

Comparative health system performance in six middle-income countries: cross-sectional analysis using World Health Organization study of global ageing and health

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Summary

Objective: To assess and compare health system performance across six middle-income countries that are strengthening their health systems in pursuit of universal health coverage.

Design: Cross-sectional analysis from the World Health Organization Study on global AGEing and adult health, collected between 2007 and 2010.

Setting: Six middle-income countries: China, Ghana, India, Mexico, Russia and South Africa.

Participants: Nationally representative sample of adults aged 50 years and older.

Main outcome measures: We present achievement against key indicators of health system performance across effectiveness, cost, access, patient-centredness and equity domains.

Results: We found areas of poor performance in prevention and management of chronic conditions, such as hypertension control and cancer screening coverage. We also found that cost remains a barrier to healthcare access in spite of insurance schemes. Finally, we found evidence of disparities across many indicators, particularly in the effectiveness and patient centredness domains.

Conclusions: These findings identify important focus areas for action and shared learning as these countries move towards achieving universal health coverage.

Keywords

Health policy, global health, public health

Introduction

Health systems strengthening and achieving universal health coverage in low- and middle-income countries are essential to confronting the major challenges faced today: addressing demographic and epidemiological

transitions, improving population financial protection and meeting public demand for improved health outcomes.¹ Many low- and middle-income countries have committed to achieving universal health coverage through increased health spending and other health systems strengthening measures.²

Assessment of health system performance is a key driver of improvement.³ It provides an important mechanism to identify areas of high and low performance, enabling efforts to strengthen and increase effectiveness of health systems to achieve universal health coverage, and it provides an important opportunity for benchmarking and cross-country learning. Although cross-country comparisons are often conducted between health systems in high-income countries,⁴ few studies have been undertaken that include and compare low- and middle-income countries, particularly looking across the domains of the healthcare system. One recent example adding to the evidence base on health system comparisons in low- and middle-income countries was the analysis of equity across three low- and middle-income countries conducted by Mills et al.⁵ that focused specifically on equity in financing and overall use of health services.

Despite growing enthusiasm for improving health systems in low- and middle-income countries inadequate information systems, lack of common definitions for performance indicators and an absence of standardised data collection mechanisms across countries resulted in limited performance comparability across low- and middle-income countries.⁶ This has been recognised as an important knowledge gap in the recent World Health Report on universal health coverage,⁷ which calls for continued efforts to

improve measurement and monitoring of health systems progress. The World Health Organization Study on global AGEing and health (SAGE) began to address this gap by collecting a wide range of health system data on six middle-income countries: China, Ghana, India, Mexico, Russia and South Africa. The SAGE instrument has been validated and implemented similarly across the six countries.⁸

Actions towards universal health coverage have been taken in several of these countries in recent years, through major health system reforms and substantial increases in health spending (Tables 1 and 2). For example, Ghana introduced a national health insurance scheme in 2004 to provide financial protection to its citizens,⁵ and China embarked on systematic reforms in 2009 to improve its social insurance scheme and strengthen primary healthcare.⁹ We aim to use SAGE data to assess and compare health system performance across these six countries.

Methods

Sample and data

We analysed cross-sectional data from the World Health Organization SAGE (wave 1), collected between 2007 and 2010. The survey included data from nationally representative cohorts of adults aged 50 years and older, as well as smaller comparative cohorts of adults aged 18–49 years.

The SAGE collected a wide range of information on the health and wellbeing of the adult population in each country through the use of standardised survey instruments, including self-assessments of health and wellbeing and objective measures of health. The survey was administered through interviews and measurements of health markers, such as weight and blood pressure. SAGE used a multi-stage cluster sampling strategy. More details on the survey objectives are described elsewhere.¹⁰

Our analysis was conducted based on the sample of respondents aged 50 years and older, which included the majority of the study population. The only exceptions to this were analyses of breast and cervical cancer screening outcomes, where age ranges appropriate to each screening programme were used: women aged 50–74 years and 25–69 years, respectively.¹¹

Framework for analysis and variables used

We assessed health system performance using the conceptual framework proposed by Arah et al.¹² This framework was originally developed to evaluate a list of quality indicators for use within Organization for Economic Cooperation and

Table 1. Macroeconomic indicators.

