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Review Article

BRICS Countries and Important Health Indicators

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Summary:

The acronym BRICS stands for Brazil, Russian Federation, India, China and South Africa. These five countries represent more than 40% of the world's population and approximately 40% of the global burden of disease. The BRICS countries vary greatly in terms of their burden of diseases, health systems etc. China is the most populous country in the world, along with highest life expectancy, lowest total fertility rate and favourable sex ratio among BRICS. India is having the highest population density, infant mortality rate and maternal mortality ratio along with lowest health expenditure as percentage of GDP. Crude birth rate is highest in South Africa; while Russia is having highest crude death rate. Approximately 46% of all incident cases of tuberculosis are attributed to BRICS countries. The overall prevalence and deaths due to HIV have declined in all BRICS countries except Russia. Prevalence of

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increased fasting blood glucose in BRICS countries is similar to the overall global average of 8.5%, though average prevalence of hypertension is higher than the global averages for both males and females. Prevalence of obesity in females in South Africa is more than double the global level. Different measures have been initiated to improve health performances by the BRICS countries by adopting their existing programs to reach sustainable development goals except South Africa. The intensive efforts and commitment undertaken by the BRICS countries to strengthen health systems will go a long way to empower the international community to build up a healthier future by confronting the increasingly complex challenges to global public health issues.

KEYWORDS:BRICS, health indicators, communicable diseases, non-communicable diseases, research and development

Introduction:

The acronym BRIC was coined in 2001 by Jim O'Neill, Chief Economist at Goldman Sachs, to denote four emerging national economies: Brazil, the Russian Federation, India and China. The acronym was subsequently extended to BRICS to include South Africa in 2010. [1,2] These five countries represent approximately 25% of the world's gross national income, more than 40% of the world's population and approximately 40% of the global burden of disease. Health appeared for the first time as a discussion point at the 3rd BRICS Summit in 2011 in the Sanya Declaration, China, with regard to HIV/AIDS.[3] In this present article, we have briefed the different health problems faced by them and their initiatives to tacklethose health issues for healthier future.

Rationale of establishing BRICS countries:

What is common?

BRICS countries are united by their common experience of high economic growth and an aspiration to improve the health of their citizens. They also have common health problems and the persistence of socioeconomic and health inequalities both within and between BRICS countries. All these countries have increased government

spending on health and have provided subsidies for the poor regarding universal health coverage.[1]

What is uncommon?

The BRICS countries vary greatly in terms of their burden of diseases, and health systems. Although BRICS countries share many common health interests, differences in their foreign policy interests may prevent them from developing a common approach to several issues on the global health agenda.[1, 2]

Why was South Africa added in late?

Although there is economic gap between South Africa and the other BRIC countries, the meaning of addition of South Africa carried geopolitical meaning. Now the group's members are spread across Asia, Europe, Latin America and Africa, linking emerging powers together and raising the voices of developing countries as a whole in the world.[2]

Demography:

The BRICS countries represent almost half of the world's population, which is particularly concentrated in China and India. Population growth has been declining in BRICS countries from a rate of 2.12 between 1965 and1970 to 0.76 between 2010 and 2015. Demographic dividend is visible in all the countries due to increased life expectancy and decrease in the fertility level (Table 1). Although the mean life expectancy has increased, from an increase of 9 years in 1990 to an increase of 20 years in 2010, the level of education has essentially remained unchanged when comparison is made between the countries. However, India has been steadily reducing the prevalence of illiteracy among its women.[3–5]

Table 1: Socio-demographic characteristics and health indicators of BRICS countries:[4-8]

Information	Brazil	Russia	India	China	South Africa
Mid-Year Population (million persons)	206 (2016)	147 (2016)	1269 (2016)	1379 (2016)	56 (2016)

