



What really matters: living longer or living healthier

Comment on “Shanghai rising: health improvements as measured by avoidable mortality since 2000”

Paul S. F. Yip*, Mengni Chen

Abstract

The decline in Avoidable Mortality (AM) and increase in life expectancy in Shanghai is impressive. Gusmano and colleagues suggested that Shanghai's improved health system has contributed significantly to this decline in AM. However, when compared to other global cities, Shanghai's life expectancy at birth is improving as London and New York City, but has yet to surpass that of Hong Kong, Tokyo, and Paris. Over the past decade, the reduction in AM of Shanghai is just in line with the international experience in reducing avoidable premature deaths. We suggest that a more elaborate research design is needed to examine the impact of the improvement in Shanghai's health system on its population health status.

Keywords: Health System, Avoidable Mortality (AM), Life Expectancy, Morbidity, Health-Adjusted Life Expectancy (HALE)

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By studying the trend of Avoidable Mortality (AM) in Shanghai during 2000–10, Gusmano and colleagues (1) showed that there is a great reduction in AM among registered residents, and the speed of the decline is comparable to or even better than other global cities, such as New York City and Paris. As the avoidable deaths can be prevented by effective healthcare intervention, Gusmano and colleagues suggested that the decline of AM is largely due to improvement in Shanghai's healthcare system. However, no empirical data was given to demonstrate a direct link for this causal relationship.

Since 1998, when the Shanghai Municipal Center for Disease Control and Prevention was established, Shanghai's healthcare system experienced several major reforms that have led to increased coverage of health insurance and enhanced accessibility to community-based healthcare services. According to the Statistical Bureau of Shanghai (2), in the last 15 years (i.e. 1998–2013) the life expectancy at birth has increased by 5.13 years for registered male residents, from 75.06 years in 1998 to 80.19 years in 2013, but only increased 3.91 years during 1983–98. The life expectancy at birth for registered female residents was 84.79 years in 2013, with an increase of 5.77 years in 1998–2013, compared to an increase of 3.76 years in 1983–98. The life expectancy at birth of registered residents has greatly improved over the past three decades (i.e. 1983–2013). The improvement and the accelerated rate of increase since 1998 may be related to improvement of Shanghai's health system. However, the improvement in life expectancy does not exclusively occur in Shanghai. Figures 1 and 2 provide a cross-city comparison on the average life expectancy at birth of six global cities: Shanghai, New York City, London, Paris, Tokyo, and Hong Kong. Shanghai has

lagged behind but has been catching up quickly in the past decade. In 1999, Shanghai's male life expectancy at birth was 76.38 years, which was actually higher than London and New York City but lower than that of Tokyo and Hong Kong. During 1999–2013, Shanghai's life expectancy at birth has continuously improved; and currently, the males' life expectancy seems to converge with other global cities at the level of 80–81 years, except New York City (Figure 1). Shanghai's female life expectancy has been keeping pace with London over the past decade; though ahead of New York City, it is currently falling behind Hong Kong, Tokyo, and Paris. Initially, the gap in life expectancy between Shanghai and some global cities such as Hong Kong, Tokyo, and Paris, was large but it has been narrowing (Figure 2).

Does the improvement in Shanghai's healthcare system contribute to the decline in AM as suggested by Gusmano and colleagues (1), as well as the increase in life expectancy of the registered population? It is far from conclusive. Further empirical data and better research design is needed to support their findings. Shanghai's experience of falling AM and increasing longevity is very similar to that of other global cities. Furthermore, when analyzed within the context of the recent national or global trends, the trends witnessed by these highly-developed global cities, actually are not that exceptional. A global estimation on premature mortality (i.e. mortality under the age of 70) published in *The Lancet* (3) has shown that during 2000–10, China had a reduction of 19% in the premature mortality rate, with a reduction of 36% in the 0–4 age group, 30% in the 5–49 age group, and 15% in the 50–69 age group. And the global premature mortality rate decreased by 19%, with a decrease of 34% in the 0–4 age group, 17% in the 5–49 age group, and 15% in

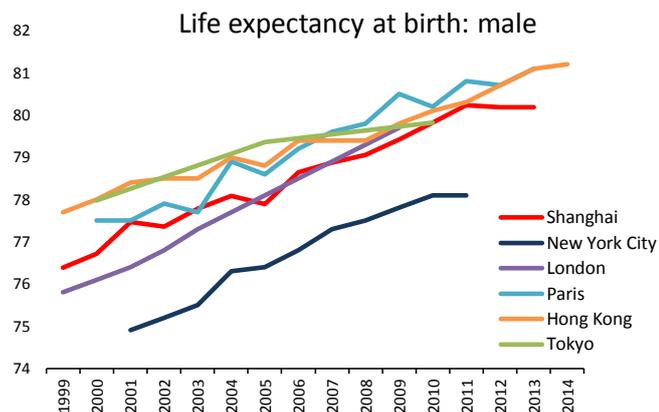


Figure 1. The life expectancy at birth for males in six global cities. Sources: Shanghai Statistical Bureau; The Department of Health and Mental Hygiene of New York City; Statistics and Information Department, Ministry of Health, Labor and Welfare, Japan; London Datastore; National Institute of Statistics and Economic Studies (INSEE), France; Census and Statistics Department of Hong Kong SAR.

the 50–69 age group. This implies that the whole world has also experienced dramatic decline in mortality over the last decade, especially in avoidable premature deaths. Meanwhile, in 2000–12 China's suicide rate has significantly declined by more than 60% (4). This decline also contributes to the decrease of avoidable premature deaths and increase in life expectancy. But there are other suggested reasons for the suicide reduction, for example, the improvement of education and work opportunities due to urbanization, and improvement of quality of life, especially for rural women. Certainly, the improvement of the healthcare system would be able to provide a more timely and effective treatment to those who attempt suicide.