	GDP per capita (constant 2010 US\$)		Gini coefficient ^a		Human Development Index ^a		World Bank income classification	
	2000	2014	2014	2014	2000	2014	2000	2014
China	1771	6497	37.0	0.727	0.591	0.727	Lower middle income	Upper middle income
Ghana	975	1696	42.8	0.579	0.487	0.579	Low income	Lower middle income
India	770	1750	33.6	0.609	0.483	0.609	Low income	Lower middle income
Mexico	8568	9510	48.1	0.756	0.699	0.756	Upper middle income	Upper middle income
Russia	6491	11,038	39.7	0.798	0.717	0.798	Lower middle income	Upper middle income
South Africa	6069	7593	65.0	0.666	0.628	0.666	Upper middle income	Upper middle income

Source: The World Bank: <http://data.worldbank.org/>
^aHuman development report: <http://hdr.undp.org/en/countries>.

Table 2. Health statistics.

	Life expectancy in 2014, years		Total expenditure on health as % of GDP		Government expenditure on health as % of total government expenditure		Out-of-pocket health expenditure as % of total expenditure on health	
	2000	2014	2000	2014	2000	2014	2000	2014
China	76	5.5	4.6	10.9	10.9	10.4	59.0	32.0
Ghana	61	3.6	3.0	7.8	7.8	6.8	31.8	26.8
India	68	4.7	4.3	4.4	4.4	5.0	67.1	62.4
Mexico	77	6.3	5.1	10.5	10.5	11.6	50.9	44.0
Russia	70	7.1	5.4	12.7	12.7	9.5	30.0	45.8
South Africa	57	8.8	8.1	13.6	13.6	14.2	13.0	6.5

Source: The World Bank: <http://data.worldbank.org/> and World Health Organization Global Health Observatory Data Repository: <http://apps.who.int/gho/data/node.main>

Development countries and has been widely used for health system evaluation.^{6,13}

Indicators

Indicator variables were constructed and categorised for four of the performance domains: effectiveness, cost, access and patient-centredness; equity was then assessed across each of these domains. As the SAGE does not include any measures pertaining to patient safety, we were unable to assess performance within this domain. A full list of variables assessed is included in online Appendix Table 1.

Effectiveness. We constructed 11 indicators relating to the prevention and management of common chronic conditions (Table 3). Respondents self-reported the management and prevention services for common chronic conditions that they received. The exception to this is in the case of hypertension, where respondents were considered to have hypertension if they self-reported a diagnosis of hypertension or if they had a mean systolic blood pressure measurement of ≥ 140 mmHg or diastolic blood pressure of ≥ 90 mmHg. Those respondents identified as having hypertension on measurement, but not self-reporting the condition, were defined as being undiagnosed hypertensive. Controlled hypertension was defined as those self-reporting the condition, having mean systolic blood pressure of ≤ 140 mmHg and diastolic blood pressure of ≤ 90 mmHg.

To assess coverage of cancer screening, we used responses to the following questions: ‘When was the last time you had a mammography?’ and ‘When was the last time you had a pelvic examination?’ Respondents who answered positively were then asked: ‘The last time you had a pelvic examination, did you have a Pap smear test?’ Following commonly used guidelines for breast and cervical cancer screening in low- and middle-income countries, coverage of breast cancer screening was defined as the percentage of the eligible population (women aged 50–74 years) who had a mammography in the past three years, and coverage of cervical cancer screening was defined as the percentage of the eligible population (women aged 25–69 years) who had a pap smear in the past three years.¹¹

Cost. Indicators included in the cost domain for outpatient and inpatient care were: (1) the percentage of respondents who reported that their last visit was free; (2) the median out-of-pocket spending amount for those who reported their last visit was not free; and (3) the proportion of out-of-pocket expenditures by type of service (healthcare provider fees, medicines, medical tests, transport or other). All spending

Table 3. Effectiveness domain indicators in SAGE countries.