Population density (persons per square km)	24.2 (2016)	8.6 (2016)	386 (2016)	143.6 (2016)	46 (2016)
Crude Birth Rate (rate per 1000)	13.9 (2016)	12.9 (2016)	20.8 (2015)	13 (2016)	21.6 (2016)
Crude Death Rate (rate per 1000)	6.1 (2016)	12.9 (2016)	6.5 (2016)	7.1 (2016)	9.7 (2016)
Infant Mortality Rate per 1000 live births	13.3 (2016)	6.0 (2016)	37.0 (2015)	8.1 (2015)	33.7 (2016)
Maternal Mortality Ratio per 100,000 live births	6.1 (2015)	10.0 (2016)	167 (2017)	20.1 (2015)	138 (2015)
Health expenditure as % of GDP	4.9 (2013)	3.6 (2016)	1.2 (2016)	6.0 (2015)	4.1 (2014)
Life expectancy at birth (years)	74.7 (2015)	70.9 (2015)	68.1 (2017)	75.9 (2015)	57.4 (2015)
Total fertility rate (per woman)	1.7 (2015)	1.7 (2015)	2.1 (2016)	1.5 (2015)	2.3 (2015)
Sex ratio (number of female per 100 male)	97.0 (2016)	86.1 (2012)	94 (2011)	105.1 (2012)	95.0 (2012)

[Figures in parenthesis in body of the table indicate year]

Socioeconomic ineguities:

Most of the world's poor people live in BRICS, even though millions of BRICS residents have been lifted out of poverty over the last decade. Urban poverty has also been increased. The countries account for approximately 50% of the world's poor, and health inequity will have seri¬ous consequences for their populations if left unaddressed.[5,9]

Major health issues in BRICS countries:

There is no simple correlation between wealth and health in BRICS countries. These countries are facing epidemiological transition due to the dual presence of infectious diseases and non-communicable diseases, in addition to health problems triggered by environmental factors. Additionally, tackling the social determinants of health continues to be a priority for BRICS countries.

Communicable diseases:

The burden of disease is not uniform between BRICS countries. Approximately 46% of all incident cases of tuberculosis and 40% of all tuberculosis-related mortalities are attributed to BRICS countries. China and India alone contribute to almost 40% of the estimated global burden of tuberculosis. Moreover, China, India and the Russian Federation together account for 56% of the estimated global burden of multidrug-resistant tuberculosis (MDR-TB). [5,10] Brazil alone accounts for approximately one-third of the western hemisphere's estimated burden of tuberculosis and MDR-TB. In terms of tuberculosis-human immunodeficiency virus (HIV) co-infection, South Africa accounts for 30% of the estimated global number of incidentcases.[5,11]

The magnitude of HIV in BRICS countries are as follows: China (0.1%), India (0.3%), Brazil (0.5%), Russia (1.1%), andSouth Africa (12.2%). Overall prevalence and deaths due to HIV have declined in all BRICS countries except Russia, which has shown a 47% increase in new HIV infections.[12] Neglected tropical diseases are endemic in all the BRICS countries except the Russian Federation. Lymphatic filariasis is endemic in Brazil and India; soil-transmitted helminths are endemic in Brazil, China, India and South Africa; trachoma is endemic in Brazil and China, schistosomiasis exists in Brazil and China; and onchocerciasis persists in parts of Brazil. Three BRICS countries reported epidemics such as Zika virus in Brazil, dengue in India, and measles in South Africa between January 2015 and October 2016. Four BRICS country offices support the implementation, capacity building, and monitoring and evaluation of International Health Regulations (IHR), and three are involved in preparedness/readiness and core capacity building.[5]

Non-communicable diseases:

All the BRICS countries are equally facing burden of non-communicable diseases and their risk factors. The prevalence of increased fasting blood glucose in BRICS countries is similar to the overall global average of 8.5%, i.e., under 10% for both males and females, with the exception of South Africa, where 12.6% of females have increased fasting blood glucose, which can act as a precursor of diabetes mellitus.[5]

Unlike fasting blood glucose, the average prevalence of high blood pressure in BRICS countries is higher than the global averages for both males and females.

Exceptions to this are China, which has lower blood pressure for both genders, and South Africa, where slightly fewer females have increased blood pressure. Similar to global pattern, a greater proportion of males have increased blood pressure compared to females.[5]

Overall levels of obesity and its sex wise distribution differ greatly among BRICS countries. The prevalence of obesity in females in South Africa is more than double the global level and is seven times greater than that in India.[5,13]

China has the highest number of cigarette smokers in the world (301 million). Over half of Chinese men smoke (52.9%), second only to Russia (60.2%). India stands third among the BRICS countries in consuming tobacco. [5,13,14] Between the years 1990 and 2013, DALYs related to alcohol-attributed diseases per 100,000 decreased in Brazil, China and South Africa, but increased in Russia and India.[15]

