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Health, Health-System and Economic Development: A South Asian Perspective

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Abstract

This study investigates the linkages between health and economic development focusing the seven South Asian (SA) countries for the period of 2000-15. Firstly, a situation analysis of major health indicators indicates that SA countries are advancing well in life expectancy, mortality and fertility rate while the burden of diseases is shifting from infectious diseases to noncommunicable diseases. The study finds that private sources mainly out of pocket health expenditure dominates the total spending on health care. Using the linear regression method, the research also finds that health expenditure growth is positively correlated with Nominal GDP growth in this region. This study also discusses the health facility situations and finds that health workforce deficiency challenge is critical in SA countries. This research also recommends that closing gaps in primary care, strengthening accessibility of health care and making progress in health determinants are necessary to expand Universal Health Coverage (UHC) in the SA region. Finally, the study has listed the major policy interventions in the SA countries and highlighted a couple of areas to be addressed for health sector advancement.

Key words: Health system, south asia, Health, economic development

Introduction

Relationship between health care expenditure (HE) and gross domestic product (GDP) varies globally with national income level across time. Investment in health sector is instrumental for economic development of all countries[3]. WHO report (2010) shows that the economic growth rate increased by 0.35% per year for every increase in life expectancy at birth by 10%. Commonly, high-income countries have more per capita HE, which also indicates that the rapid economic growth may stimulate national health care spending growth[8,16]. Likewise, share of HE in GDP varies from country to country based on their development status. HE has also been credited for extended life expectancy at birth (LEB) and reducing infant mortality since people tend to pay more attention to quality of life with rapid economic development[17,19]. LEB is a key determinant of health status and economic growth of a country. There are multiple channels through which economic growth affects life expectancy. Besides HE, socio economic and environmental factors are identified as possible determinants of life expectancy. Improved sanitation and clean water availability have strong correlation with life expectancy too[4,11,12,18].

South Asia is home to a quarter of the world population[21]. Economy of this region which adopted globalization, liberalization and macro-economic

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reforms in last couple of decades, is one of the fastest growing economy in the world. Though, South Asian economy showed strong GDP growth from 6.2 percent to 7.5 percent between 2013 and 2016, GDP growth of Pakistan, Sri Lanka and Nepal was below 5 percent in 2016. Like other diversities in terms of size, population, social and political structure, cross-country variations in productivity and growth levels in economy are also evident in this region. Despite rapid economic growth of this region, 31 percent of the population are deprived of more than one dimension such as health, education and living standards. Health disparities are increasing significantly in SA region due to rapid but inequitable socioeconomic development, different pace and patterns of demographic and epidemiological transitions[2,14]. Rapid economic growth of South Asia has also been attributed to air pollution which is contributing to between 13% and 21.7% of all deaths through chronic and acute respiratory and cardiovascular illness[15].

There is a strand of literature focusing the health outcome and health expenditure in the OECD and African regions[5,6,7,9]. Comparatively research on the similar issue is few for SA countries[19]. Moreover, the studies on SA countries does not provide a complete diagnostics covering health indicators, health financing, economic development, health facilities and health policies altogether. The major motivation of this study is to fill up this research gap by presenting an all-encompassing picture of SA by exploiting the latest health data.

Cross country studies on health system help to understand progress of each country against health system targets, to identify variations among countries and to review policies and programs. Countries with differences and similarities can learn from each other from this kind of comparative researches, in order to seize and spread good practices in health system. Therefore, Comparing the health status of the populations, identifying health workforce challenges, bridging between HE growth and GDP growth and understanding influences of socio-economic and environmental factors on life expectancy are crucial for the policy makers to implement evidence-based policies and interventions in health care system. Though, the health challenges are similar in nature in this region, it is less clear whether there are differences among SA countries in their health care system determinants and health policies which this study attempts to address.