	China	India	Ghana	Mexico	South Africa	Russia
Undiagnosed hypertension (%)	56.0 ^a	55.3	76.3 ^{aC}	51.4	61.5	26.6C
Prescribed meds persons with known hypertension in the past 12 months (%)	37.7 ^a	32.9 ^a	18.9 ^{aC}	38.6	33.1	69.3 ^{aC}
Hypertension controlled (%)	20.1	50.1C	29.1C	17.8	27.4C	59.1C
Prescribed meds for diabetes in the past 12 months (%)	83.3	71.1	79.4	78.6	80.6	75.0
Special diet/weight control for diabetes (%)	67.7	58.4	66.4 ^a	57.8	66.7	73.7
Prescribed meds for depression in the past 12 months (%)	37.3	27.3	43.8	19.6	64.2C	46.9
Breast screening coverage in the past three years (%)	19.2 ^a	0.7C	1.7C	43.3 ^{aC}	9.9 ^{aC}	34.9C
Cervical screening coverage in the past three years (%)	27.1 ^a	0.9 ^{aC}	3.8C	62.3 ^{aC}	28.1 ^a	72.0
Eye examination in the past three years (%)	20.4 ^a	26.7 ^{aC}	18.4 ^{aC}	50.9 ^{aC}	34.7 ^{aC}	75.6 ^{aC}
Operation if have cataracts (%)	22.4	50.6 ^{aC}	47.6C	49.3C	44.1C	26.5
Medications or treatment from a dentist in the past 12 months (%)	36.7	34.7	17.7C	29.8 ^a	43.2C	75.8

C: significantly different from China ($p < 0.05$).

^aAffluent respondents fared better than deprived respondents.

data were adjusted for cost-of-living differences using purchasing power parities for 2010 and presented in US dollars (Table 4).

Access. The access domain included: (1) the percentage of respondents who received healthcare the last time when it was needed; (2) the percentage of respondents who indicated that cost was a barrier to getting healthcare; (3) whether or not respondents received any outpatient or inpatient care last year; (4) the number of inpatient and outpatient facilities visited last year; and (5) the time taken to travel to an outpatient clinic or hospital (Table 5).

Patient-centredness. The patient-centredness domain included indicators in the areas of perceived: (1) promptness of care; (2) being treated respectfully; (3) clarity of communication; (4) involvement in decision-making; (5) confidentiality; (6) choice of provider; (7) facility cleanliness; (8) overall satisfaction with care received; (9) health condition improvement following care; and (10) outcome or result of care as expected (Table 6).

Responses for these indicators were originally coded on five levels from 1 (best) to 5 (worst), with the exception of outcome expected, which was a binary indicator. We first reverse coded responses in the patient-centredness domain (apart from outcome expected) on a scale from 0 (worst) to 4 (best), and

then scaled from 0 to 100, with 0 indicating the lowest response and 100 indicating the highest response.

Equity. Equity was assessed through evaluation of statistically significant differences in outcomes between the most affluent and the most deprived population within each country. This was evaluated for each indicator across all domains.

Statistical analysis

We first summarised the mean, median or proportion of achievement for each indicator as appropriate. To assess disparities for outcomes within countries, we ran regression models for each country separately, and identified any statistically significant differences in outcomes between the most affluent and the most deprived populations within each country. We used multiple logistic, ordinal logistic and linear regression models (for binary, ordinal and linear outcomes, respectively), adjusting for the following characteristics: age, gender, residence and wealth status. To compare differences in outcomes across countries, our model included dummy variables for each country using China as the reference group. We applied sample weights in all our analyses using the svyset command in Stata version 12. For country comparisons, we normalised country specific weights across the dataset.

Table 4. Healthcare costs domain indicators in SAGE countries.