Overall, China has the largest overall loss ($28 billion) in terms of cost for cancer. While South Africa has the highest cost per cancer death ($101,000), which is about five times that of India; which had the lowest cost per death. Tobacco and infection-related cancers (such as liver, lung, cervical, stomach cancers and Kaposi sarcoma) are major contributors to productivity losses. But in South Africa, rising incidence of Kaposi sarcoma has been reported, due to concomitant presence of HIV/AIDS.[16]

Road-traffic accidents (RTAs) have increased steadily and account for approximately 20% of the world's deaths. The associated economic losses are estimated at 1 to 3% of GDP (gross domestic product). Increased RTAs are believed to be due to the increased number of vehicles, complexity of the traffic mix and rapid urbanization. RTAs are likely to increase in BRICS countries unless investments to improve road safety are made.[17]

Maternal and child health:

There has been a decrease in the under 5 mortality rates, albeit at a lower rate compared to the global level, with the largest drop observed in China and Brazil (80% and 73% decrease, respectively). As of 2015, India had the highest under 5 mortality rate (47.7), which was almost five times higher than that observed in the

Russian Federation (9.6). Overall, the maternal mortality ratio (MMR) has also been decreasing with China and India representing the greatest reduction (72.2% and 68.7% respectively). The MMR of India (167) is approximately 7 times higher than the lowest rate of 25 observed in the Russian Federation. Although the MMR in South Africa initially declined to 60 in 1996, it peaked again at 154 in 2010 due to the HIV epidemic and is presently stabilized at 138 in 2015 (Table 1).[5,18,19]

Health service coverage:

The average vaccination coverage of measles, hepatitis B, and diphtheria tetanus toxoid and pertussis (DPT - 3) among 1-year-olds in BRICS countries has surpassed the global average. Vaccination coverage is above 95% for each in Brazil, China, and Russia, although it varies between 69% and 76% in India and South Africa. The percentage of women receiving at least four antenatal care visits was above 85% in Brazil and South Africa and 49.7% in India, the latter of which also has the lowest proportion of births attended by skilled health personnel at 74.4%. The four other BRICS countries have levels of over 90% for birth attendance by skilled health personnel. [5]

China is the only BRICS country where the rate of treatment success for new TB cases (94%) exceeds the global average (83%). The other four countries range between 69% and 78%, with the lowest level present in the Russian Federation. High levels of health care expenditure in South Africa has been attributed to voluntary private health insurance (41.8%), which is over ten times the level observed in China (3.5%). In South Africa, hospital prices are at par with high income nations such as the United Kingdom, France, and Germany.[20,21]

Initiatives taken by BRICS countries:

The BRICS countries have made remarkable progress in moving toward universal health coverage and in strengthening their health systems in five thematic areas: (i) strategic health technologies for communicable diseases (led by Brazil); (ii) medical technologies (led by the Russian Federation); (iii) strengthening health surveillance

systems (led by India); (iv) drug discovery and development (led by China); and (v) reducing non-communicable-disease risk factors, health promotion and universal health coverage (led by South Africa). Brazil, China and India are leading in manufacturing of low-cost medicines and vaccines. The Russian Federation has embarked on a high-level commitment to fight non-communicable diseases.[22,23]

BRICS countries are also addressing some of the social determinants of health. In 2011, for example, the Brazilian government launched the *Brasilsem Miséria* (Brazil without Poverty) plan. In 2013, India launched the world's largest food subsidy plan – a plan that will cost the government an estimated US$ 22 billion per year.[5] In terms of the relative health performance within BRICS countries, Brazil is the second-best performer after China. *Janani Suraksha Yojana*– India's program of conditional cash transfers, which was designed to improve child survival had only resulted in small benefit. [24] In South Africa, the benefit was reflected in the success of the Child Support Grant program. Moreover,poor quality of health care, inequities in access to health care and the levels of prepayment for health remain challenges in BRICS countries. In China and India, the reforms have not adequately addressed the issue of out-of-pocket expenditure.[5,21]

South Africa is the first BRICS country to implement a 20% tax on sugar drinks to tackle obesity and diabetes. Although all five BRICS countries are Parties to the WHO Framework Convention on Tobacco Control (FCTC), which obligates them to implement policies that effectively reduce tobacco use and exposure to tobacco smoke, China's tobacco control policies are the weakest among them.[25] China does not have a comprehensive national smoke-free law. In India, Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply, and Distribution) Act [COTPA] has been strengthened. In addition, targeted approach directed at motivating smoking cessation of female smokers, frequent changing of pictorial warnings depicting a variety of health consequences in cigarette packets, and display of toll-free number for quitting have already been implemented to promote quitting. [5,14] Policies have also been implemented in all of the BRICS countries including increased tax, measures to prohibit drink-drivingand advertisement restrictions on alcoholic products.[5]

