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Progress in maternal and child health: how has South Asia fared?

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Progress in maternal and child health: how has South Asia fared?

Although maternal and child health has improved over the past decade, much remains to be done. **Nadia Akseer and colleagues** highlight the deficiencies and how to ensure progress

In our review of the state of maternal and child health in South Asia published in *The BMJ* 12 years ago,¹ we highlighted rampant poverty, malnutrition, and lack of female empowerment as key barriers to change. Since then, the region has seen much focus on the millennium development goals related to maternal and child health as well as economic development. This article explores the progress and current state of reproductive, maternal, newborn and child health throughout South Asia, and presents a snapshot of the regions' preparedness for the sustainable development goals.²

Methods and data sources

Our analysis focuses on countries that are active members of the South Asian Association for Regional Cooperation: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. We used national and global data sources to assess maternal mortality,³ child mortality,⁴ and stillbirths⁵ as well as causes of death.⁶⁻⁸

We calculated coverage rates for interventions and health indicators for mothers, infants, and children in South Asia from UN, World Bank, and WHO sources.⁸⁻¹³ Full definitions of the variables and details of the methods are provided in the appendix on [bmj.com](#).

Mortality trends and causes of death

Globally, maternal mortality ratio dropped from 385 to 216 deaths per 100 000 live births from, 1990 to 2015, a 44% reduction.³ Never-

theless, around 303 000 mothers die every year, about 22% of whom are in South Asia, with India accounting for the bulk of these deaths. Maternal mortality fell substantially in all South Asian countries during this period (ranging from a 59% reduction in Pakistan and Sri Lanka to 90% in the Maldives), with an overall reduction of 68% (fig 1). Afghanistan had the highest maternal mortality ratio in the region in 1990 (1340/100 000 births) and still had the highest ratio in 2015 despite a 70% fall. The main causes of maternal death vary across South Asia (appendix), though maternal haemorrhage, hypertensive disorders, obstructed labour and uterine rupture, and abortion, miscarriage, or ectopic pregnancy are leading causes in many countries.

Mortality among children under 5 years reduced by about half from 1990 to 2015 (91 to 43 deaths per 1000 live births) across the world and by 60% in South Asia (from 129/1000 to 53/1000).⁴ Of the 5.9 million children under 5 who died in 2015, almost 1.9 million (31%) were in South Asia. Pneumonia and diarrhoea related illness are the two leading preventable causes of child mortality in South Asia (appendix), leading to about half of all child deaths in most countries. Injuries are responsible for at least a further 10%. In Sri Lanka and Maldives congenital anomalies cause a third of child deaths.

Over half (57%) of deaths among children under 5 in South Asia occur in the first 28 days of life; this amounts to more than 1 million newborns dying every year in the region.⁴ Moreover, of the 2.6 million stillbirths that occur globally every year, about 37% (almost 1 million) are in South Asia.⁵ Newborn mortality rates fell from 1990 to 2015; stillbirth rates also fell, although more slowly (appendix). Newborn mortality rates continue to be highest in Pakistan (45.5 deaths per 1000 live births) and Afghanistan (35.5). The main causes of newborn death are fairly consistent across the region, with preterm birth causing about one third of deaths and intrapartum related events; infections, including sepsis and meningitis; and congenital anomalies each contributing about one fifth of deaths (appendix). Some variation exists across countries. Robust data on causes of stillbirths were not available for comparison.

Coverage of essential interventions

We explored a range of evidence based essential interventions for mothers and children that are associated with improved child and maternal survival (see appendix for detailed list). Figure 2 shows the wide differences in coverage across the region. Contraceptive use is about 55% on average and is lowest in Afghanistan (31%) and highest in Sri Lanka and Bhutan (about 70%). About 70% of women have at least one antenatal visit in most countries, reaching almost 100% in Sri Lanka and Bhutan. Coverage drops for four or more antenatal care visits and skilled birth attendance; these interventions have the widest variation across countries, ranging from 23% in Afghanistan to 93% in Sri Lanka. The provision of postnatal care within two days for both the newborn and mother is low in the region (30-40% median) with some variation across countries. Data for Sri Lanka were not available.