This paper examines the trend in health status of six SA countries i.e. Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka over the time from 2000 to 2015. Afghanistan was not included in these analyses since this country joined SA in 2007. In this research, health financing and health facilities including health workforce across the countries have also been analyzed. This paper scrutinizes relationship between health expenditure growth (HEG) and GDP growth using linear regression model too. Recent health policies of these countries are being assessed to identify the similarities and differences in their pursuit of health policies.

Methodology

This study exploits the secondary data on both health finance and health indicators of the seven South Asian countries collected from World Bank's data portal, World Development Indicators(WDI). The longitudinal availability of the data for the time period of 2000-2015 has been transformed into infographics, preferably different types of bar and line diagrams to present the cross country comparison. The analysis has been extended to simple linear regression to grasp the relation between health expenditure and nominal GDP growth in all the mentioned countries. Translating the quantitative indicators in policy implication for the SA countries is an important dimension of the paper.

Results

1.0 Situation Analysis Major Health Indicators and Diseases

Life Expectancy:

Life expectancy at birth and mortality rate are two most critical demographic determinants used to monitor progress in the health of various populations. LEB has increased steadily for last 15 years (2000-2015) in all SA countries while Maldives, Bhutan, Nepal and Bangladesh show the fastest increase in LEB among these countries. Least improvement in LEB is observed in Pakistan while Maldives possess the highest increase in LEB in this region.