	China	India	Ghana	Mexico	South Africa	Russia
Outpatient						
The last outpatient visit was free (%)	8.3	6.2 ^C	16.7 ^C	54.3 ^{aC}	75.4 ^{aC}	61.4 ^C
Median of out-of-pocket spending ^b	22.4	13.8	7.6	32.6	28.0	31.6
<i>Type of spending as a percentage of out-of-pocket expenditure</i>						
Provider fees	4.1	14.1 ^C	10.3 ^C	21.5 ^C	53.0 ^C	12.6 ^C
Medicines	85.8	68.6 ^{aC}	49.0 ^{aC}	36.4 ^C	14.7 ^C	68.8
Test	7.2	5.1 ^C	3.8 ^C	15.4	1.5 ^C	2.6 ^C
Transport	1.9	9.5 ^C	34.5 ^C	26.6 ^C	29.9 ^C	15.4 ^C
Other	1	2.7 ^C	2.4 ^C	0.1 ^C	0.9	0.6
Inpatient						
The last inpatient visit was free (%)	4.1	5.8	13.9	62.8 ^C	81.2 ^C	57.3 ^C
The median of out-of-pocket spending ^b	664.7	207.0	47.6	651.9	46.2	94.8
<i>Type of spending as a percentage of out-of-pocket expenditure</i>						
Provider fees	13.2	15.3	18.5	62.8 ^C	75.7 ^C	11.5
Medicines	57.4	51.3 ^C	18.1 ^C	12.1 ^C	1.0 ^C	61.1 ^a
Test	17	11.2 ^C	7.2 ^C	3.2 ^C	1.6 ^C	6.8 ^C
Transport	3	11.3 ^C	51.2 ^C	19.9 ^C	14.2 ^C	13.9 ^C
Other	9.4	10.8	5.0 ^C	2.0 ^C	7.4	6.6

C: significantly different from China ($p < 0.05$).

^aAffluent respondents fared better than deprived respondents.

^bFor those who reported the last visit was not free.

Results

We included data from a total of 35,239 respondents across the six countries: 13,367 from China, 4724 from Ghana, 7150 from India, 2306 from Mexico, 3938 from Russia and 3754 from South Africa. The mean age of respondents ranged from 61 years old in India and South Africa to 64 years old in Ghana. The sex of respondents in the sample was approximately evenly divided in all countries apart from Russia, where the proportion of men surveyed was lower (38%). For full sample characteristics, see online Appendix Table 1.

Effectiveness domain

Performance achievement did not surpass 80% in any of the effectiveness indicators assessed across the six

countries (Table 3). Performance varied widely across indicators, both across countries and within each country. For example, the percentage of respondents with undiagnosed hypertension ranged from 27% in Russia to 76% in Ghana. Among respondents with hypertension across the six countries, between 19% and 39% reported that they were prescribed blood pressure control medications, apart from Russia where the proportion was 69%.

The majority of respondents with diabetes reported having been prescribed medications to control their blood sugar level (over 70% in all countries). The majority also reported following a special diet for diabetes; 58% in India and Mexico, and over two-thirds in China, Ghana, South Africa and Russia.

There were large variations across countries in women's breast and cervical cancer screening.

Table 5. Healthcare access domain indicators in SAGE countries.

	China	India	Ghana	Mexico	South Africa	Russia
Received healthcare last time when needed	95.2 ^a	98.0 ^C	91.5 ^C	99.1 ^C	98.9	95.0 ^C
Cost was a barrier to getting healthcare (%)	23.3 ^a	34.8 ^a	46.6 ^C	40.4	0.4 ^C	1.5 ^C
Outpatient						
Any outpatient visits in the past 12 months (%)	60.2 ^a	87.4 ^C	65.2 ^{aC}	40.5 ^C	61.9	67.2
Number of outpatient visits in the past 12 months	2.5 ^a	2.9	1.7 ^{aC}	2.1	3.1	2.2
How long it took you to get to the clinic (% > 1 h)	2.6 ^a	9.1 ^C	7.7 ^C	5.7 ^C	5.5 ^C	3.6
Inpatient						
Any hospital stays in the past three years (%)	22.2	14.5 ^C	9.7 ^C	13.6 ^C	11.6 ^{aC}	30.1 ^C
Number of hospital stays in the past 12 months	0.14	0.12	0.09 ^C	0.24	0.11 ^a	0.21
How long it took you to get to the hospital (% > 1 h)	7	36.8 ^{aC}	19.2 ^C	27.0 ^C	11.3 ^C	5.5

C: significantly different from China ($p < 0.05$).

^aAffluent respondents fared better than deprived respondents.

