the subgroups. South Africa and the Russian Federation exhibited large declines in health performance as well as large sex-specific inequalities in health. Although China's levels of avoidable mortality decreased in absolute terms, the level of improvement appeared low in the context of China's economic growth.

Conclusion When evaluating a country's health performance in terms of avoidable mortality, it is useful to compare that performance against the performance of other countries. Such comparison allows any country-specific improvements to be distinguished from general global improvements.

Abstracts in عربي, 中文, Français, Русский and Español at the end of each article.

Introduction

In 2001, the acronym BRIC was coined to represent the fast-growing economies of Brazil, the Russian Federation, India, and China. In 2010 the acronym evolved into BRICS with the addition of South Africa. Since 2001 the five BRICS countries have all expanded in economic terms. China already has an economy that is 80% of the American economy.

As their economic power increases, BRICS are becoming increasingly influential in global health – via their domestic health and foreign assistance programmes and their activism in international fora.[1,2] Together, these five countries account for over 40% of the world population and much of the global burden of disease.[3] In India, which accounts for nearly 18% of the world's population, 217 million individuals were estimated to be undernourished in 2012.[4] In 2012 South Africa had more people infected with the human immunodeficiency virus (HIV) – 6.1 million – than any other country.[5]

In the light of the rising prominence of BRICS in the global health arena, we wished to evaluate the health progress that each of the five countries had made between 1990 and 2011. In this paper, we focus on the changes seen in mortality among males and females of different age groups.

We use years of life lost (YLL) – an estimate of the number of years a person has lost because of premature death – as a measure of the ill health of a population.[6,7] Some premature deaths – and associated risk factors – are avoidable; others are not. The number of premature deaths and types of avoidable risk factors may vary over time. For example, the development of new technology may increase the percentage of deaths that are avoidable. If that technology becomes accessible to much of the world's population, it may trigger a global reduction in avoidable mortality. In evaluating the changes in the health performance of a country over time, we may decide to compare the temporal trends in that country with the corresponding global trends or, at least, the corresponding trends seen in other comparable populations.[8,9] In this way we can evaluate the country's health performance relative to that seen in similar areas and so help to distinguish country-specific changes from more general global changes. As an added complication, the choice of "similar areas" may also have to change over time, especially when the countries being investigated are changing rapidly. For example, in 1990 we may have compared China and India with other countries that the Word Bank classified as low-income. In 2011, however, such comparisons would have been unjustified because China and India had then become upper-middle-income and lower-middle-income countries, respectively.

Methods

Years of life lost

YLL is generally calculated using the equation:

$$YLL_{a,s}^{i} = N_{a,s}^{i} \times LE_{a,s}^{\#} \tag{1}$$

where i, a, and s are identifiers of the country, age group and sex involved, respectively, $N_{a,s}^{i}$ is the number of deaths among a fixed number of people and $LE_{a,s}^{\#}$ is the remaining life expectancy – which could be set as the shortfall from a fixed age, such as 69 years, or as the highest observed age- and sex-specific life expectancy among all countries.[6,7]

Avoidable years of life lost

In the calculation of YLL it is assumed that all deaths measured by $N_{a,s}^i$ are premature and thus avoidable. However, national survival curves – even those for countries with exceptionally high life expectancies at birth – are far from rectangular, as some deaths at young ages are unavoidable. To account for this, we modified the equation for calculating YLL – subtracting the number of unavoidable deaths at each age from the total number of deaths $N_{a,s}^i$ to give an estimate of avoidable years of life lost (AYLL):

$$AYLL_{a,s}^i = (N_{a,s}^i - N_{a,s}^*) \times LE_{a,s}^* \qquad (2)$$

where $N_{a,s}^*$ is the estimated number of unavoidable deaths – based on the lowest observed mortality rate for the given age–sex group among all countries in the sample, and $LE_{a,s}^*$ is constructed from $N_{a,s}^*$ – for the different age–sex groups – using standard life table methods. Since $N_{a,s}^*$ takes account of unavoidable deaths caused by genetic factors, the estimates of AYLL are comparable across different age–sex groups and allow age and sex inequalities in health to be examined. The distinction between avoidable and unavoidable mortality is important in this context because health inequality represents the differences in health – or health losses – which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust.[10]

In substituting $LE_{a,s}^*$ for $LE_{a,s}^\#$ we constructed a hypothetical reference country – with the lowest observed mortality in each age–sex group – and then used its mortality profile as a benchmark. We could then compare each study country's mortality outcomes against this benchmark. This was consistent with using $N_{a,s}^*$ as a measure of unavoidable deaths.

Using the mortality rates of particular population groups as proxies for unavoidable premature deaths is a long-established practice.[11–16] It avoids the burden of having to decide which causes of death are preventable,[9,17–20] and the need for an accurate determination of the cause of death. Identification of the cause of death can be particularly problematic in developing areas.[21]

Income-specific avoidable years of life lost

The reference mortality rates – $N_{a,s}^*$ – used in the calculation of AYLL are often drawn from high-income countries such as Japan. However, the health services that are generally accessible in high-income countries are often not accessible in low- or even middle-income countries. The use of high-income countries as the reference group prohibits us from separating the loss of life years that results from lack of resources from the loss caused by other reasons, such as the inefficient use or unequal distribution of resources. To address this issue, we estimated income-specific avoidable years of life lost (IAYLL) as:

$$IAYLL_{a,s}^i = (N_{a,s}^i - N_{a,s}^{*i}) \times LE_{a,s}^{*i} \qquad (3)$$

where $N_{a,s}^{*i}$ is the estimated level of unavoidable mortality among countries with the same income level as country i, and $LE_{a,s}^{*i}$ is the corresponding reference life expectancy. By definition, IAYLL cannot be larger than AYLL.