Brazil launched a national integrated neglected tropical disease plan in 2012. By linking this plan to the *Brasilsem Miséria* – the national plan for poverty reduction – Brazil has institutionalized strong links between poverty and neglected tropical diseases and has helped implement effective cross-sector approaches. India, which accounts for more than 35% of the global neglected tropical disease burden, is already implementing the world's largest program against lymphatic filariasis and has contributed greatly to the research and body of knowledge on this disease. India is also using innovative models, such as integrating deworming with school health and nutrition programs, to expand the reach of its neglected tropical disease programs. India has also eliminated dracunculiasis (2000) and trachoma (2017). [5,13,20] China eliminated lymphatic filariasis in 2007 and is now working toward the elimination of trachoma and schistosomiasis. Regarding other communicable diseases, India became free from poliomyelitis in 2014 and has implemented daily dose regimens against tuberculosis beginning in 2017.[26,27]China is preparing to scale up access to treatment for MDR-TB. The Russian Federation has already implemented compulsory seat belt usage through health messages and the enforcement of laws. Brazil and South Africa have shown a strong commitment in successfully adopting three new vaccines: the *Haemophilus influenza* type b vaccine, the pneumococcal conjugate vaccine and the rotavirus vaccine; whereas China, India and the Russian Federation continue to face challenges in introducing and scaling up their national coverage of these vaccines. India has included the *Haemophilus influenza* type b vaccine throughout our country and the rotavirus vaccine in five selected states.[5,28]

In Brazil, key health policy decisions, such as which medicines to make available through the national health system and at what price, are based on health technology assessments. India has rolled out its National Health Mission in 2017, whereas China has set itself the goal of achieving universal coverage of healthcare services by 2020. South Africa has set up a health technology assessment unit in 2012 at the University of the Witwatersrand, and scientists are considering several areas that could be ripe for this approach.[24,29]

BRICS and Sustainable Development Goals:

A discussion on implementing the sustainable development goals (SDGs) is ongoing in all BRICS governments. The most common approach to implementation is the development of national SDG plan or mainstreaming existing plans and programs, which is occurring in all BRICS countries except South Africa. The government of Brazil is most actively approaching towards SDG implementation.[5,21] Integration of the SDGs into the work plan of the government has occurred in China, the Russian Federation and South Africa, with the process ongoing in Brazil and India.

Conclusion:

Priorities set up for SDG goals i.e. universal health coverage, control of non-communicable diseases and global governance for health that reach beyond the health sector like climate change, food and water security are the important areas likely to be of particular importance for the BRICS countries. Inter-BRICS cooperation has already gained momentum either through bilateral agreements or collective joint efforts; moreover, the establishment of the BRICS development bank will further contribute to the advancement of health in BRICS countries and in regions beyond their own boundaries. Last but not the least, the intensive efforts and commitment undertaken by the BRICS countries to strengthen health systems will go a long way to empower the international community to build up a healthier future by confronting the increasingly complex challenges to global public health issues.

References:

1. O'Neill J. Building better global economic BRICs. New York: Goldman Sachs; 2001.

2. World development indicators database. Washington: World Bank; 2013. Global burden of disease. Geneva: World Health Organization; 2008.

3. Harmer A. The BRICS countries: a new force in global health? Bull World Health Organ 2014;92:394–395.

4. BRICS: Joint Statistical Publication 2013. Government of India Ministry of Statistics and Programme Implementation Central Statistics Office (CSO) New Delhi (India).

5. BRICS Health and WHO Country Presence Profile. Available from: http://apps.who.int/iris/bitstream/10665/255800/1/WHO-CCU-17.05-eng.pdf. Last accessed December 7, 2018.

6. Rodwin VG. Health and Health Care in BRIC Nations. Available from: https://wagner.nyu.edu/files/faculty/publications/SSRN-id2598570_2.pdf. Last accessed December7, 2018.

7. BRICS: Joint Statistical Publication 2016. Government of India Ministry of Statistics and Programme Implementation Central Statistics Office (CSO) New Delhi (India).