Table 6. Patient-centredness domain indicators in SAGE countries.

	China	India	Ghana	Mexico	South Africa	Russia
Outpatient						
Prompt attention	73.1	69.9 ^{aC}	67.3 ^C	72.9	58.2 ^{aC}	60.7 ^C
Respect	74.3	72.7 ^{aC}	76.5 ^{aC}	79.1 ^C	70.7 ^{aC}	71.6
Clarity of communication	72.5	72.5 ^a	71.6	76.9 ^C	70.4 ^a	69.2
Involvement in decision-making	71.6 ^a	71.6 ^a	67.9	74.8	66.4 ^{aC}	66.1 ^{aC}
Confidentiality	71.6 ^a	71.6 ^{aC}	75.2 ^a	77.0	71.3 ^a	68.9 ^C
Choice of provider	73.5	72.9 ^a	67.9 ^C	76.5	69.1 ^{aC}	68.7 ^C
Facility cleanliness	72.4 ^a	74.2 ^{aC}	79.3 ^{aC}	81.0 ^C	75.1 ^{aC}	68.5 ^C
Satisfaction	73.7	72.4 ^a	79.6 ^C	78.5 ^{aC}	76.4 ^C	71.9
Condition improved	77.7	75.0 ^{aC}	76.5	73.5 ^C	74.4 ^{aC}	70.0 ^C
Outcome expected ^b	90.5 ^a	87.2 ^C	86.1 ^C	92.5	85.2 ^C	88.8 ^a
Inpatient						
Prompt attention	71.9	69.7 ^{aC}	67.5	76.9 ^C	68.6 ^a	63.8 ^C
Respect	72.6	73.6 ^a	77.5 ^C	74.4	73.4 ^a	71.6
Clarity of communication	69.6	73.0 ^a	73.8	74.0	65.3 ^a	66.7 ^C

(continued)

Table 6. Continued.

	China	India	Ghana	Mexico	South Africa	Russia
Involvement in decision-making	71.6 ^a	72.0 ^a	70.3	72.6	69.5 ^a	61.8C
Confidentiality	70.7 ^a	71.2 ^a	77.6C	78.0C	74.1 ^a	67.6C
Choice of provider	71.8	72.4 ^a	67.4	77.9C	71.3 ^a	67.7 ^a
Facility cleanliness	71.6	75.3 ^a C	82.2C	77.1C	75.3C	66.7 ^a C
Satisfaction	71.7	74.4 ^a C	81.7C	82.2C	76.2C	71.0 ^a
Condition improved	80.6	76.8C	79.1	79.2	81.2	75.6C
Outcome expected ^b	88.1	92.1	90.1	86.4	85.6	82.8 ^a

Values are presented on a scale from 0 to 100, with 0 indicating the lowest response and 100 the highest.

C: significantly different from China ($p < 0.05$).

^aAffluent respondents fared better than deprived respondents.

^bPercentage out of 100.

The level of cervical cancer screening coverage ranged from 1% in India to 72% in Russia and breast cancer screening coverage ranged from a low of 1% and 2% in India and Ghana to a high of 43% in Mexico.

There were evident differences within each country's performance across indicators, particularly in prescription of medication to those with known hypertension, eye examination, and breast and cervical cancer screening.

Cost domain

The percentage of inpatient and outpatient visits that were free of charge differed greatly, with less than 10% of respondents in China and India reporting that their last inpatient or outpatient healthcare visit was free (Table 4). For outpatient care, the highest proportion of spending reported in most countries was on medicines, with the exception of South Africa where providers accounted for the highest proportion of spending (50%).

For inpatient care, the highest proportion of out-of-pocket spending was spent on provider fees (Mexico and South Africa) or medicines (China, India and Russia). Spending on tests in the inpatient setting, as in the outpatient setting, was at similar levels across the six countries, accounting for less than 20% of spending.

Access domain

More than 90% of respondents reported receiving care when it was needed (Table 5); however, there were disparities in this indicator in China, with the most deprived populations in China less likely to

report receiving healthcare whenever needed compared to affluent populations.