The improvement in the health system might contribute to increase of lifespan but higher degree of disability is expected to appear among people in advanced age. A more challenging issue for our health system is to ascertain “are we living healthier, not only longer”. And what has not been explored in the paper of Gusmano *et al.* (1) is that “*whether the substantial investment in Shanghai's health system has made its residents live in better health than before*”.

Measuring the improvement of the health system with only one indicator – AM, can be problematic and misleading to some extent. The improved health system may have raised the survival rate, but it could also have left more people living with disabilities and cause a large disease burden on the healthcare system. For instance, behind the rapid mortality decline in the 1970s, the U.S. also witnessed worsening health conditions among middle-aged and older people (5). In Europe, despite the increase in life expectancy, concerns grow that the health system will face increasing challenges as increasing old people suffer from cancer, diabetes, mental disorders (6). The changes in the population's health status should also be included to appraise the performance of the health system (7,8). Gusmano and colleagues (1) have detected the decrease in avoidable deaths, but failed to reveal how morbidity changes behind the declining mortality and increasing life expectancy. As life expectancy increases, the incidence and the duration of suffering disease and disability may increase as well, leading to the morbidity expansion

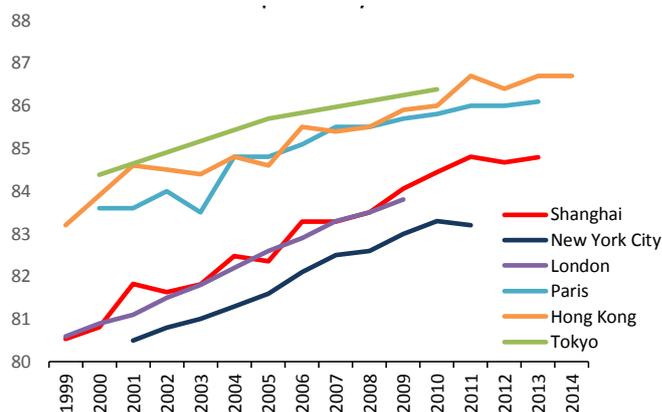


Figure 2. The life expectancy at birth for females in six global cities. Sources: Shanghai Statistical Bureau; The Department of Health and Mental Hygiene of New York City; Statistics and Information Department, Ministry of Health, Labor and Welfare, Japan; London Datastore; National Institute of Statistics and Economic Studies (INSEE), France; Census and Statistics Department of Hong Kong SAR.

(9–11), which is termed “the failures of the success” by Gruenberg (9). Alternatively, Shanghai may have experienced a “morbidity compression” that the morbidity is compressed to a shorter and later period of the lifespan with increase in the Health-Adjusted Life Expectancy (HALE) (12). But until now, there has been little research on the healthiness of Shanghai's population.

Further investigation into morbidity trends is much needed for better health planning and management in these rapidly-aging global cities. Due to the prolonged low fertility, the aging problem in Shanghai, Hong Kong, and Tokyo is probably more serious compared to other global cities in Western countries. In 2013 about 18% of Shanghai's registered resident population were over age 65 (2) and about 14% of Hong Kong's population were elderly (13). As a large proportion of the population will enter into old age in these cities, the increasing morbidity and disability among the elderly will lead to an increase in government expenditures on healthcare. Nowadays, the so-called “active aging” or “productive aging” is advocated widely and extending retirement age is suggested to increase the workforce (14). However, it should be emphasized that the prerequisite for the success of these strategies is healthy aging. Therefore, the trends in morbidity and disability rates among the elderly are the decisive factor in facing the aging issue.

Apart from traditional indicators – mortality and life expectancy, further exploration on the HALE and Disability-Adjusted Life-years (DALY) for Shanghai and other global cities is also called for. By combining mortality and morbidity, HALE and DALY can better reflect the health progress of Shanghai's residents. Salomon and colleagues (7) conducted a systematic study on HALE for 187 countries. One of their important findings is that HALE increases more slowly than the life expectancy over the last 20 years. They estimate that an increase of one year in life expectancy is only accompanied by an increase of 10 months in HALE (7). They argue that the reduction of morbidity lags behind mortality decline for the past twenty years. The AM used by Gusmano *et al.* (1) can only reflect the health progress in reducing deaths. In terms of reducing morbidity and increasing HALE, it is still

unknown whether Shanghai's rising is still comparable to other global cities.

Shanghai has been witnessing a great reduction in AM and an accelerated increase in life expectancy among registered residents. It is also of interest to learn about the situation for non-registered resident population (i.e. non *hukou* resident). As they may not be as well-covered by the healthcare system as registered residents, if they have similar improvement in AM and life expectancy, then we need to look for other factors which may have contributed to the improvement. Nevertheless, the possible contribution of improvement in the health system should be recognized but needs to be carefully evaluated. Future investigation and comparison in morbidity trends, HALE, and DALY will help assess impacts of the healthcare system on health progress more comprehensively. This will provide illuminating information on health management and planning, especially for these aging global cities.

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Ethical issues

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

PSFY and CM discussed the framework, drafted and revised the manuscript.

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Untimely applause was a distraction

Comment on “Shanghai rising: health improvements as measured by avoidable mortality since 2000”

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Abstract

The paper published in the January 2015 issue of this journal by Gusmano and colleagues entitled “*Shanghai rising: health improvements as measured by avoidable mortality since 2000*” has spurred this commentary. We discuss controversial issues surrounding the concept of avoidable mortality in health service research in general and Gusmano’s study in particular. The impact of overall social development on mortality may be underappreciated in Gusmano’s report; the innovative efforts of healthcare professionals to use cutting-edge technology and evidence-approved preventive strategies to reduce healthcare cost and improve the life quality of community members may not necessarily come to fruition in death reduction, and might be undervalued, too. More critically, the shape and magnitude of emerging health issues in Shanghai, such as accidents and injuries, pollution-related cancers, may be camouflaged in Gusmano’s report. We conclude this commentary by suggesting the most urgent questions to be addressed in the future studies.