Since no two countries have identical income, we used the data envelopment analysis method to estimate $N_{a,s}^{*i}$. This benchmarking technique allowed us to identify the lowest possible mortality rate for a given income level – based on the observed mortality rates of countries with similar income levels.[22]

We can justify the use of income as the sole benchmarking criterion in three ways. First, at any point in time – and thus at a given state of technology – there is a well-fitting logistic relationship between life expectancy at birth and income across countries.[23] This relationship, which is known as the "Preston curve", is extremely resilient – even with the current global trend of decreasing mortality. The existence of such a stable relationship means that we can compare a country's health performance relative to its income over time. Second, income is strongly correlated with many non-income factors that impact on health, such as access to education, food, shelter and medicine. Income is, arguably, the best single proxy for these factors. Of course, economic growth can also bring about health problems, such as increasing air pollution. In northern China, for example, such pollution may have reduced mean life expectancy at birth

by 5.5 years.[24] Third, we did not wish to model the determinants of mortality. When controlling for income, we essentially grouped countries by income level. If we had grouped countries based on multiple factors, we would have produced more groups but have had fewer countries in each group. There had to be a trade-off between comparisons that were limited to countries that were very similar and comparisons that each included an "adequate" number of countries. We believed that – given the unique and important role of income in health – grouping countries by income alone struck a reasonable balance.

Besides resources, countries also differ in other factors that could contribute to mortality differences, such as geography and climate. The absence of malaria from most temperate areas is an obvious example. However, there is evidence that income can moderate the effect of climate on life expectancy and that – after controlling for socioeconomic factors – environmental factors have no discernible effect on mortality.[15,25] Furthermore, a country's geography and climate are unlikely to have changed dramatically within the 20-year time frame of our analysis.

Decomposing the change in relative health performance

For any age–sex group in a country, we can decompose the change in its IAYLL between period r and the later period t into two components. The equation we used – with the i, a, s indexes omitted for clarity – is:

$$IAYLL_t - IAYLL_r = (N_t - N_r)\frac{(LE_t^* + LE_r^*)}{2}$$
$$+ \left\{ \begin{array}{l} (LE_t^* - LE_r^*)\frac{[(N_t - N_t^*) + (N_r - N_r^*)]}{2} \\ -(N_t^* - N_r^*)\frac{(LE_t^* + LE_r^*)}{2} \end{array} \right\}$$
$$(4)$$

To the right of the equal sign, the first term represents the country's own health progress in terms of a lower death rate – weighted by the mean reference life expectancy over periods r and t. The second term represents the effect of technological improvement and economic growth on peer standards. This effect is measured in terms of higher remaining life expectancy – weighted by the mean avoidable death rate of the

country over the two periods– and lower preventable death rates – weighted by the mean reference life expectancy over the two periods.

As N^* and LE^* are income-specific, rising standards could result from increases in the reference standards or – if the study country has grown faster than its original reference countries – the move of the study country to a higher income group with higher reference standards.

Data

The mortality data that we used came from life tables published by the World Health Organization.[26] The income data – purchasing power parities expressed as international dollars for the year 2005 – were drawn from World Development Indicators.[27] Countries with populations of less than a million were excluded because they may show particularly large variability in their observed mortality – which could bias the estimation of the reference mortality rates. Data envelopment analysis was applied to the remaining 129 countries with available data, to construct the reference mortality profile for each BRICS country in 1990 and 2011.

Results

Figures 1–5 show the age–sex-specific AYLL and IAYLL for each of the BRICS countries for 1990 and 2011. As we normalized the data used, by population, these figures indicate the years of life being lost by an average person. In Fig. 1, for example, we can see that an average Brazilian female born in 1990 was expected to lose an additional 3.26 years of life expectancy – compared with her global peers – due to excess mortality in this Brazilian birth cohort between birth and an age of 1 year. However, when compared with her peers in other countries with similar income, the same female was expected to lose 2.68 years due to such excess mortality. In other words, 0.58 of a year – or 17.8% of her life lost – could be associated with her country's lack of resources. In 2011, this average female's AYLL and IAYLL had dropped to 0.93 and 0.65 years, respectively, indicating substantial post-1990 improvement in one age–sex group's relative health performance. In fact, almost all age–sex groups in Brazil experienced health improvement between 1990 and 2011.