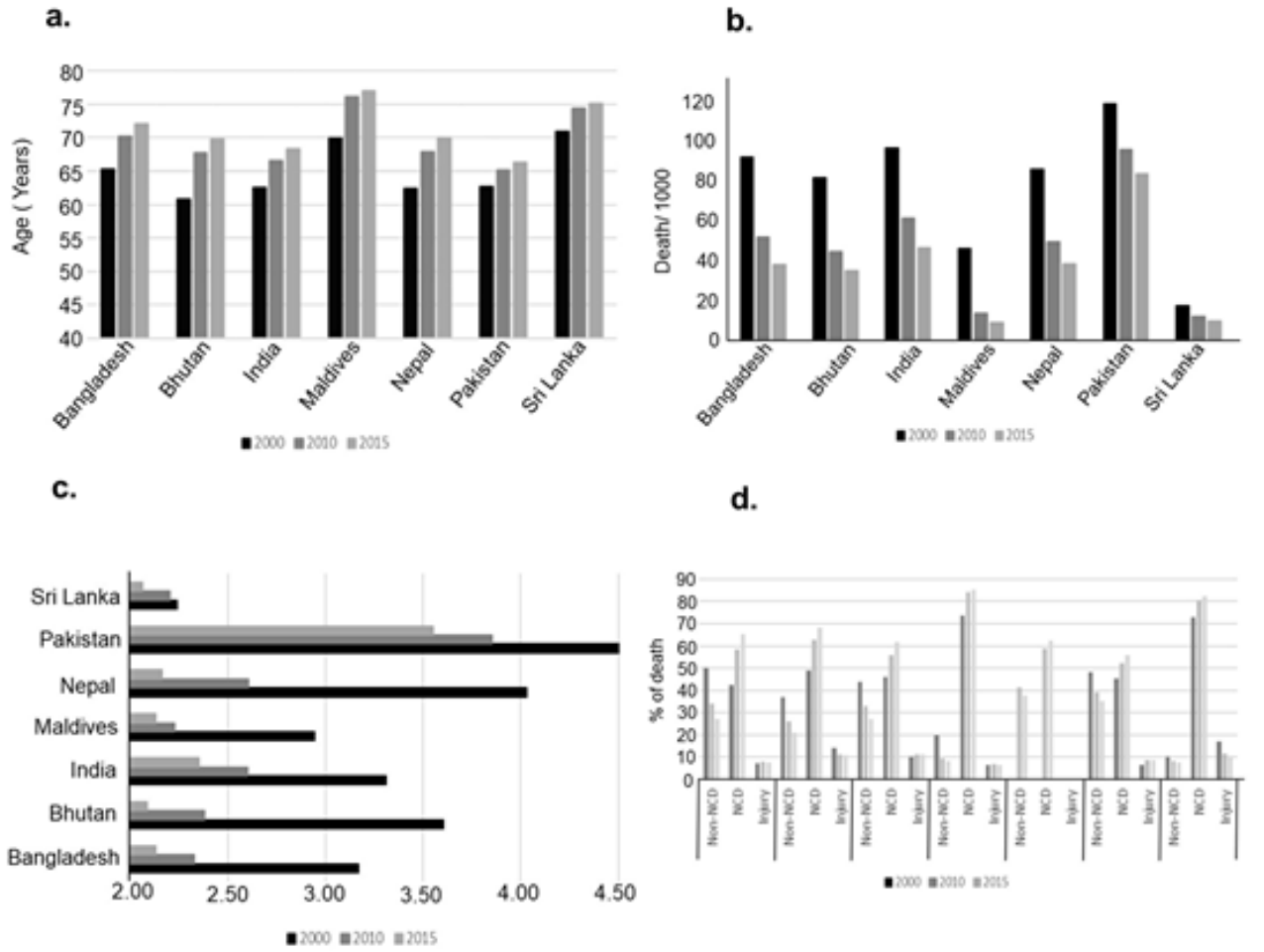

Fig 1. Major health indicators and diseases in South east asia. a. Trends of Life Expectancy at Birth (LEB) in SA countries, 2000-2015. b. Trends of Mortality under 5 years per 1000 live births in SA countries, 2000-2015. c. Trends of Fertility Rate (births per woman) in SA countries, 2000-2015. d. Shift from communicable diseases to NCDs in SA countries, 2000-2015

Life expectancy at birth (LEB) increases in SA region as death toll falls:

LEB of Pakistan, Nepal, India and Bhutan was below 65y (y=years) in 2000. Bangladesh marginally crossed the land mark of 65y in 2000. Bhutan, Nepal and Maldives improved their LEB by 9y,7.5y and 7.1y respectively from 2000 to 2015 while the LEB of other countries like Bangladesh and India increased by 6.8y and 5.7y respectively. LEB of Pakistan showed smallest gains (3.6y) over the same time period among these seven countries. Sri Lanka gained only 4.1y over these time period, though, this country has the second highest LEB (75.1y) in 2015. However, the average LEB of SA countries rose by 6.3y over the period between 2000 and 2015(Fig1a).

Mortality Rate:

Mortality under-five strongly influences the changes in LEB over time in the population. The overall mortality rate of children under-five of SA countries has significantly improved by declining 51.4 percent from 73.0 under-five deaths per 1,000 in 2000 to 37.6 in 2015. Mortality under-five was considerably low in Maldives (8.8/1,000) and Sri Lanka (9.5/1,000) in 2015, dropped by 79.9 and 42.4 percent from 2000 to 2015 respectively. Under-five mortality rate has declined by more than half in Bangladesh (58.4%), Bhutan (57.0%), Nepal (55.1%) and India (51.9%) between 2000 and 2015.Though the mortality rate under-five of Pakistan decreased by 29 percent from 2000 to 2015, still this country holds the highest mortality rate (79.5/1,000) in this region in 2015(Fig1b).

Fertility Rate:

Fertility rate(FR), births per women declines in SA region during the time period 2000-2015(Fig.1C). Among all SA countries, the lowest FR was registered in Sri Lanka (2.2) followed by Maldives (2.9) in 2000. The highest FR was in Pakistan (4.6) followed by Nepal (4), Bhutan (3.6), India(3.3), and Bangladesh(3.1). FR declined in Sri Lanka and Maldives to 7.9% and 27.6% over the 2000-2015 respectively. FR fell significantly in Nepal(46.4%) and Bhutan(41.1%) tailed by Bangladesh (32.7%) and India (29%) during this time period(fig.1c).