Keywords: Global Health, China, Shanghai, Avoidable Mortality, Performance

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The paper by Gusmano and colleagues in the January 2015 issue of this journal is interesting and provoking (1). It “examined the evolution of Shanghai’s healthcare system” by analyzing “avoidable mortality over the period 2000–10 and compared Shanghai’s experience to other mega-city regions”. The main result was that: “*the age-adjusted rate of avoidable mortality, per 1,000 population(s), dropped from 0.72 to 0.50. The rate of decrease in age-adjusted avoidable mortality in Shanghai was comparable to New York City and Paris, but lower than London (42%)*”. Gusmano *et al.* (1) concluded that: “*establishment of the Municipal Center for Disease Control and Prevention and its upgrading of public health and health services are likely to have contributed to the large decrease in the number and rate of avoidable deaths*”. We applaud the authors’ efforts to place Shanghai’s unprecedented rise in a unique comparative examination of top megacities in the world. However, we believe that Gusmano and colleagues’ interpretations of their results deserve further discussion.

The chief concerns of Gusmano’s report are rooted in the unavoidable limitations of the concept of avoidable mortality. Created as a tool for medical audit by David Rutstein of Harvard Medical School in the 1970s (2), with various synonyms, the terms attracted considerable interest since then and have been used as measuring instruments to assess the quality of healthcare. The milestone application of avoidable mortality is the publication of the *European Community Atlas of Avoidable Death* in 1988 (3). The report concluded that avertable deaths were relatively common, and improvements of accessibility of healthcare had a measurable impact during the 1980s. The avoidable mortality, however, was much less sensitive to the improvement of healthcare

services when avoidable mortality dropped below a certain level due to floor effects (4). Surprisingly, with a relatively high level of avoidable mortality in the early year, and approximately 50% decline in deaths from coronary heart disease from 1980 through 2000 (5), the United States (U.S) experienced a much smaller reduction of avoidable mortality during the same period according to Nolte *et al.* (6).

The term of avoidable mortality has been used by the World Health Organization (WHO) (7), and researchers in many countries (8–21), mainly the countries of Organization for Economic Co-operation and Development (OECD). In spite of a steady increase in the number of publications using the term of avoidable mortality since the late 1980s, little progress has been made in advancing the original concept, critically limiting its’ acceptability among health service research community (4,22). The concept of avoidable mortality failed to find its way to be widely used in the country where it originated. The most recent study applying the concept of avoidable mortality to examine healthcare service in the U.S. was actually performed by non-U.S. researchers for an international comparison (6). It is interesting to note that, very often, there were some researchers questioning the validity of a research paper immediately after it was published using the concept of “avoidable mortality”, from the early dialogue between Andreev *et al.* (23) and Holland (22), Alleyne (24) and Nolte *et al.* (6) to the recent debates between Allin and Grignon (25) and Lavergne and McGrail (26,27), and Peter *et al.*’s commentary (28) on papers by Mackenbach *et al.* (29), and Schoenbaum *et al.* (30). This is phenomenal with scientific publications, highlighting a high level of enthusiasm in search for a simple metric to measure health

system performance and a growing dissatisfaction as well. The use of death as an endpoint and focusing on mortality are obvious limitations of the concept of avoidable mortality (4,22). There are likely to be many underlying reasons for an observed declining of amenable mortality. Interpretation of the data must go beyond the aggregate figure to look within populations if these findings are to inform policy. A substantial amount of disease burdens in modern society are disability-related social cost rather deaths, avoidable mortality fails to reflect the efforts that focus primarily on relieving pain and improving quality of life. Death is just the endpoint of a complex chain of events, and it is challenging if not impossible to clearly clarify which causes are avoidable. Most of the avoidable deaths should be partitioned into a proportion to which reductions are attributable, including primordial, primary, secondary, or tertiary preventive efforts. Additionally, emerging health issues, such as road injuries and mental health problems, create significant health burdens in the megacities. Large portions of the resources have been invested to respond to these ever-changing challenges with a limited impact on mortality but substantially on morbidity. After having comprehensively assessed the validity of avoidable mortality against the disease spectrum of modern society, Pérez *et al.* concluded in their recent report that: “avoidable mortality does not seem to appear to be a good indicator for analyzing the performance of healthcare systems” (p180) (28).

With these limitations inherited, Gusmano *et al.*'s (1) report may under appreciate the impact of overall social development on mortality. For example, Tuberculosis (TB) has been listed in almost all versions of avoidable death list, including the one used by Gusmano *et al.* However, the acquisition of TB is largely driven by socio-economic conditions (31,32). Simply attributing an outcome to a particular aspect of healthcare, such as consolidating multiple pre-existing institutions into one agency, is intrinsically arguable. Overstretching the connection between declining mortality from selected diseases and institutional reorganization or improvement of public health or healthcare services *per se* may divert resources from investment outside the healthcare system that more directly targets underlying causes.