Breastfeeding interventions (including early initiation and exclusive breastfeeding for 6 months) have about 50% regional coverage, with a gap of 40% between the highest (Sri Lanka, Bhutan for early initiation;

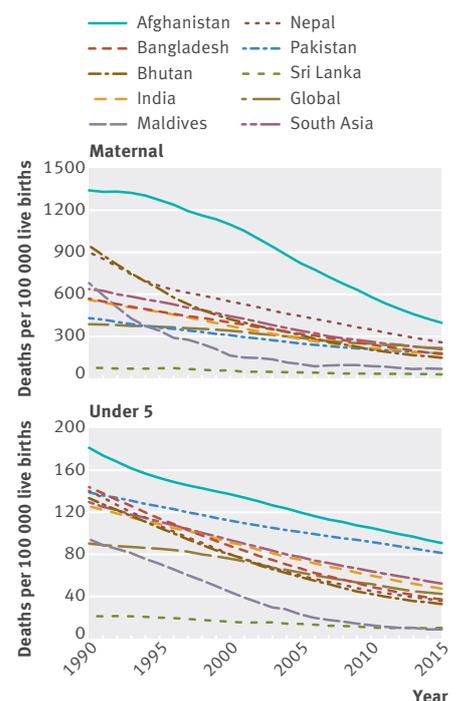


Fig 1 | Mortality trends in South Asian Countries, 1990-2015^{3,4}

KEY MESSAGES

While South Asia has reduced maternal mortality ratio across the region, mortality remains high in many countries including Afghanistan, Pakistan, and Nepal. Despite progress in delivering antenatal care and vaccinations, wide disparities exist across wealth groups and between rural and urban populations in many countries. Social determinants and health systems or policies are important contributors to observed improvement and differentials in the region. Ongoing challenges include conflict or insecurity, malnutrition, encouraging empowerment of girls and women, and supporting better and timely data collection.