Respondents reporting that cost was a barrier to care ranged from low levels in South Africa and Russia (less than 2%) to higher levels in India (35%), Mexico (40%) and Ghana (47%).

The average number of outpatient visits in the past 12 months across countries ranged from 1.7 visits in Ghana to 3.1 visits in South Africa. The average number of inpatient stays in the past 12 months was similar across countries, ranging from 0.09 in Ghana to 0.24 in Mexico.

In the inpatient setting, respondents from India were most likely to report it took them more than an hour to reach the hospital. Only 5% and 7% of respondents from Russia and China reported it took them more than an hour to reach a hospital, compared to 37% in India. Similarly, in the outpatient setting, 9% of respondents from India reported it took them more than an hour to travel to clinic; this was higher than the proportion of respondents in the other five countries.

Patient-centredness domain

Scores for the patient-centredness indicators were similar across the six countries surveyed (Table 6). The lowest score ranges across the six countries were reported for inpatient involvement in decision-making (score range 62–73) and outpatient promptness of attention (score range 58–73). The highest range of scores reported across countries was for outcome as expected, both in the inpatient (score range 82–92) and outpatient (score range 86–93) settings.

In both the inpatient and outpatient settings, Mexico had the greatest proportion of high scores

(highest score for six of 10 inpatient indicators and seven of 10 outpatient indicators). Russia lagged behind in achievement on most of the patient-centredness indicators.

There was a high degree of disparities across the patient-centredness indicators, particularly in India and South Africa. In India and South Africa, for the majority of indicators for both the inpatient and outpatient settings the most deprived populations reported lower scores compared to affluent populations. The number of indicators demonstrating within country differences in responses between affluent and deprived populations was lowest in Russia (six of 20 indicators) and Mexico (one indicator).

Discussion

Principal findings

Using a large, nationally representative dataset, this study presents a snapshot of health system performance across six middle-income countries, which together account for more than half of the world's population. We found shortcomings in several indicators, particularly in the effectiveness, cost and equity domains. Many of these shortcomings are experienced by high-income countries as well; for example, cervical cancer screening rates continue to be low in many Organization for Economic Cooperation and Development countries.¹⁴

Across the six countries, for most indicators within the effectiveness domain performance against indicators did not surpass 80%. For instance, less than 38% of respondents from all countries surveyed, with the exception of Russia, had been prescribed hypertension medication in the past 12 months. Performance in key preventive interventions such as cervical screening was also strikingly low, particularly in India and Ghana. This is consistent with findings from other studies using household survey data.^{11,15} This low performance could be attributed to a variety of factors, including stigma, lack of knowledge about cancer screening programs, or lack of resources allocated to preventive programmes.^{16–18}

Reducing out-of-pocket payments can improve financial affordability of services, which is considered a core dimension of universal health coverage.¹⁹ Within the cost indicators, spending on medicines appeared to be a key factor in out-of-pocket spending across the countries surveyed. In all but one of the countries, the highest proportion of out-of-pocket spending for outpatient care was on medicines. This could negatively impact the management of chronic conditions that require medical treatment, such as hypertension.²⁰ In Ghana for instance, only 19% of

respondents with known hypertension were prescribed medications and almost half of the respondents experienced cost as a barrier to accessing healthcare. Barriers to affordability of secondary prevention medicines in India have been similarly documented elsewhere.²¹

We found that Russia lagged behind in almost all indicators in the patient centredness domain, behind even countries with lower GDP per capita such as Ghana. This is consistent with existing knowledge of user views of the Russian health system. A public opinion survey conducted in Russia in 2008, for example, found that more than 58% of respondents were not satisfied with the health system.²² Dissatisfaction with the health system could impact healthcare access and utilisation. Goepfel et al.,²³ for example, found that individuals were less likely to seek care if they were not satisfied with their health system.