The innovative efforts of healthcare community in Shanghai in using cutting-edge technology and evidence-approved preventive strategies to improve the life quality of community members may be undervalued in Gusmano *et al.*'s report. Partnered with business communities, a regionally integrated health networks has been set up in Minghang of Shanghai, linking hospitals, community health centers, nursing homes and households to enhance early detection of non-communicable disease using telemedicine and wireless technology (33). These efforts may not necessarily reduce mortality substantially but they dramatically reduce disability, increase independence and satisfaction with life for patients, and ultimately lower the emotional and financial cost to the family and society as a whole. More critically, the shape and magnitude of emerging health issues in Shanghai may be masked in Gusmano *et al.*'s report. There were 2,176 traffic accidents reported in Shanghai in the year 2010, resulting in 1,009 deaths (34), more than the death numbers from

nephritis and nephrosis, malignancy of cervix and uterus, and pneumonia combined in Gusmano *et al.*'s report. Shanghai has the highest incidence of cancer in the nation (35). About 54,000 incident cases were reported in the year 2013, representing an increase of 13% from 48,000 cases in the year 2011 (36). The dangerously high level of pollution is taking an increasingly devastating toll in Shanghai as well as other parts of China. Unfortunately, Gusmano *et al.*'s report failed to convey the sense of urgency and magnitude of these emerging issues.

The novel contributions of Gusmano *et al.*'s work are the questions stimulated rather the answers offered. In addition to “the steep decline of avoidable mortality among Shanghai's registered population”, the thought-provoking figure in Gusmano *et al.*'s report also clearly demonstrates that the same trends occurred in other megacities, and the avoidable mortality was plummeting in London. The Gusmano *et al.* (1) were correct that: “these city-level differences reflect the fact that avoidable mortality is influenced by a combination of population characteristics, socio-economic status” and “healthcare related variables related to health system performance”. Without examining these explanatory variables, in particular, health policy, spending and institutional reorganization, it might be disputable to jump to the conclusion that: “investments in public health infrastructure and increasing access to health services in megacities – both in China and worldwide – can produce significant mortality declines”. Comparisons beyond the mortality among four megacities in Gusmano *et al.*'s report would certainly generate robust conclusions. What were the factors driving the impressive decline of avoidable mortality in London, which was doing better than Shanghai as Gusmano *et al.* pointed out? A “comparable” decrease was also obtained in New York City. How much of the decline of avoidable mortality in New York City and London was attributed to revving-up health spending or institutional reorganization? Have mayor Bloomberg's innovative public health policies, from cracking down on soda serving sizes to implementing a trans-fat ban in restaurants, added years to New Yorkers' lives? Why Paris saw a slower-than-other decline? Where did Tokyo stand, one of the “big four”, and also sharing more similarities with Shanghai than anyone of the three cities included in Gusmano *et al.*'s study? Seeking the answers to these questions would greatly advance the Healthy Cities Movement globally.

As the crown jewel of the Chinese economy, and one of the world's most dynamic cities, Shanghai has been making a great stride in both health and overall social development in the past decades, offering a unique lens to scrutinize sustainable and scalable solutions to translate economic growth into better health. The wealth of the successful stories and costly lessons as well from Shanghai rising need to be systematically reviewed. Certainly, Gusmano *et al.*'s efforts are a part of this endeavor; they are to be congratulated for looking at Shanghai rising from a global health perspective.

Ethical issues

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

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The Chinese healthcare challenge

Comment on “Shanghai rising: avoidable mortality as measured by avoidable mortality since 2000”



Guilhem Fabre*

Abstract

Investments in the extension of health insurance coverage, the strengthening of public health services, as well as primary care and better hospitals, highlights the emerging role of healthcare as part of China's new growth regime, based on an expansion of services, and redistributive policies. Such investments, apart from their central role in terms of relief for low-income people, serve to rebalance the Chinese economy away from export-led growth toward the domestic market, particularly in megacity-regions as Shanghai and the Pearl River Delta, which confront the challenge of integrating migrant workers. Based on the paper by Gusmano and colleagues, one would expect improvements in population health for permanent residents of China's cities. The challenge ahead, however, is how to address the growth of inequalities in income, wealth and the social wage.

Keywords: Healthcare Challenges, China, Inequalities, Universal Health Coverage

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Gusmano and colleagues (1) have written an important paper that highlights the expanding role of healthcare and its probable effects in contributing to population health improvements in Shanghai. What they do not include in their analysis, however, is any political-economic context in which to understand why the example of cities like Shanghai may be forerunners of what we may expect in China's exploding cities. Therefore, I propose to present this perspective in my commentary.

In 2010, China became the world's largest manufacturing nation (19.8% of the world's manufacturing output) bypassing the US (19.4%), thus ending its 110 year-run as the largest producer of goods (2). After joining the World Trade Organization (WTO) in 2001, China's growth during its golden period (2002–7) was driven mainly by fixed asset investments and exports, whose average annual growth rates were respectively 29% and 24%. Following the spread of the US financial crisis around the world, the fall of global demand revealed China's high export dependency. Meanwhile, the government's stimulus package (2009–10), based on expansionary fiscal and monetary policies to maintain economic growth, raised the investment rate to 48% of GDP for four consecutive years (2009–12), leading to overcapacity in certain sectors, a decline in efficiency, inflation and wage pressures (3).

In order to temper the effects of productivity declines and reductions in exports since 2010, China has moved from investment and export-led growth based on low wage labor towards a new type of slower growth based on research and development (R&D), indigenous innovation and the domestic market. Today the priority sectors are

transportation (high-speed trains, subways, aircraft), renewable energy, and the cutting-edge sectors of R&D (ICT's, life sciences, nanotechnologies, space exploration). In addition, overcapacities in real estate and manufacturing require a decline of investment in these sectors while expanding and restructuring services will be important to sustaining GDP and net employment growth in the medium-term (4). China's health expenditures are much lower, in terms of GDP, than the average for Organisation for Economic Co-operation and Development (OECD) nations.