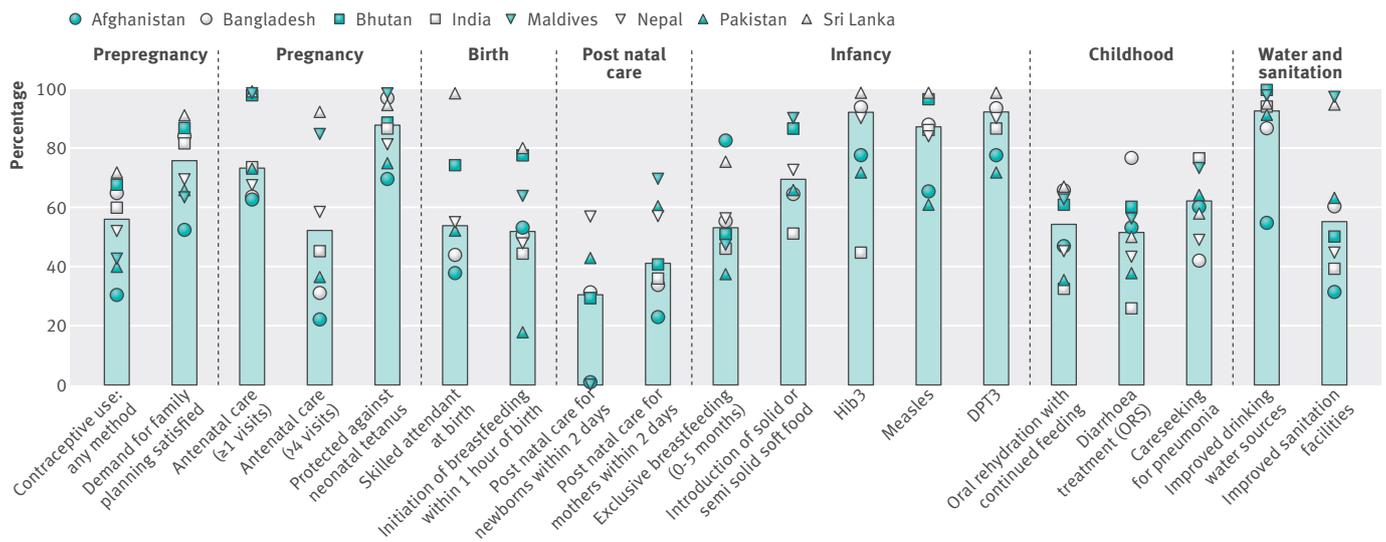


Fig 2 | Coverage of essential interventions in South Asian countries¹⁴

Afghanistan for exclusive breastfeeding) and lowest (Pakistan) countries. The region performs well in the provision of child vaccinations, with about 90% coverage on average for tetanus, Hib3, measles, and DPT3. Country coverage ranges from about 70% to 100%, with Afghanistan and Pakistan amongst the lowest and Sri Lanka consistently the highest.

Access to treatment for children with diarrhoea and pneumonia is moderate in the region (50-60%). Oral rehydration solutions (ORS) and ORS with continued feeding are least used in India and Pakistan, and coverage rates are highest in Bangladesh. Conversely, care seeking for pneumonia is highest in India and Maldives (almost 80% coverage) and lowest in Bangladesh (41%).

Coverage inequalities within countries

We analysed socioeconomic and residence inequalities for two key interventions (skilled birth attendance and measles vaccination) as they represent opposite ends of the continuum of care and diverse delivery strategies (fig 3). Coverage gaps for skilled birth attendance between the richest and poorest quintiles and between urban and rural residents are evident in most countries, with gaps of at least 70% in India, Nepal, and Bhutan. Sri Lanka and Maldives have minimal to no gaps. Inequalities in measles vaccination were greatest for Pakistan, India, and Afghanistan, with lowest coverage rates among the poorest populations and those living in rural areas.

Access to improved water and sanitation

Equitable and sustainable access to safe water and improved sanitation and hygiene can improve outcomes in many ways through its implications for environmental cleanliness, health, reduced poverty, and

equity.¹⁵ About 8% of maternal deaths worldwide are attributable to infections that can be directly linked to unhygienic conditions during labour and to poor hygiene practices in the six weeks after birth.^{16,17} The availability of improved water is almost universal throughout the region except in Afghanistan, where only 55% of the population has access (see appendix on bmj.com).¹⁸ Improved sanitation facilities are less available in the region (about 55% regional

median), varying from 32% in Afghanistan to over 90% in Sri Lanka and Maldives.

Malnutrition

Malnutrition of children and women remains a problem in South Asia (fig 4). Since the early 2000s, the prevalence of under 5 stunting has dropped by about one third in Afghanistan, Bangladesh, India, Nepal, and Maldives. Pakistan, however, experienced an increase over this period