Differences indicating within country disparities were evident across many of the indicators assessed. In the effectiveness domain, all countries displayed disparities in responses for at least two of the 11 indicators. For example, in Ghana we found within country differences between poor and affluent groups having been prescribed medications for the control of hypertension, being on a special diet/weight control for diabetes control and having had an eye examination within the previous three years. Other national surveys conducted in Ghana have also found that richer households had better access to medicines for chronic conditions.²⁰ In the cost domain, all countries apart from China displayed disparities in responses for one indicator within inpatient or outpatient care. In the healthcare access domain, China, India, Ghana and South Africa all displayed disparities in responses, with China displaying disparities for the highest number of indicators within the domain (four of eight indicators). Finally, in the patient-centredness domain, all countries displayed disparities in responses across the indicators, with the highest number of disparities in indicators displayed in India and the lowest number in Mexico.

Strengths and limitations

This is one of the few studies assessing health system performance broadly across multiple middle-income countries, using a standardised survey, and conducted in a similar time frame. However, this study faces similar challenges to other health system comparison studies, including the reliability, accuracy, and validity of indicators assessed, as many of the indicators assessed were based on self-reported data.

To ensure a comprehensive overview of the health system, it is essential to consider the indicators assessed here in conjunction with other indicators

that are not captured in the SAGE data. Many key healthcare quality indicators, such as waiting times and operation outcomes were not included in the SAGE data. Further, our analyses did not take into consideration the extent to which differences in population expectations, norms and culture characteristics between countries may influence respondent ratings of performance.²⁴ Finally, indicators presented within the access domain may also reflect utilisation of services rather than access alone.

In assessing health system performance, we used the Arah framework, which is frequently used to review the performance of high- and middle-income countries. For example, the Organization for Economic Cooperation and Development 'Health at a Glance' report uses this framework to assess health systems, including for SAGE countries such as India.²⁵ The framework acknowledges that the health system is one determinant of health and other tiers in the model can be used to compare performance across countries; this likewise requires standardised data collected with similar methodology across countries, such as the SAGE data.²⁶

We focused in this study on health system performance using data for adults aged 50 years and older, reflecting the challenges faced across middle-income countries in addressing the health needs of aging populations and non-communicable and chronic care needs. However, continued assessment of health systems will require multiple data sources and comparisons across the life-course, and health system performance in early life may impact the needs of adults later in life; however, we did not explore such an effect in our study. A study using the SAGE and climate research data from India found that exposure to climate shocks in early life was associated with higher risk in adults of developing hypertension later in their life.²⁷

It is also worth noting that the six countries studied here are at different stages of economic development, and in their sociodemographic and epidemiological pictures. Therefore, caution must be applied in directly attributing the comparative findings for a specific indicator to specific policies in the respective country. As the countries assessed were classed as middle-income countries as of 2010, the findings may be less directly applicable to countries in different stages of economic development.

Nevertheless, the results of our study highlight potential issues and focus areas for continued investigation across low- and middle-income countries, to explore why some areas of the health system perform better in certain countries than others, and make this knowledge available to inform policy and action. Data used in this study have been collected between

2007 and 2010. With the collection of the next wave of SAGE data currently underway, an assessment of the comparative performance of the six health systems for which survey data are currently available provides a useful dashboard of performance within and between countries.

Implication for policy-makers

With many countries around the world embarking on health system reforms to achieve universal health coverage, it is vital that health system performance assessment continues to be an integral part of health system strengthening.³ Concerted efforts are needed to collect data on a wide array of indicators. One example of such an effort is the Primary Health Care Performance Initiative that brings together a consortium of policy-makers and health system managers to develop better measurement tools to drive improvement in primary healthcare systems.²⁸

Conclusion

Health system performance comparison should be conducted using comparable frameworks, tools and metrics in countries with similar socioeconomic, demographic and epidemiological profiles, enabling results to be used for policy action and continuous shared learning.^{29,30} Assessment of health system is multidimensional, and multiple sources are needed to provide a comprehensive picture of health system performance.²⁶

Our findings suggest common problems and areas for focus across middle-income countries, as well as health system performance challenges that are unique to particular countries. India and Ghana are facing particular challenges in achieving high coverage of preventative measures such as cervical screening. Improving service coverage for low-income populations within India and Ghana may improve outcomes while also reducing inequalities.³¹ To achieve better health outcomes at a lower cost, interventions that are feasible and cost-effective should also be prioritised for action.³²

Declarations

Competing Interests: None declared.

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