Fig. 1. **Avoidable years of life lost, Brazil, 1990 and 2011**
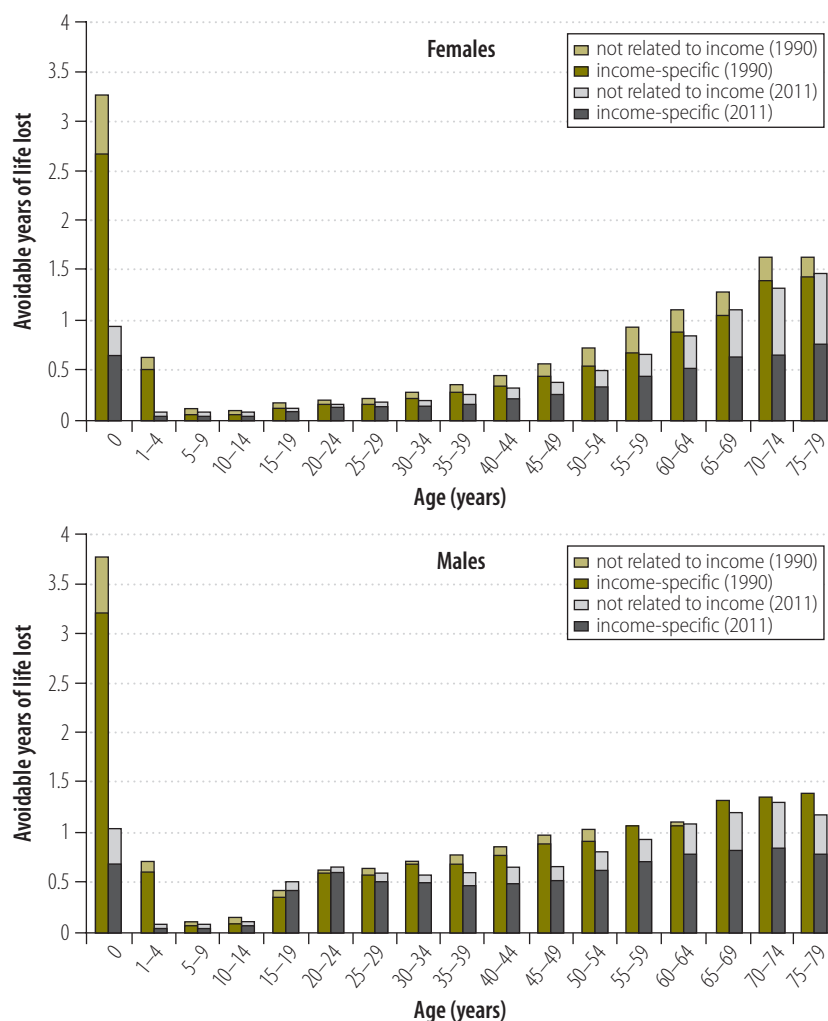
In contrast, the Russian Federation experienced substantial declines in relative health performance – in all individuals older than 5 years – between 1990 and 2011 (Fig. 2). Men of working age appeared to have particularly poor health during this period. Within BRICS, only the Russian Federation saw much worse health among males than among females. Gender inequality in health is a particularly important issue in the Russian Federation – largely as a result of the rapid rises in unemployment, alcohol problems and suicide observed among adult males after the collapse of the former Soviet Union in the early 1990s.[28–31]

Within BRICS, over the study period, India's children experienced the worst relative health performance – although they did also show substantial improvement over time (Fig. 3). Adult females in India – except those who were more than 70 years of age – also experienced steady improvements in relative health performance over time. The corresponding trends in the relative health performance of adult males were more mixed.