8. BRICS: Joint Statistical Publication 2017. Available from: http://www.gks.ru/free_doc/doc_2017/JSP-2017.pdf. Last accessed onDecember7, 2018.

9. Mújica OJ, Vázquez E, Duarte EC, Cortez-Escalante JJ, Molinab J, da Silva Juniord JB. Socioeconomic inequalities and mortality trends in BRICS, 1990–2010. Bull World Health Organ 2014;92:405–412.

10. Global tuberculosis report 2013. Geneva: World Health Organization; 2013. Available from: http://www.who.int/tb/publications/global_report/en/ [Last accessed November192018].

11. Creswell J, Sahu S, Sachdeva KS, Ditiu L, Barreira D, Mariandyshev A et al.Tuberculosis in BRICS: challenges and opportunities for leadership within the post-2015 agenda. Bulletin of the World Health Organization 2014;92:459-460.

12. Setswea G, Shisanab O, Zungua N, Mothianea M. Are BRICS Countries Winning the War on HIV/AIDS? Magnitude and Risk Factors. Sociology Study2015; 5 (9): 700-717.

13. Acharya S, Barber S-L,Lopez-AcunaD,MenabdeN,MigliориniL,Molina J et al. BRICS and global health.Bull World Health Organ 2014;92:386–386A.

14. Saha I, Paul B. War against Tobacco: where do we stand? Indian Journal of Public Health 2018; 62(1): 55-57.

15. Rabiee R,Agardh E, Coates MM,Allebeck P, Danielsson A-K. Alcohol–attributed disease burden and alcohol policies in the BRICS–countries during the years 1990–2013. J Glob Health. 2017; 7(1): 010404.

16. Pearce A, Sharp L, Hanly P, Barchuk A, Bray F, de Camargo Cancela M et al. Productivity losses due to premature mortality from cancer in Brazil, Russia, India, China, and South Africa (BRICS): A population-based comparison. Cancer Epidemiol. 2018 Jan 16; 53: 27-34.

17. Hydera AA, Vecino-Ortiza AI. BRICS: opportunities to improve road safety. Bull World Health Organ 2014;92:423–428.

18. Maternal mortality in 1990-2015 WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Maternal Mortality Estimation Inter-Agency Group RUSSIAN FEDERATION. Available from: http://www.who.int/gho/maternal_health/countries/rus.pdf. Last accessed November19, 2018.

19. Xi B, Zhou C, Zhang M, Wang Y, Xu L. Maternal and child mortality in China. The Lancet 2014; 383(9921): 953 – 954.

20. McKee M, Marten R, Balabanova D, Watt N, Huang Y, Finch AP et al. BRICS' role in global health and the promotion of universal health coverage: the debate continues. Bull World Health Organ 2014;92:452–453.

21. Rao KD,PetrosyanV,Araujoc EC, McIntyred D. Progress towards universal health coverage in BRICS: translating economic growth into better health. Bull World Health Organ 2014;92:429–435.

22. da Silva Junior JB, Desiraju K, Matsoso P, Minghuid R, Salagaye O. BRICS cooperation in strategic health projects. Bull World Health Organ 2014;92:388.

23. Keeton C. BRICS seek value for money as health-care costs rise. Bull World Health Organ 2014; 92: 392–393.

24. Janani SurakshyaYojana. National Health Mission. Ministry of Health and Family Welfare. Government of India. Available from: http://nhm.gov.in/nrhmcomponnets/reproductive-child-health/jsy.html. Last accessed: November19, 2018.

25. China Falling Behind in Tobacco Control Among BRICS. Available from: https://www.tobaccofreekids.org/assets/global/pdfs/en/BRICS_brief_en.pdf. Last accessed November19, 2018.

26. John TJ, Vashishtha VM. Eradicating poliomyelitis: India's journey from hyperendemic to polio-free status. Indian J Med Res. 2013 May; 137(5): 881–894.

27. TB treatment in India – New patients, previously treated, daily treatment. Available from: https://www.tbfacts.org/tb-treatment-in-india/. Last accessed November19, 2018.

28. Kaddar M, Milstien J, Schmitt S. Impact of BRICS' investment in vaccine development on the global vaccine market. Bull World Health Organ 2014; 92: 436–446.

29. Fan VY,Grépin KA, Shenc GC, Chend L. Tracking the flow of health aid from BRICS countries. Bull World Health Organ 2014;92:457–458.