Under these circumstances the reform of public health, the extension of health insurance coverage and the improvement of healthcare services is an important factor for correcting inequalities and rebalancing growth toward the domestic market, particularly in megacity-regions such as Shanghai and the Pearl River Delta, which confront the challenge of integrating migrant workers.

China's investment and export-led growth, was largely dependent on the supply of cheap labor from the hinterland, in a context of stunted urbanization resulting from the Maoist policies (1949 to 1979). This compelling illustration of Arthur Lewis' development model (5), whereby the transfer of an unlimited supply of labor in traditional sectors feeds accumulation in modern sectors through the urbanization process, has now been challenged for several reasons and that is why we can expect to see the growth of internal investments, including those in the health sector, whose effects the paper by Gusmano and colleagues (1) attempts to assess. To understand the strength and importance of China's new strategy for economic development, it is important to understand why China's high investment and export-led

growth model is no longer sustainable.

First, as early as 2004–7 there was a labor shortage in the Pearl River Delta Region of Guangdong province due partly to the absence of any social insurance for the massive migrant population (6). This region, concentrated between Canton, Shenzhen and Zhuhai, the two special economic zones at the borders of Hong Kong and Macao, accounts for some 30% of foreign investment and exports, and 10% of GDP (7). Although the labor shortage often took the form of high turnover rates, and an imbalance of female employment, this trend is likely to increase in the future. United Nations (UN) projections indicate that in the 20 years from 2010 to 2030, the pool of 15 to 23 years olds, which provides the bulk of labor-intensive activities, will fall, as a result of the one-child policy, by almost 60 million people to a total of 164 million from 202 to 142 million (8).

Second, from 1998 to 2010 China has seen a moderate growth of real wages exceeding the real GDP growth rate by an order of 1% (9). But the rise of real wages has been dramatic since the new decade with the multiplication of labor conflicts in 2010, the second year of the stimulus package following the global crisis. According to a study by the Research Office of the China State Council, in 2006 the migrants from the countryside worked an average of 11 hours a day, 6 or 7 days a week, or nearly 50% more than permanent residents, but received only 60% of the pay, without counting the difference in social protection (10). According to the National Bureau of Statistics of China, 27/05/2013 (in Chinese), of a total of 262 million migrants, 163 are trans-provincial migrants, and 99 million are intra-provincial migrants. In 2012, the average salary for the 163 million trans-provincial migrants reached 2290 RMB (375 US dollars) (11). Some local economists underline China's loss of competitiveness for labor-intensive goods: according to the Ministry of Commerce, China's urban workers' salaries rose at an average of 33% from 2009 to 2011, and minimum salaries rose in 2010 and 2011 at an average of 20% in most of the provinces (12). These higher wages benefit mainly about half of the 260 million migrant workers born after 1980, who are better-educated, with an average of about ten years in school. They are, therefore, more demanding than their parents and more familiar with the internet and new technologies (13).

Third, since 2000, the cost of land has risen at high rates every year, and even more so after the 2008 crisis, when it was used to finance the local part of the stimulus package, which led to a predictable property bubble, in the absence of any land tax. If we add the competitiveness loss due to the reevaluation of the Renminbi to the US dollar, combined with inflation pressures, it is clear that China's high investment and export-led growth model is no longer sustainable.

This triple shock in terms of costs-affecting exchange rates, labor, and land – has increased the importance of China's R&D and innovation policy as the main strategy for ascending the value chain, as Japan and the four dragons had previously done in the mid-1980s. R&D and innovation matter: the US Department of Commerce estimates that 75% of the growth in the American economy since World War II is due to technological innovation (14). In the context of China's current restructuring towards services, which is also an economic priority, investments in the health sector

will become significant areas for growth, and based on the paper by Gusmano and colleagues (1), one might also expect improvements in population health. There is, however, an important challenge ahead – one not lost on the authors of this paper.

The challenge ahead concerns the growth of inequalities in income, wealth and the social wage. The dynamics of Chinese urbanisation, which took off since the mid-eighties, have created a social divide within cities between citizens of urban origin (Hukou) having access to social security, public housing and education, and migrants (Mingong) or second-tier citizens who have migrated from rural areas and are a priori denied such rights (15). The numbers of migrants, whose specific circumstances vary, are estimated at more than a third of the population of Beijing, Shanghai and the Pearl River Delta in Guangdong province (16). Although the urban population is estimated at 52% of the total population, only 35% of the total benefit from the urban status "Hukou".

It is clear that the new policies decided by the third Plenum of the Central Committee in November 2013 aim to create an inclusive growth, a transition from the investment and export-led growth of "cheap China" to a new redistributive model, where the health system, along with other services such as education will have to include the real and not the nominal urban population. The National Urbanization Blueprint for 2014-20 has set a target of 60% of urban population while 45% of population would have access to urban "Hukou". This means extending social benefits such as education and health services to more than 100 million people (17). The new urbanization policy (18) is thus tightly linked to the health reform and investments.

The challenge, however, lies in implementing these goals in public health and social improvements which are far more complicated than building physical infrastructure. Indeed, it will be important to continue tracking the impact of efforts by municipal and provincial governments, hospitals, physicians, pharmaceuticals and other stakeholders, as they negotiate the implementation of what is surely the most ambitious attempt, worldwide, to provide universal healthcare coverage to a national population of over 1.3 billion.

Ethical issues

Not applicable.

Competing interests

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Author's contribution

GF is the single author of the manuscript.