For the majority of South Africa's population, relative health performance worsened between 1990 and 2011 (Fig. 4). Only children younger than 5 years and some of the subgroups older than 70 years experienced improved relative health performance over this period and, even for these subgroups, the excess loss of life remained high in 2011. Adults aged between 20 and 60 years experienced particularly sharp declines in relative health performance after 1990. In South Africa in 1990, gender inequality in health was uniformly in favour of females, regardless of their age. In 2011, however, females between 20 and 35 years of age appeared to be experiencing much worse health performance relative to their male counterparts.
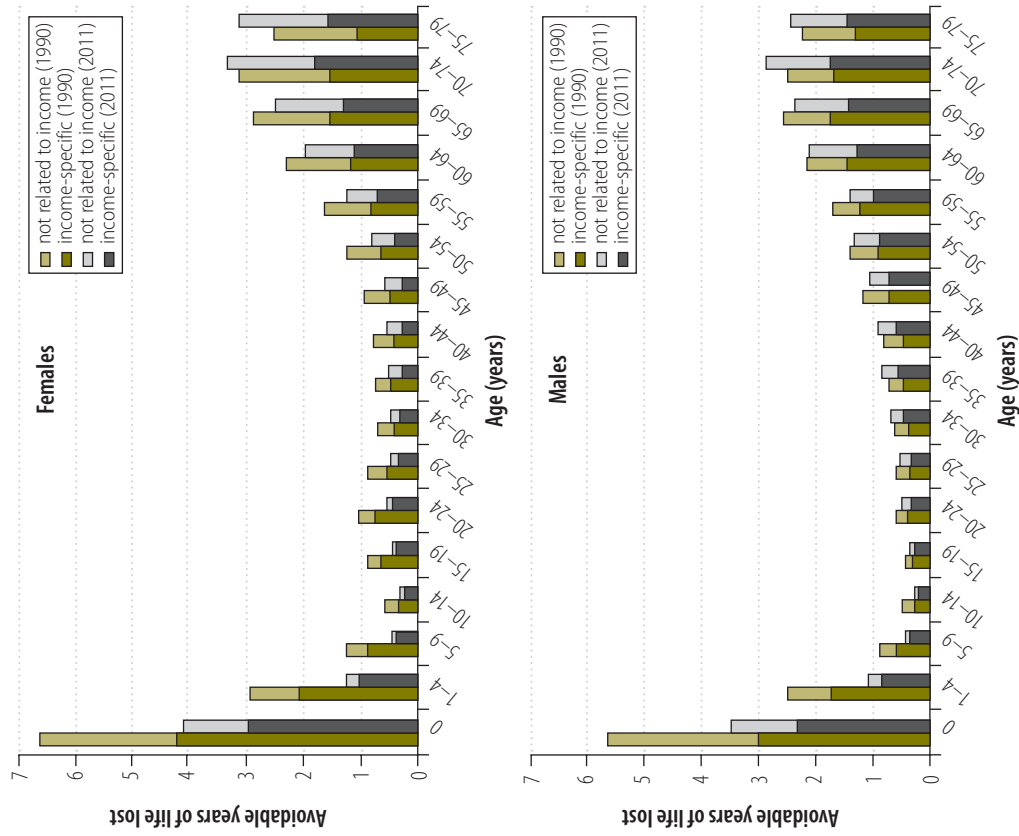
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Fig. 2. **Avoidable years of life lost, Russian Federation, 1990 and 2011**
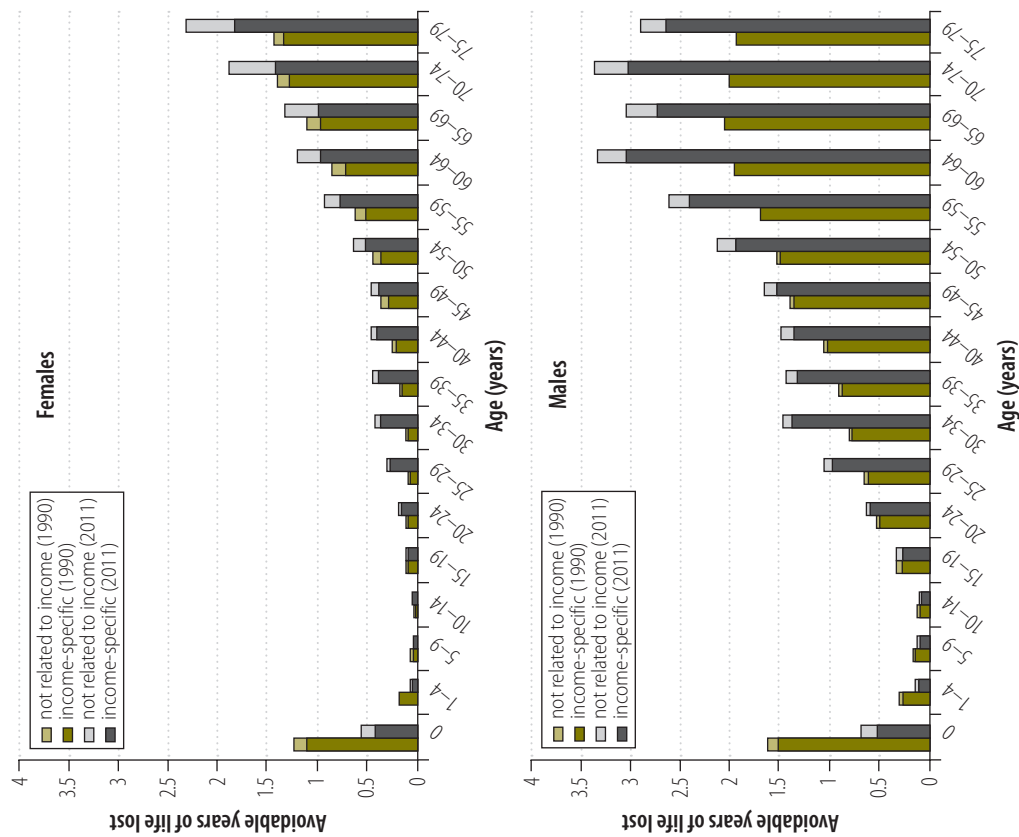