The burden of diseases is shifting from infectious diseases to noncommunicable diseases in SA countries:

Total disease burden of each country is disaggregated across three main categories: Non-communicable disease, communicable disease and injuries. Communicable disease category includes all death by infectious diseases,maternal, prenatal and nutrition diseases. At the SA regional level, in 2015 more than 69 percent (69.8%) of death burden results from NCD which is 14.9 percent points more than that of 2000.Injuries held the least share 9.1 percent in 2015 which was just over 10 percent in 2000. Only the death by injuries decreased by 7 percent points in Sri Lanka among these countries from 2000 to 2015. This shift in death burden towards NCDs since 2000 resulted from a significant reduction in communicable and preventable diseases. Death burden of NCD was higher in Maldives and Srilanka than other SA countries while the shifting of death burden from communicable to non-communicable was the highest in Bangldesh(fig1. d).

Since 2000, NCD imposed the largest death burden in Maldives and Sri Lanka. NCD deaths accounted for a massive 73.6 percent and 72.9 percent of all deaths in Maldives and Sri Lanka in 2000 which increased by 11.6 and 9.6 percent points in 2015 respectively. Though, NCDs account for less than 50 percent of total death burden in rest of the SA countries in 2000, it increased by 22.8 percent point in Bangladesh, 19.4 percent point in Bhutan, 15.6 percent point in India and 10.5 percent point in Pakistan in 2015. Share of death due to communicable diseases decreased in Bangladesh,India, Bhutan and Pakistan by 23, 16.8,16 and 12.8 percent points respectively from 2000 to 2015. Data from Nepal was not available for 2000, therefore, could not incorporate in the analysis (fig1.d)

2.0 Health Expenditure: Composition and Trend

Private sources chiefly out of pocket health expenditure dominates the total spending on health care:

Health care expenditure is significantly correlated with life expectancy and mortality of different populations (Jaba, 2014). Globally, most of the countries experienced steady increase of longevity and decrease of children under five mortality rate accompanied with a growth of the health expenditure.

The average capital health expenditure (CHE) of five SA countries was 0.6 in 2000 (% of GDP) which decreased by 0.3 percent points in 2014. Nepal and Pakistan were excluded from this analysis since data were not available in the data source. Among these countries, CHE of Bhutan was the highest while the lowest CHE was documented in Bangladesh (0.2) in 2014.