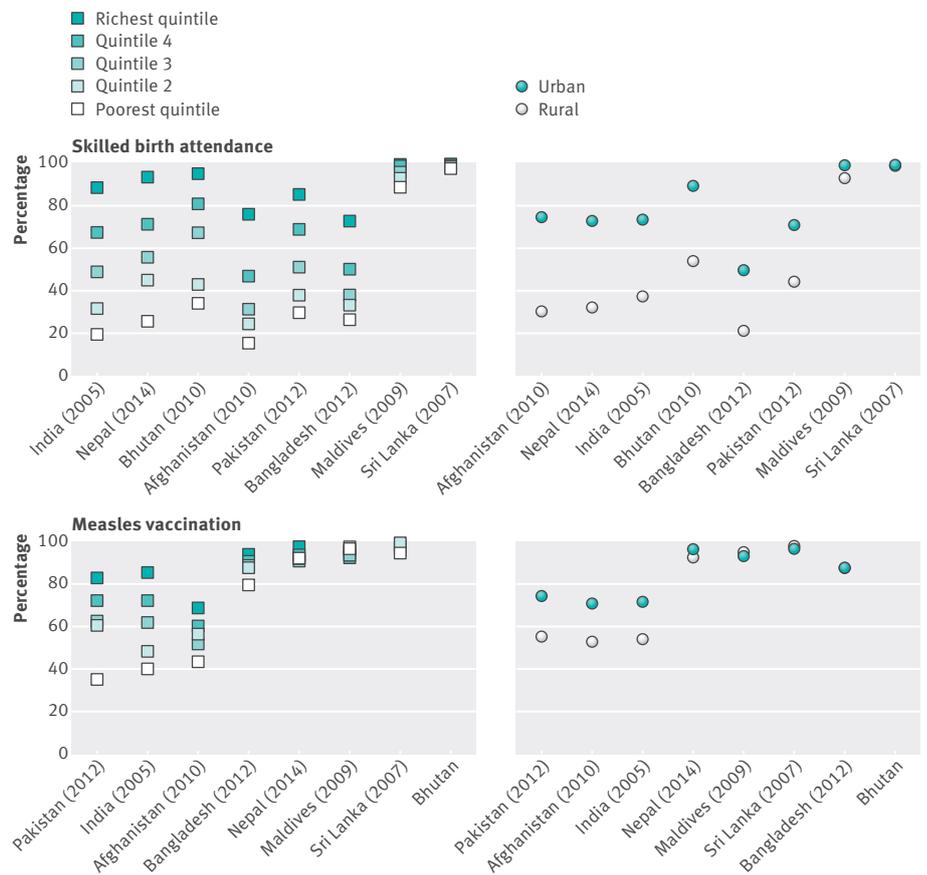


Fig 3 | Inequalities in skilled birth attendance and measles vaccination by country¹⁴

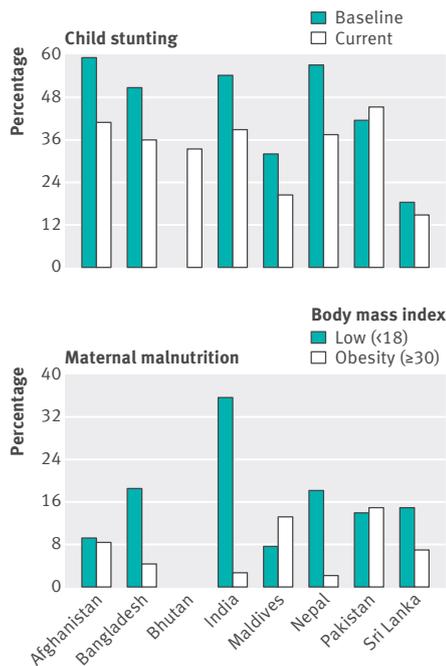


Fig 4 | Malnutrition trends in South Asian countries using latest available data. Baseline figures for stunting relate to earliest available estimate between 1999 and 2004¹⁹

(from 42% to 45%). Despite progress, current levels of stunting are more than 30% in most countries in the region, except Sri Lanka (15%) and Maldives (20%). Currently around a third of children are underweight in most countries except Bhutan (13%) and Maldives (18%) (appendix). Prevalence of wasting has hardly changed over the decade, and currently ranges from 6% in Bhutan to 21% in Sri Lanka.

Both overnutrition and undernutrition are concerns among women age 15-49 years in

South Asia (fig 4). Maternal underweight (defined as body mass index < 18.5) is prevalent in about 36% of women in India—about double that in the next highest countries (Nepal 18% and Bangladesh 19%). Obesity (BMI ≥ 30) is highest in Pakistan (15%) and Maldives (13%).

Empowerment of girls and women

Empowered girls and women are more inclined to seek healthcare when in need and consequently have improved health outcomes and survival. Empowered females are more educated, delay marriage, postpone childbearing, and have fewer and spaced pregnancies, all of which are known to improve maternal and child health.²⁰

All countries in the region have experienced an overall reduction in fertility rates since 2004, ranging between 9% and 36% (table 1). Current fertility rates are highest in Afghanistan and Pakistan. Births among adolescent girls (age 15-19 years) have declined more than 50% in Bhutan, Maldives, and India. Pakistan has made the least progress in reducing fertility among adolescent girls (11% reduction). Average age at first marriage is lowest in Bangladesh (19.2 years), and highest in Sri Lanka (23.6 years). Although most countries have increased the average age of marriage by 2%-7%, Afghanistan had the fastest rate of change over the past decade (from 15.0 years in 2006 to 21.2 years in 2011).