Fig. 3. **Avoidable years of life lost, India, 1990 and 2011**

Fig. 4. **Avoidable years of life lost, South Africa, 1990 and 2011**

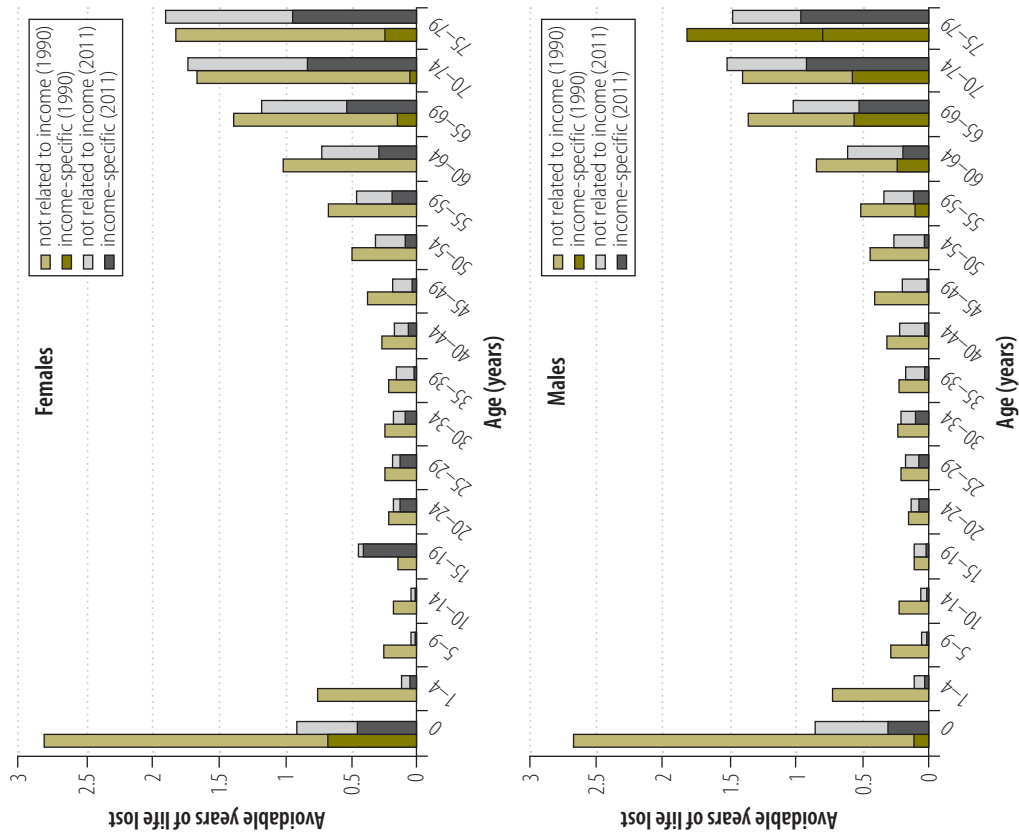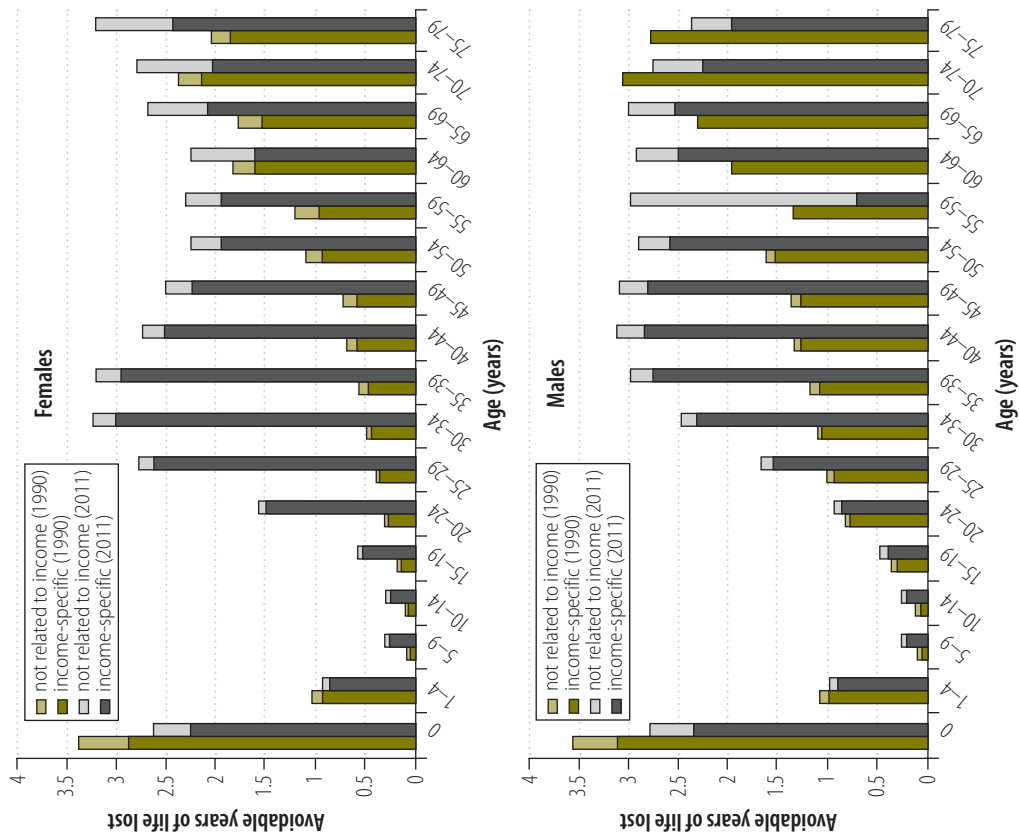Fig. 5. **Avoidable years of life lost, China, 1990 and 2011**
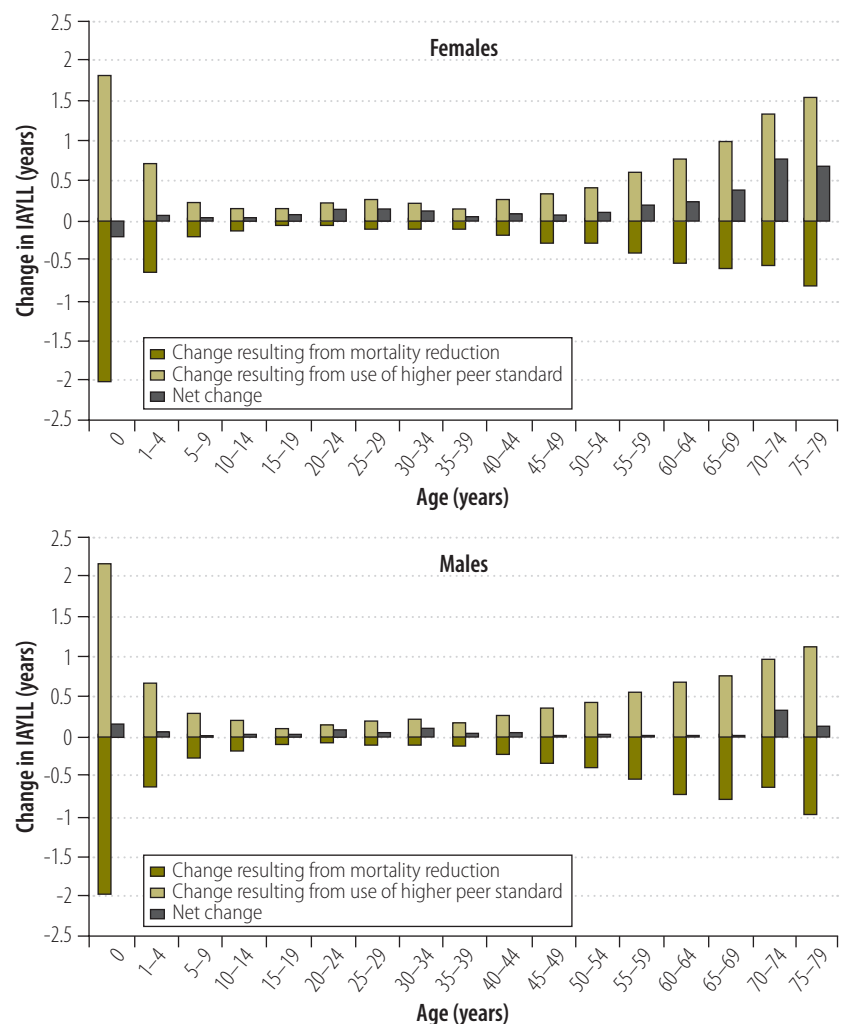
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China's health performance in and since 1990 appears to be particularly impressive (Fig. 5). In 1990, many of China's age–sex groups had IAYLL values of zero – indicating that they were experiencing a health performance that was at least as good as that being experienced by their income peers elsewhere in the world. In 2011, all of the Chinese age–sex groups except one – girls younger than 1 year – appeared to be experiencing slightly poorer health performance than their income peers. However, this observation did not reflect an increase in mortality but a change in the income group used as a reference. In 1990, China was classified as a low-income country. By 2011 China had grown so much that it had become an upper-middle-income country. In our analysis of the data for 2011, China was therefore benchmarked not against low-income countries – as used for the 1990 data – but against other upper-middle-income countries. Upper-middle-income countries generally have better health performance than low-income countries.