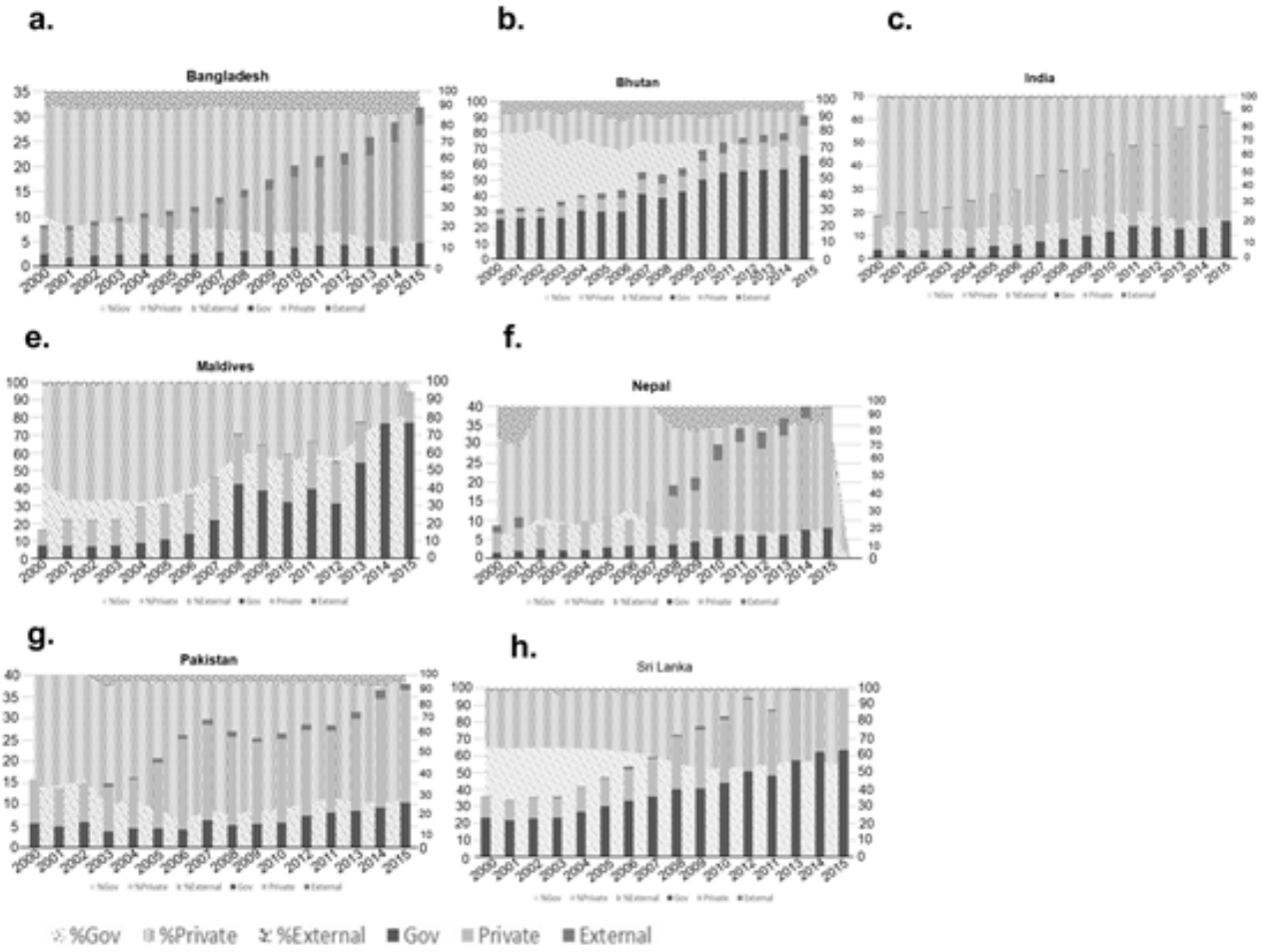

Fig 2. Composition of total Health Expenditure per capita across the SA countries, 2000-2015. Primary axis represents amount of health expenditure per capita by US$ while secondary axis represent the composition of health expenditure in percentage

Compared to other SA countries, total health expenditure (THE) per capita was significantly higher in Maldives (943.9 $), Sri Lanka (117.9$) and Bhutan (91.1$) in 2015. On average rest of the countries spent only 44 $ per capita on health. The lowest per capita spender on health of this region is Bangladesh with 32 $ followed by Pakistan (37.9$), Nepal (44.4$) and India (63.3$) in 2015. However, THE per capita increased by 780$, 81.8$,59.3$,44.8$, 35.8$,22.1$ and 8$ in Maldives, Sri Lanka, Bhutan, India, Nepal, Pakistan and Bangladesh respectively from 2000 to 2015.

The private health expenditure (PHE) per capita which includes funds from households, corporations and non-profit organizations shares the foremost part of Total health expenditure per capita in SA except Maldives, Bhutan and Sri Lanka since 2000. PHE per capita accounted for 63 percent in 2000 which increased 11 percent points in 2015 in Bangladesh, the highest in this region. PHE per capita increased by 10.5, 8.9, 8.4 and 4.2 percent points in Sri Lanka, Bhutan, Nepal and Pakistan respectively from 2000 to 2015. Share of PHE per capita in THE decreased in Maldives and India by 34.6 and 3.1 percent points from 2000 to 2015 respectively.