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Health improvements for a healthy Shanghai rising

Comment on “Shanghai Rising: health improvements as measured by avoidable mortality since 2000”



Yuan Ren*

Abstract

The commentator suggests that it is necessary to extend the classical connotation of global city which focuses much on the functions of controlling global capital and production. Global city should also include the dimensions of the leading role and capacity on health improvements and well-being promotion. The commentator agrees with authors' assessments about Shanghai's substantial progress on health services and health system reform, however, we should pay much attention to the significant inequality of health services between central city and outskirt, and between local residents and non-*hukou* migrants. The commentator also suggests that future researches could study the successful experiences of Avoidable Mortality (AM) decline and also disease specific AM decline in main global cities, in order to make more effective policy implications and social schemes recommendations for health improvements in Shanghai and in other cities.

Keywords: Healthy Rising, Health Improvement, Inequality, Non-*hukou* Migrant

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Observing the substantial decline of Avoidable Mortality (AM) in Shanghai, and comparing this with other global cities such as New York, London and Paris, Gusmano and his colleagues (1) demonstrated in this paper the big progress of Shanghai's public health and health system since 2000, including the high investments in public health, good health management reforms especially community-based health services, and etc. The paper shows the age-adjusted AM in Shanghai is lower than in New York and in London and higher than in Paris, and the speed of decline of AM is faster than in Paris and slower than in London, and it is similar with in New York.

Overall, this study offers optimistic evaluations for Shanghai's public health system. “Shanghai Rising” is, therefore, not only an economic rising, it is also a rising in health services, and this makes the rising a “healthy Shanghai Rising”. An important implication is that global cities should extend the classical notion of their functions of controlling global capital and production, which is emphasized by Sassen in her famous works (2). The future global cities should also focus on their leading role and capacity of achieving social progress, health promotion, cultural and technological innovation, fashion and leisure, and environmental sustainability, and so on. The future global cities should make more efforts to promote people's overall well-being, including public health. The necessity to shape an updated understanding about global city is not only because the essence of city life is to improve people's well-being, but not just a capital machine. Meanwhile, we also could conclude the traditional global city is based on global productive chain and related financial capital flows, and with the changes of global industrial system toward health industry, services economy and ecological and

green economy, and so on, those emerging industries strongly related to human health and welfare would also influence the global capital flow and services trade patterns in the future, consequently, that will constitute new connotations, and make new guidelines for future global cities, including Shanghai.

Comparing health improvement with AM among different cities, Shanghai's health services seem to have entered the rank of the world's top cities. However, comparative studies among different cities are always fraught with risks. As the authors have already mentioned in the paper, one of the limitations of the study is that the analysis is just based on 14.9 million local *hukou* population but does not include the information of nearly 10 million non-*hukou* migrants. Other limitations include coding errors on causes of death, and the ambiguous relation between some disease-specific mortality rate and the health system itself.

Besides, different cities have different spatial structure and population size, and it weakens the comparability among cities. For example, New York City, with approximately 800 square kilometers land area and a population of 8 million, is totally different from the city of Shanghai, which covers an area of 6,300 square kilometers with a population of 24 million. In fact, the city of Shanghai in statistics include a “morphological CITY composed by urbanized central districts” and “surrounding large scale rural and sub-urban areas”, thus it is more like the New York metropolitan area in terms of the spatial structure, but not the New York city. Similarly, Paris *intra-muros* and 3 *departments* of the first ring has the total area of 749 square kilometers, and 6.2 million population, is not suitable to compare with the metro Shanghai either. London city is even smaller, therefore, using the area of Greater London makes a comparable strategy

along with New York and Paris city. Simply comparing the Shanghai metropolitan area (allow me to use this concept here replace the Shanghai in statistics) with New York City, Paris and Greater London might conceal a serious problem that there is great inequality in health services provision between Shanghai CITY (that could be morphologically defined the place inside the outer-ring area, and is around 660 square kilometers and has 10 million populations) and the outskirts of Shanghai. The health services per capita in Shanghai central city is 5 to 6 times its sub-urban area, and health services per square kilometers in central city Shanghai is even 40–50 times higher than the city's average (3). The spatial inequality of public health services in Shanghai needs further researches and deserves more policy attention.

In order to make a proper assessment about the health services improvements in Shanghai, I would like to further emphasize the limitations to use *hukou*-based mortality data to evaluate the real health services situation in Shanghai. We know that Shanghai is a large city composed by migrants. So far among the 24.15 million permanent populations in Shanghai, about 10 million are non-*hukou* migrants who stay in Shanghai for more than half a year and mostly have stable jobs and resident places. Meanwhile, Shanghai's public health system and health services provision is based on the *hukou*-system. Therefore, most non-*hukou* migrants do not have equal access to health services compared to local residents. Our recent research in Shanghai shows only 39.5% of non-*hukou* migrants had urban worker's medical insurance in 2012, while 75.7% of local *hukou* residents had. Meanwhile, only 4.4% of non-*hukou* migrants had urban residents medical insurance, compared to 22.1% of local residents. In addition, 30.9% of non-*hukou* migrants who had been sick or in need of healthcare in 2012 visited a pharmacy for medical care, yet only 3.3% of local-*hukou* residents selected this method for medical treatment; 44.1% of non-*hukou* migrants visited hospital, compared to 62.2% local-*hukou* residents. Although we still need more data to make an accurate examination, with consideration of the poor access to basic public health services of those non-*hukou* migrants, the overall health services provision in Shanghai should not be as optimistic as the paper suggests. It also indicates that the serious inequality of health services between the local residents and the non-*hukou* migrants is a big challenge for a healthy "Shanghai rising".