Fig. 6 shows how the changes in China's IAYLL between 1990 and 2011 can be partially attributed to improvement in China's mortality rates and partially to changes in the income group used as a benchmark. There were reductions in mortality in all age–sex groups. However, as China has moved up the "income ladder", more of its deaths were considered avoidable and the mean loss of life years resulting from each avoidable death also increased.

Discussion

The concept of avoidable – or amendable – mortality has been used extensively as one indicator of the performance of a health system.[8,9] However, there are often limitations to the application of this concept, such as difficulty in defining avoidable mortality – across areas with different resources and living habits and over time, as technology and disease prevalences change – and the frequent omission of data on quality of life.[9,20] We attempted to avoid some of these issues by benchmarking against countries with similar mean incomes and allowing the benchmark to change over time. However, caution needs to be exercised when interpreting the results for any single year because income – although

a useful proxy – does not capture all determinants of unavoidable mortality.

The method that we used to estimate relative health performance permits the identification of those subpopulations where large gains may be possible with the resources currently available. The social and political environment can clearly play a role in excess mortality, as reflected in the case of the "missing women" in India and China, the high prevalence of HIV infection in South Africa and the high prevalence of alcohol abuse among middle-aged men and women in the Russian Federation.[32–35]

The BRICS countries are far from homogenous. The Russian Federation has the highest mean income but among the worst relative health performance and – in terms of such performance – has not made any substantial gains over

the past 20 years. India has the lowest mean income but managed to outshine South Africa in terms of relative health performance and health inequality. Brazil has a similar mean income to South Africa but exhibited much larger improvements in relative health performance across almost all age–sex groups. South Africa's large level of avoidable mortality has been attributed to the country's HIV epidemic, continuing rural poverty and inefficient implementation of high-impact interventions.[36,37] Although China's mean income is still less than half that of the Russian Federation's, China has outperformed the Russian Federation in terms of health performance and health inequality by a large margin.