Share of government health expenditure (GHE) per capita decreased by 14, 11.4, 7.9 and 7.8 percent points in Bangladesh, Sri Lanka, Pakistan and Bhutan respectively from 2000 to 2015. On the contrary, government contribution shared 81.6,72.1 and 53.7 percent of THE in Maldives, Bhutan and Sri Lanka respectively in 2015 which is significantly higher than

other SA countries. Contribution of external health expenditure per capita which comprises of direct foreign transfers and foreign transfers distributed by government decreased in all SA countries except Bangladesh from 2000 to 2015. External sources were negligible with 0.39, 0.9 and 1.1 percent in Maldives, India and Sri Lanka respectively in 2015. External share per capita dropped by 11 percent points from 2000 to 2015, which is the highest in all these countries in Bangladesh contribution of external sources increased gradually by 3 percent points from 2000 to 2015 (Fig.2).

3.0 Health Expenditure and GDP

Health Expenditure growth is positively correlated with Nominal GDP Growth in SA countrie

The examination of the percentage point differences between Health expenditure growth and nominal GDP growth is performed by plotting the nominal GDP growth (%) in the horizontal axis and HEG (%) in the vertical axis from cross sectional data of SA countries. The analysis was performed for every SA country separately with the continuous data from 2000 to 2016 to observe the relationship between nominal GDP growth and HEG over time. All countries of this region show positive correlation between nominal GDP growth and HEG, so that the fitted regression lines also yielded a positive sloped line. A highest significant positive correlation between nominal GDP growth and HEG is observed where the model explains 40 percent of variation within the data. Positive relationship remains significantly pronounced in Bangladesh, Pakistan and Bhutan where models explain 42, 24 and 47 percent of variation within the data respectively. The lowest correlation between these two indicators are observed in Sri Lanka followed by India. Regression analysis for Nepal could not be performed due to data unavailability (Fig. 3).