Literacy of women (age ≥ 15 years) is greater than 90% in Sri Lanka (92%) and the Maldives (99%), and about half in other South Asian nations except Afghanistan where only 24% of women are literate. Liter-

acy of young women (age 15-24 years) is >85% in all countries except Pakistan (67%) and Afghanistan (46%).

Investments in health systems

The density of healthcare staff, including physicians, nurses, and midwives, varies widely across the region. South Asia has seen various health system and outreach innovations targeted at marginalised populations with poor access to health services. These have included deployment of community health workers through non-governmental health workers in Bangladesh²¹ to public sector workers such as lady health workers in Pakistan²² or accredited social health activists (ASHA) in India.²³

There have also been large scale experiments with community engagement through women's groups²⁴ as well as financial incentive programmes, both conditional on recipients' health behaviour, such as India's Janani Suraksha Yojana programme supporting facility births,²⁵ and unconditional, such as the income support programme in Pakistan targeting women.²⁶

Table 2 lists the key health initiatives implemented in South Asia during the period of the millennium development goals. Common features of such programmes include adaptation of a basic package of healthcare services and strategies to expand universally, contracting out delivery of healthcare services to non-governmental organisations to enable rapid scale-up, financial incentive programmes or abolishing user fees, and community based healthcare initiatives and training of midwives.

High out-of-pocket health expenditures annually drag about 4% of the population

Table 1 | Indicators of empowerment of women and girls in South Asian countries

Country	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Fertility rate (average births per woman):								
2014	4.8	2.2	2.0	2.4	2.1	2.2	3.6	2.1
2004	7.0	2.8	3.0	3.0	2.4	3.4	4.1	2.3
% change	-30.7	-21.7	-31.6	-20.1	-12.2	-35.2	-12.4	-8.6
Adolescent fertility rate (average births per 1000 women aged 15-19):								
2014	76.7	83.5	22.7	25.7	7.3	72.5	39.2	15.4
2004	134.7	101.1	61.7	54.0	20.1	104.1	44.2	25.7
% change	-43.0	-17.5	-63.2	-52.4	-63.7	-30.4	-11.4	-40.1
Mean age at first marriage:								
Current (year of data)	21.2 (2011)	19.2 (2013)	21.4 (2010)	20.7 (2011)	22.4 (2009)	20.7 (2014)	23.1 (2013)	23.6 (2007)
Baseline (year of data)	15.0 (2006)	18.7 (2004)	21.8 (2005)	20.2 (2006)	22.9 (2006)	19.4 (2006)	22.3 (2003)	NA
% change	41.3	2.7	-1.8	2.5	-2.2	6.7	3.6	—
Female adult literacy rate (% aged ≥ 15):								
2015	23.9	58.3	55.1	63.0	98.9	54.8	42.7	91.7
Baseline (year of data)	NA	NA	38.7 (2005)	50.8 (2006)	98.4 (2006)	NA	35.4 (2005)	89.1 (2006)
% change	—	—	42.4	23.9	0.5	--	20.7	2.9
Literacy rate of young women (% aged 15-24):								
2015	46.1	85.9	90.4	87.3	99.5	87.4	66.8	99.2
Baseline (year of data)	NA	NA	68.0 (2005)	74.4 (2006)	99.4 (2006)	NA	53.1 (2005)	97.9 (2006)
% change	—	—	33.0	17.3	0.1	—	25.8	1.3

NA=not available.