It remains unclear how much of China's success can be attributed to its

Decomposition of changes in income-specific avoidable years of life lost, China, 1990 and 2011

IAYLL: income-specific avoidable years of life lost.
Note: A negative change indicates an improvement in relative health performance.

health-care system and how much to increases in its mean income.[38] Since China changed to a market economy, out-of-pocket expenditure on health has increased substantially and this has contributed to widening health inequalities.[39] Once account has been taken of mean income, our results also show that China's elderly people are relatively disadvantaged compared with their younger counterparts – and this disparity has increased in magnitude since 1990. This observation is a concern, especially as China has a rapidly ageing population and increasing income inequality.[40] Since 1990, various policy initiatives have been made in the country to improve health finance and access – such as Basic Medical Insurance, the New Rural Cooperative Medical Scheme and the Urban Resident Basic Medical Insurance Scheme – but evidence about the success of these initiatives are mixed.[41,42] The 2003 epidemic of severe acute respiratory syndrome exposed

other weaknesses in China's health infrastructure and generated pressure for further reforms.[43]

In terms of the relative health performance within BRICS, Brazil is the second best performer after China. Brazil has undertaken various social and economic reforms since its democratic transition in the mid-1980s. These include the Unified Health System, which aims to provide universal health coverage and equitable access to health-care services free of charge, the Family Health Programme, which focuses on underserved communities, and the *Bolsa Familia* programme, which uses conditional cash payments to improve children's school enrolment and nutrition.[44] Although these initiatives have not been without their setbacks and shortfalls, they have contributed to substantial improvements in Brazil's health performance and health equity.[45–47]

The application of IAYLL is not limited to emerging economies. It could

be useful for monitoring the relative performance of any country's health system at different stages of that country's development. Comparison of IAYLL and AYLL can reveal to what extent a country's poor health performance is the result of a lack of resources – as indicated by mean income. Donors of health aid would, presumably, like to know if other factors are as important as resources in limiting health performance – as appears to be the case in India. Improvements in national income and global health technology could mask a lack of progress or even regression in the efficiency of a country's health-care system. A dynamic benchmarking approach such as the estimation of IAYLL could be used to focus on this efficiency issue and complement the use of other overall health indicators, such as life expectancy at birth. ∎

ملخص

الأداء الصحي النسبي في تجمع "بريك" (BRICS) على مدار العشرين سنة المنصرمة: الفائزون والخاسرون

الغرض تحديد ما إذا كان الأداء الصحي في البرازيل والاتحاد الروسي والهند والصين وجنوب أفريقيا – البلدان المعروفة بتجمع "بريك" (BRICS) – متماشياً مع وتيرة التنمية الاقتصادية بها.

الطريقة تم قياس الانخفاضات في الوفيات حسب الفئات العمرية ونوع الجنس في كل بلد من بلدان تجمع "بريك" (BRICS) بين عامي 1990 و2011. وتم مقارنة هذه النتائج بتلك الخاصة بأفضل البلدان أداءً في العالم وأفضل البلدان أداءً ذات مستويات الدخل المماثلة. وقمنا بتقدير التقدم الذي أحرزه كل بلد في تقليل الوفيات ومقارنة التغيرات في معدلات الوفيات في هذا البلد مقابل البلدان الأخرى التي يتشابه فيها متوسط الدخل لتقدير التغيرات في الوفيات التي يمكن تفاديها.

النتائج اختلف الأداء الصحي النسبي في بلدان الدراسة الخمسة بصورة ملحوظة على مدار فترة الدراسة. وأثبتت البرازيل تحسناً

إلى حد ما في الأداء الصحي النسبي عبر الفئات الفرعية المقسمة حسب العمر ونوع الجنس التي قمنا بتقييمها. وكان التحسن الذي شهدته الهند أكثر تواضعاً وأكثر تبايناً بين الفئات الفرعية. وأظهرت جنوب أفريقيا والاتحاد الروسي تراجعاً كبيراً في الأداء الصحي بالإضافة إلى تباينات كبيرة حسب نوع الجنس في القطاع الصحي. وعلى الرغم من انخفاض مستويات الوفيات التي يمكن تفاديها في الصين من حيث الحدود المطلقة، بدا مستوى التحسن منخفضاً في سياق النمو الاقتصادي للصين.

الاستنتاج عند تقييم الأداء الصحي لأحد البلدان من حيث الوفيات التي يمكن تفاديها، من المفيد مقارنة ذلك الأداء بأداء البلدان الأخرى. وتسمح هذه المقارنة بتمييز أي تحسينات خاصة بالبلد عن التحسينات العالمية العامة.

摘要

过去 20 年中金砖国家的相对卫生绩效：赢家和输家

目的 确定被称为称为金砖五国（BRICS）的巴西、俄罗斯联邦、印度、中国和南非等国卫生绩效是否与其经济发展保持一致。

方法 衡量每个金砖国家在 1990 年到 2011 年间具体年龄和性别死亡率的减少情况。将这些结果与世界上绩效最好的国家以及同等收入水平绩效最好的国家进行比较。我们估计每个国家在降低死亡率方面的进步，并将这些国家的死亡率变化与其他同等平均收入国家进行比较，来估算可避免死亡率的变化。

结果 五个研究国在研究期间相对卫生绩效明显不同。

在我们评估的各个年龄和性别子组中，巴西的相对卫生绩效有相当提高。印度的提高更缓和，在各子组间差异性更大。南非和俄联邦出现卫生绩效的大幅下滑，并显示出性别上明显的健康不平等。虽然中国可避免死亡率绝对水平下降，在中国经济增长的背景下改善水平仍显偏低。

结论 在通过可避免死亡率来评估一个国家的卫生绩效时，将一国的卫生绩效和其他国家相比非常有用。这种比较可将任何具体国家的改善与一般的全球改善区别开来。

Résumé

Performance relative en matière de santé dans le groupe BRICS au cours des 20 dernières années: les gagnants et les perdants

Objectif Déterminer si la performance en matière de santé du Brésil, de la Fédération de Russie, de l'Inde, de la Chine et de l'Afrique du Sud – les pays connus sous le nom de BRICS – est restée en phase avec leur développement économique.