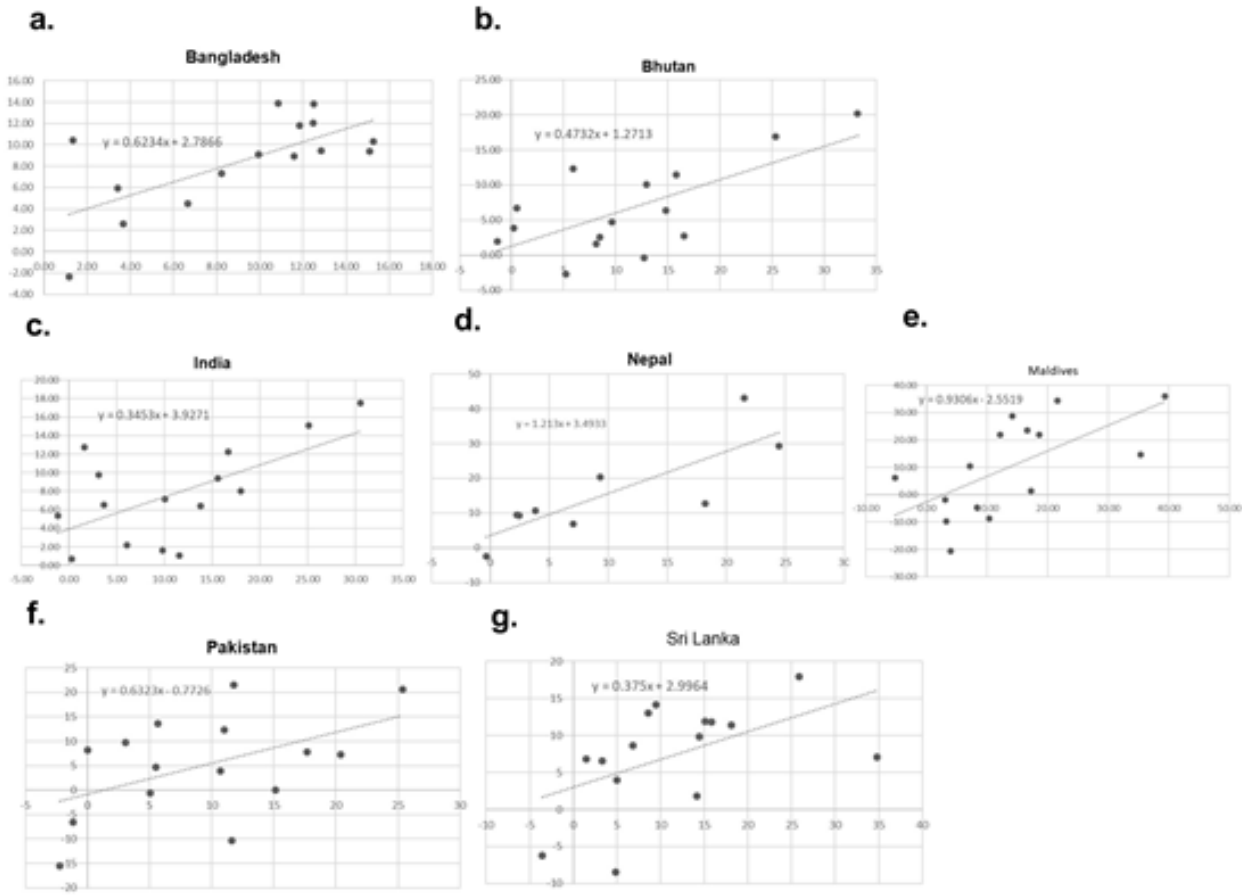

Fig. 3: Correlation between Health Expenditure growth and Nominal GDP Growth in SA countries

4.0 Health System

Health workforce deficiency challenge is critical in SA countries

Inadequate qualified health workforce (HWF), an identified serious threat to the attainment of the SDGs goals, is a mutual scenario of SA region. This cross-country study has identified a lack of comprehensive and comparable data in health care for most of the countries of this region. Therefore, this analysis has been performed on the available data for each country ranging from 2000 to 2016. Nepal was excluded from this analysis for that reason. None of these countries met the minimum threshold of 2.3 doctors, nurses and dentist per 1,000 population established by WHO till 2015 for health system to perform optimally. However, net physician increased 365 percent in Maldives from 2000 to 2015 followed by approximately 108 percent in Sri Lanka, 94 percent in Bangladesh, 74 percent in Bhutan, 47 percent in Pakistan and 38 percent in India within this time frame. In addition to shortage of HWF, a gross imbalance in the skill- mix of health workforce particularly with doctor-nurse(midwives) ratio, is a significant workforce challenges in this region. Though nearly every country of SA has increased their nurse and midwives' densities over the last one and half decades (2000-2015), Bangladesh, India and Pakistan are still away from the threshold of doctor to nurse ratios of 1:3 recommended byWHO. Maldives increased the number approximately by 178 percent followed by Sri-Lanka (134 percent), India (79 percent), Bhutan (70 percent), and Pakistan (16 percent) during this time period. Alike other SA countries, number of nurse and midwives in Bangladesh has slightly decreased (0.4 percent) in 2015 from 2000. In 2015, doctor to nurse and midwives' ratios were 4.2 in Bhutan, 3.2 in Sri-Lanka, 2.27 in Maldives, 0.8 in India, 0.6 in Bangladesh and 0.5 in Pakistan. On the other hand, community health worker (CHW) densities have increased by approximately 215 percent in Bangladesh,123 percent in Pakistan, 75 percent in India and decreased by 74 percent in Bhutan and 17.1 percent in Maldives from 2000 to 2015/2016 (Fig.4).