Cerebrovascular Disease (CVD) and Ischemic Heart Disease (IHD) are leading causes attributing to the decline of AM in Shanghai. What would make the paper more interesting is to identify what kind of health improvements (schemes/intervention programs) attribute to this kind of mortality decline. What's more, it would be valuable to show whether there are some differences in causing the AM decline among different global cities. If so, what are the main reasons? Are there any effective experiences to attribute to decline of some decrease-specific mortality in different global cities? For example, we could learn from New York's practices, that

different with investment in hospitals and disease control centers, construction of buildings, streets, neighborhoods, community gardens, local swimming pool and recreation facilities to make an active urban design (4) will have significant effect to change people's life style to reduce obesity, as well as CVD caused high blood pressure, and to improve people's health. Those disease-specific and item-specific researches on AM decline would lead to effective implications for improving health system and health services. Comparative studies on causes of AM decline in different global cities would give more insights for improving health system in other cities.

Despite facing a number of challenges, we could say that Shanghai as a rising global city is experiencing a "Healthy Rising" through significant health improvements caused by high investments and health system reforms. It is also caused by people's huge demand for high quality health services. The rapid progress of health services creates new development opportunities for urban services industry, and to some extent helps the city to achieve the transformation from a manufacture-based economy into a service-based economy. In this sense, health improvements also become an important opportunity for global city's growth, and will provide a driving force for city's future prosperity and for citizens' well-being advancement.

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Ethical issues

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Competing interests

Author declares that he has no competing interests.

Author's contribution

YR is the single author of the manuscript.

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changes in lifestyle and behavioral risk factors accounted for another 30% of the decline.

The different experiences with declines in AM in London and in Shanghai raise the question what readers are to make of the “Shanghai rising” authors’ comparison of time trends in AM in disparate cities whose only common characteristic is that they are of mega-size. The factors that drove the decline in AM in Shanghai are unlikely to have been the same as the factors driving the decline in AM in other cities. Exactly what message did the authors seek to convey with their few-city comparison in Figure 1? Is it mainly that in comparison with 3 mega-cities in advanced economies Shanghai’s track record on AM is not bad? Or do the authors feel that there are lessons to be learned from the comparison? A bit more thought and discussion of this fundamental question would have been helpful.

It could have been illuminating, for example, to learn more about the particular channels through which the establishment of the Shanghai CDC might have contributed to the decline in AM in Shanghai. That information could possibly inform policy-makers in other countries, especially those in other developing countries seeking health reforms and universal health coverage. For example, an earlier paper by Peng et al.⁸ published in the *American Journal of Public Health*, stated that among other features of the newly formed Shanghai CDC were several public health programs the new entity initiated. One of the new programs was a model program created to transform “the traditionally clinically based community hospitals into community-based health promotion and disease prevention health service centers.” Similarly, it would have been helpful to learn more from the authors of “Shanghai rising” about the particular primary care initiatives that might have reduced the AM rate in Shanghai—for example, the establishment of health management programs such as identifying, monitoring and managing residents with hypertension and diabetes (SBP and DBP, HbA1c, etc), 2 major noncommunicable diseases in China targeted for population-wide management; cancer screening for early detection and treatment, which are among the major goals in China’s nation-wide public health improvement efforts; and stepped up health education for the public, another national goal.

Finally, it hardly needs elaboration to note that the metric AM is only one dimension of the multidimensional phenomenon of “improvement in health status” which has not, however, precluded other authors from leaning their work on AM.⁹

Concluding Observations

Because public health policy and its impact on the health of population is so heavily path-dependent, rooted in the history, culture, and political system of nations, it is often difficult to extract lessons on health policy from one country for transfer to another. A vivid illustration of this phenomenon can be seen in the lack of success to transfer the world-famous *modes operandi* of the Kaiser Permanente health system in California¹⁰ to other states even within the United States, for example, to Florida or New York.

China may provide an exception to this phenomenon. The evolution of China’s health system from the Maoist regime to a raw but ill-fated market-based system to today’s search for a judicious mixture of government-controlled cooperation of

the public sector with private initiatives in effect constitutes a giant laboratory, with a myriad of experiments whose success or failure can inform policy-makers in other emerging market countries. In that regard, Shanghai’s approach to health policy during the past few decades and today is an experiment warranting sustained observations and analysis.

Going forward, one priority in Shanghai’s next step health reforms must be to address healthcare for its large population of migrant workers, reported by the authors of “*Shanghai rising: health improvements as measured by avoidable mortality since 2000*” to be 9.4 million, who constituted 39% of Shanghai’s total resident population of 24.3 million in 2010.³ Given the overall progress made in health insurance coverage since 2010 for China’s urban residents many of whom are migrant workers, progress must also have been made in Shanghai on that front in the interim years since 2010, the last year of the 10-year period 2000–2010 the paper addressed. However, undoubtedly more will be needed.

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Shanghai's Track Record in Population Health Status: What Can Explain It?

Comment on "Shanghai Rising: Health Improvements as Measured by Avoidable Mortality Since 2000"



Tsung-Mei Cheng*

Abstract

Health reforms that emphasize public health and improvements in primary care can be cost-effective measures to achieve health improvements, especially in developing countries that face severe resource constraints. In their paper "Shanghai rising: health improvements as measured by avoidable mortality since 2000," Gusmano et al suggest that Shanghai's health policy-makers have been successful in reducing avoidable mortality among Shanghai's 14.9 million (2010) registered residents through these policy measures. It is a plausible hypothesis, but the data the authors cite also would be compatible with alternative hypotheses, as the comparison they make with trends in amenable mortality-rate (AM) in large cities in other parts of the world suggests.

Keywords: Population Health, Primary Care, Public Health in China, Universal Health Coverage, Leadership, Chinese Health Reform

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It has been assumed for some time that investments in public health and primary care are among the most cost-effective ways to improve health and achieve health equity, especially in resource constrained developing countries. For example, Vietnam, a lower-middle-income country with a population of 89.7 million and a per capita gross domestic product (GDP) of \$5293 (Purchasing Power Parity) in 2013, has achieved remarkable population health outcomes thanks to its two-track system: one track focused on prevention through public health services which accounts for approximately 30% of Vietnam's total health spending in 2013, and the other track on clinical acute care.¹

The World Health Organization (WHO), in its 2008 World Health Report, rekindling the spirit of the Alma-Ata Declaration (1978) which mobilized a "Primary Health Care movement" around the world more than thirty years ago, called for a renewal of primary care to achieve healthcare for all in the globalized world.²

What Drives Trends in Amenable Mortality?