Table 2 | Key health policies and reforms in South Asian countries

Country	Reform	Year started	Focus
Afghanistan	Midwifery training programme	2002	Provided pre-services training to midwife for community care and hospital based care
	Basic package of health services	2004	Basic primary care services including maternal health and family planning
	Contracting of primary health services to NGO	2004	Capitation based (\$3.8 to \$5.1 per capita) contracts with providers through a bidding process
Bangladesh	BRAC Shasthya Shebikas community health workers	1970*	Scaled up to all 64 districts: from 1080 community health workers to 91 000 by 2010
	SWAp	1998*	A shift from project based planning to sector-wide planning, management, and financing.
	Bangladesh national strategy for maternal health	2001	Adopted community based skilled birth attendant to supplement institution based care
	Demand side financing	2007	Maternal health voucher scheme. Current converge in 53 upazilas
Bhutan	Universal access to health services	2008	In the constitution of 2008 health is recognised as human right and as one of the nine domains of gross national happiness.
	Health policy	2012	Pledges universal health access to modern and traditional care, 90% population living within three hours walking distance to a health facility
India	National rural health mission	2004	Integration of vertical reproductive and maternal health programmes and health system strengthening in 18 states
	Janani Suraksha Yojana	2005	Conditional cash transfer to pregnant women
	Accredited Social Health Activist (ASHA)	2006	82 0000 community health workers (ASHA) as of 2012
	Rashtriya Swasthya Bima Yojna	2008	Inpatient (including maternity) coverage for the poor. 41.3 million people covered by 2016
Maldives	Madhana	2008	Publicly funded health insurance scheme initially covering public employees and elderly people
	Aasandha	2012	Universal health coverage (up to Rf 100 000) including treatment in neighbouring countries
Nepal	National safe motherhood plan	2002	Increase the access of poor and marginalised people on the reproductive health services
	Free healthcare policy	2006	Abolishing user fee at public facilities. By 2009 free essential health services including maternity services
	National safe motherhood/ neonatal health plan	2006	Birth preparedness package
	Community based neonatal care package	2007	Piloted in 10 districts and planned to expand to 35 more districts by 2013
Pakistan	Social Action Program I & II	1992/1998	Sector wide approach for primary and secondary healthcare
	National programme for family planning and primary healthcare	1994	Currently over 100 000 lady health workers covering more than 80% of rural population
	People's primary healthcare initiative	2004	Contracting of primary healthcare facilitates to NGOs. Implemented in 75 districts (out of 113)
	Community midwife programm	2005	New cadre of community midwife is introduced
	18 th constitutional amendment	2010	Devolution of health sector to the provinces
	National health insurance scheme	2014	Financial protection from health shocks to the population living below poverty line for inpatient care including maternity services.
Sri Lanka	National maternal and child healthcare program	1965*	Family planning and reproductive health were integrated
	Strategic framework for health development 2004-2015	2003	Health master plans and health development plan were implemented
	National health development plan	2012	World Bank assisted project for outsourcing non-clinical services and other financing reforms

*Key initiatives that were further accelerated after 2000.

into poverty in the three most populous countries of the region: India, Bangladesh, and Pakistan (table 3). Only four countries had data available for spending on maternal and child health. The proportion of total health expenditure was 9.8% in Sri-Lanka, 12% in Bangladesh, 16% in Afghanistan, and 21% in Pakistan.

Discussion

Despite wide variations, South Asia has made impressive progress in maternal and child health over the past decade. In many countries with widespread conflict and grinding poverty, notably Nepal and Afghanistan, these gains are remarkable. Although countries have used different approaches to achieve these reductions, many have involved community based programmes to manage demand and deliver services.

Nepal invested heavily in community based approaches to increase detection of

serious childhood illnesses and management of pneumonia.³⁷ A range of innovative approaches for addressing maternal health and nutrition through women's groups provided some of the first evidence on the role of community empowerment in rural Mawanpur, Nepal.³⁸ Bangladesh also used interventions including community empowerment, investments in education and young women, and national roll-out of community health workers through non-governmental organisations such as BRAC. It was able to rapidly roll-out interventions through a range of community outreach programmes.^{39 40} However, the reductions in maternal mortality in Bangladesh far outstripped the gains in skilled birth attendance coverage and facility births.⁴¹ The innovative deployment of public sector community health workers in Pakistan,⁴² as well as India,⁴³ suggest that such strategies could be deployed at scale.

Similarly, reductions in child mortality (and especially from diarrhoeal diseases) have been notable, but while there have been major gains in use of oral rehydration therapy, care seeking for childhood pneumonia is low and rates of childhood undernutrition are still high.⁴⁴ Investments in social determinants and non-health sectors such as education, especially girls' education and female empowerment to reduce early marriages and high fertility rates, as well as effective communication strategies are likely to be especially important to improve and sustain gains in maternal and child health.