Méthodes On a mesuré les baisses de mortalité par âge et par sexe, qui ont été observées dans chaque pays du groupe BRICS entre 1990 et en 2011. Ces résultats ont été comparés à ceux des pays les plus performants dans le monde, ainsi qu'à ceux des pays les plus performants avec des niveaux de revenus similaires. On a estimé les progrès de chaque pays en matière de baisse de la mortalité, et on a comparé les changements dans les taux de mortalité de ces pays à ceux d'autres pays avec des revenus moyens similaires afin d'évaluer les changements dans la mortalité évitable.

Résultats La performance relative en matière de santé dans les 5 pays

étudiés a sensiblement différé au cours de la période de l'étude. Le Brésil a montré une amélioration assez régulière de la performance relative en matière de santé dans tous les différents sous-groupes d'âge et de sexe que nous avons évalués. L'amélioration de l'Inde a été plus modeste et plus variée dans tous les sous-groupes. L'Afrique du Sud et la Fédération de Russie ont enregistré de fortes baisses de performance en matière de santé, ainsi que de grandes inégalités en matière de santé en fonction du sexe. Bien que les niveaux de mortalité évitable de la Chine aient diminué en valeur absolue, le niveau d'amélioration semblait faible dans le contexte de la croissance économique du pays.

Conclusion Lorsque l'on évalue la performance en matière de santé en termes de mortalité évitable, il est utile de comparer cette performance à la performance d'autres pays, afin de distinguer les améliorations spécifiques au pays par rapport aux améliorations mondiales générales.

Резюме

Относительное улучшение показателей здоровья в странах БРИКС за последние 20 лет: лидеры и отстающие

Цель Определить, соответствуют ли показатели здоровья населения таких стран, как Бразилия, Российская Федерация, Индия, Китай и Южная Африка (страны, входящие в группу БРИКС) их уровню экономического развития.

Методы Были измерены темпы снижения смертности по половому и возрастному признакам в каждой стране БРИКС за период 1990-2011 гг. Эти результаты сопоставлялись с данными стран с наилучшими показателями в мире, а также стран с наилучшими показателями со схожим уровнем доходов. Для оценки изменений в показателях предотвратимой смертности был оценен прогресс каждой страны в снижении смертности и сопоставлены изменения в показателях смертности в данной стране с другими странами с аналогичным средним уровнем доходов.

Результаты Относительные показатели здоровья населения в пяти исследуемых странах отличались значительно в течение периода

исследования. Бразилия продемонстрировала устойчивое улучшение относительных показателей здоровья в различных возрастных и половых подгруппах, включенных в исследование. Улучшение ситуации в Индии было более скромным, с более широким разбросом показателей по подгруппам. Южная Африка и Российская Федерация продемонстрировали существенное снижение показателей здоровья, а также большую неравномерность в состоянии здоровья по половому признаку. Хотя уровень предотвратимой смертности в Китае снизился в абсолютном выражении, темпы улучшений являются низкими, учитывая текущий экономический рост в Китае.

Вывод При оценке показателей здоровья населения страны с точки зрения предотвратимой смертности полезно сравнить эти показатели с уровнем, достигнутым в других странах. Такое сравнение позволяет отличить улучшения, достигнутые в конкретных странах, от общих глобальных улучшений.

Resumen

Rendimiento sanitario relativo de los países BRICS en los últimos 20 años: ganadores y perdedores

Objetivo Determinar si el rendimiento sanitario de Brasil, la Federación de Rusia, India, China y Sudáfrica, los países conocidos como BRICS, ha avanzado a la par que su desarrollo económico.

Métodos Se midieron las disminuciones de la mortalidad por sexo y edad observadas en cada uno de los países BRICS entre 1990 y 2011. Estos resultados se compararon con los de los países con los mejores resultados del mundo y con los de los mejores resultados con niveles de ingresos similares. Se calculó el progreso de cada país en la reducción de la mortalidad y se compararon los cambios en los índices de mortalidad de cada país con los de otros países con ingresos medios similares para estimar los cambios en la mortalidad evitable.

Resultados El rendimiento sanitario relativo de los cinco países del estudio se diferenció notablemente durante el período de estudio. Brasil mostró una mejora bastante uniforme en el rendimiento sanitario relativo en los distintos subgrupos por edad y sexo que se evaluaron. La mejora

de India fue más modesta, con más variaciones entre los subgrupos. Sudáfrica y la Federación de Rusia mostraron grandes disminuciones en el rendimiento sanitario, así como grandes desigualdades sanitarias relativas al sexo. Aunque los niveles de mortalidad evitable de China disminuyeron en términos absolutos, el nivel de mejora resultó bajo en el contexto del crecimiento económico del país.

Conclusión Al evaluar el rendimiento sanitario de un país en términos de mortalidad evitable, resulta útil compararlo con el de otros países. Una comparación de este tipo permite distinguir las mejoras específicas de cada país de las mejoras globales generales.

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