"Shanghai rising: health improvements as measured by avoidable mortality since 2000," Gusmano et al³ report that the amenable mortality-rate (AM) in Shanghai had decreased by 30% from 2000 to 2010, and that this rate of decrease "was comparable to New York City (30%) and Paris (25%), but lower than in London (42%)." This decline in AM coincided with, first, the establishment of the Shanghai Municipal Center for Disease Control and Prevention (Shanghai CDC) and, second, the upgrading of Shanghai's public health and health services

systems, including an expansion of the healthcare workforce, chronic disease management, and public health surveillance. Therefore the authors cast the decline in AM as a causal flow from these public health policies to the decline in AM.

The authors' hypothesis certainly is data compatible, and it is plausible. But the authors cannot rule out alternative, plausible hypotheses on other factors that may have driven the decline in AM in Shanghai, which leaves the entire issue open to further research, including the quality of political leadership and economic development. Shanghai's per capita income has for many years been the highest in the country,⁴ and was almost twice as large as the rest of China in 2013. The city continues to enjoy the highest average disposable income in all of China in 2015.⁵

The authors note that a similar decline in AM across England occurred in roughly the same period, 2001–2011. According to the Office for National Statistics of the United Kingdom, the AM rate for all persons in England fell by 28%, from 240.4 per 100 000 population in 2001 to 173.5 per 100 000 in 2011.⁶ This actually is a significantly lower number than the 42% decline for the city of London reported by the authors of "Shanghai rising" cited in their paper. But the causes of this decline in AM in London are not the same as those the authors of "Shanghai rising" describe as causal factors for the decline in AM in Shanghai. According to Bajekal et al,⁷ for example, of the reasons offered for the decline in avoidable deaths in England were, first, "improvements in uptake" of medical and surgical treatments, which accounted for approximately 50% of the decline from coronary heart disease; and second,

changes in lifestyle and behavioral risk factors accounted for another 30% of the decline.

The different experiences with declines in AM in London and in Shanghai raise the question what readers are to make of the “Shanghai rising” authors’ comparison of time trends in AM in disparate cities whose only common characteristic is that they are of mega-size. The factors that drove the decline in AM in Shanghai are unlikely to have been the same as the factors driving the decline in AM in other cities. Exactly what message did the authors seek to convey with their few-city comparison in Figure 1? Is it mainly that in comparison with 3 mega-cities in advanced economies Shanghai’s track record on AM is not bad? Or do the authors feel that there are lessons to be learned from the comparison? A bit more thought and discussion of this fundamental question would have been helpful.

It could have been illuminating, for example, to learn more about the particular channels through which the establishment of the Shanghai CDC might have contributed to the decline in AM in Shanghai. That information could possibly inform policy-makers in other countries, especially those in other developing countries seeking health reforms and universal health coverage. For example, an earlier paper by Peng et al.⁸ published in the *American Journal of Public Health*, stated that among other features of the newly formed Shanghai CDC were several public health programs the new entity initiated. One of the new programs was a model program created to transform “the traditionally clinically based community hospitals into community-based health promotion and disease prevention health service centers.” Similarly, it would have been helpful to learn more from the authors of “Shanghai rising” about the particular primary care initiatives that might have reduced the AM rate in Shanghai—for example, the establishment of health management programs such as identifying, monitoring and managing residents with hypertension and diabetes (SBP and DBP, HbA1c, etc), 2 major noncommunicable diseases in China targeted for population-wide management; cancer screening for early detection and treatment, which are among the major goals in China’s nation-wide public health improvement efforts; and stepped up health education for the public, another national goal.

Finally, it hardly needs elaboration to note that the metric AM is only one dimension of the multidimensional phenomenon of “improvement in health status” which has not, however, precluded other authors from leaning their work on AM.⁹

Concluding Observations

Because public health policy and its impact on the health of population is so heavily path-dependent, rooted in the history, culture, and political system of nations, it is often difficult to extract lessons on health policy from one country for transfer to another. A vivid illustration of this phenomenon can be seen in the lack of success to transfer the world-famous *modes operandi* of the Kaiser Permanente health system in California¹⁰ to other states even within the United States, for example, to Florida or New York.

China may provide an exception to this phenomenon. The evolution of China’s health system from the Maoist regime to a raw but ill-fated market-based system to today’s search for a judicious mixture of government-controlled cooperation of

the public sector with private initiatives in effect constitutes a giant laboratory, with a myriad of experiments whose success or failure can inform policy-makers in other emerging market countries. In that regard, Shanghai’s approach to health policy during the past few decades and today is an experiment warranting sustained observations and analysis.

Going forward, one priority in Shanghai’s next step health reforms must be to address healthcare for its large population of migrant workers, reported by the authors of “*Shanghai rising: health improvements as measured by avoidable mortality since 2000*” to be 9.4 million, who constituted 39% of Shanghai’s total resident population of 24.3 million in 2010.³ Given the overall progress made in health insurance coverage since 2010 for China’s urban residents many of whom are migrant workers, progress must also have been made in Shanghai on that front in the interim years since 2010, the last year of the 10-year period 2000–2010 the paper addressed. However, undoubtedly more will be needed.

Ethical issues

Not applicable.

Competing interests

Author declares that she has no competing interests.

Author’s contribution

TMC is the single author of the manuscript.

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