In war ravaged Afghanistan, because of the shortage of skilled public sector workers, the government adopted contracted non-governmental organisations to provide a basic package of primary care services.⁴⁵ Although the transaction costs were relatively high, there were limited

Table 3 | Healthcare financing overview in South Asian Countries (best recent estimate)²⁷⁻³⁶

	India	Bangladesh	Pakistan	Afghanistan	Sri-Lanka	Nepal	Bhutan	Maldives
Health expenditure as % of GDP	4.0	3.5	3.0	8.0	3.2	5.3	3.7	9.2
Per capita health expenditure (\$)	59	27	40	56	97	25	107	561
Government health expenditure as % total health expenditure (%)	28.6	23.0	32.1	5.6	55.0	21.0	71.0	44.0
Out-of-pocket payments as % total health expenditure	64.2	63.0	60.4	73.3	37.9	54.8	11.0	49.0
Child and maternal health as % total health expenditure	—	12.0	21.0	16.0	9.8	—	—	—
% from official development assistance	0.3	8.3	7.0	20.8	1.5	18.9	18.0	3.0
% of population impoverished because of out-of-pocket health payments	3.7	3.8	3.8	—	0.3	3.0	—	—
% of population with out-of-pocket health expenditure > 25% of total expenditure	1.8	4.5	5.0	—	0.5	1.2	—	—

Source: National health accounts for India (2013-14), Bangladesh (2012), Pakistan (2013-14), Sri Lanka (2013), Afghanistan (2011-12), Maldives (2011), Nepal (2008-09), Bhutan (2009-10). Doorslaer et al (2006) for impoverishment impact of OOP health payments (except Pakistan Malik, 2016) and Doorslaer (2007) for OOP health payments exceeding 25% of the household total expenditure

alternatives and the model allowed for rapid population coverage in difficult to reach rural populations.

High rates of newborn mortality and intra-partum stillbirths are a major challenge across the region, and are associated with poor quality of care in both community and facility settings.⁴⁶ Further reductions in under 5 mortality will require action on the dual challenge of improving care during pregnancy and childbirth in community settings and facilitation of facility births, as well as improving care of newborns in referral facilities. Pakistan invested in a major national programme of primary care using “lady health workers,” who now number over 100 000 and cover almost two thirds of the rural population,⁴⁷ and India has also introduced a major public sector programme of community based health workers. Evidence shows that there is considerable opportunity for innovations in facilitating the work of frontline workers to improve mother and child health.^{22 43 48 49} In other regions of South Asia where there have been relatively rapid gains, we need to invest in strategies to improve the quality of care in referral facilities, especially those responsible for secondary care.

Major challenges remain. The rapid growth of urban slums—often home to over a third of the population of megacities—poses huge challenges to effective care and governance. These and other marginalised populations, including indigenous groups and those relegated on the basis of ethnicity, religion, or caste systems, will require innovative targeting to reduce inequities. Furthermore, reaching the poorest and remote populations in countries where care is focused on rich and urban populations such as Afghanistan and Pakistan, is critical. Recent reviews have highlighted innovative strategies for reducing such inequities to improve maternal and child health.⁵⁰

Finally, the state and international partners must support and protect women and children who are at risk of gender based violence, lack of economic security, and

physical immobility. High rates of maternal and adolescent malnutrition remain tenacious underlying risk factors for ill health and mortality in the region. Direct policies and initiatives to improve nutrition of all populations are critical for health gains in South Asia. Low rates of breastfeeding and complementary feeding are a concern and should be prioritised for large scale intervention. Quality and timely data are vital for effective monitoring, evaluation, and rapid feedback. Countries should focus on efforts to enhance administrative databases, health management information systems, birth and death registries, and national surveys on health and wellbeing to track progress towards the sustainable development goals.

South Asia comprises a substantial chunk of the global population and contains some of the highest maternal and child mortality rates worldwide. Gains over the past decade provide evidence that progress is possible, but much more can be done with focus on scaling up evidence based interventions and addressing barriers as key investments in reaching the sustainable development goals.

Contributors and sources: This consortium of authors have diverse subject expertise related to maternal, newborn and child health among countries in the region. Drs Bhutta, Arifeen and Nadia Akseer have undertaken Countdown country case studies in the region. The review was conceived in a planning meeting for the special South Asia collection in Dubai in January 2016.

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