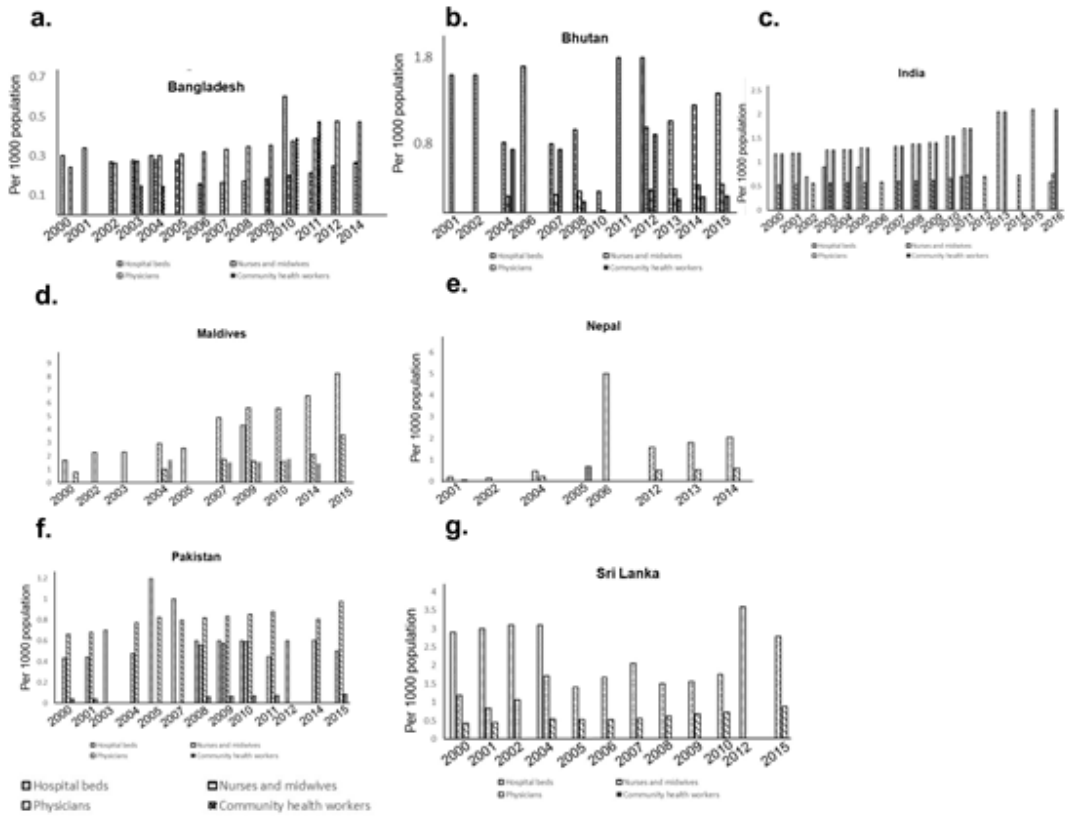

Fig 4. Health Facilities in SA Countries, 2000-2015

Closing gaps in primary care, strengthening accessibility of health care and making progress in health determinants are necessary to expand Universal Health Coverage (UHC) in SA region:

UHC index supports countries in tracking their progress in reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access and health security. The current values for UHC index ranged from 40 to 62 across the SA countries, which are under the global median average of 65 (SDG report, 2015). Sixteen tracer indicators which were used to develop UHC index, are categorized in four tracer areas:

Reproductive, maternal, newborn and child health:

Among five tracer indicators, large gaps persist in health seeking behavior for child pneumonia and pregnancy care in most of the countries. Compared to other countries, percentage of care seeking for symptoms of pneumonia is significantly higher in India (77%) and Bhutan (74%). The highest portion of children (78 percent) of Maldives did not seek treatment for pneumonia symptoms followed by 58 percent in Bangladesh, 50 percent in Nepal, 42 percent in Sri Lanka and 36 percent in Pakistan in 2015.

While 93, 85 and 85 percent of mothers of Sri Lanka, Maldives and Bhutan respectively received basic interventions for four or more times, 69, 63, 52 and 40 percent of mothers received no or less than four times interventions in Bangladesh, Pakistan, India and Nepal correspondingly.

51 percent women of Pakistan followed by 47 percent of Maldives have inadequate coverage for family planning. Rest of the countries covered more than 65 percent women under family planning program.

Infectious diseases:

On average 70.5 percent tuberculosis (TB) incidents were successfully treated in Bhutan and Nepal in 2015. However, TB effective treatment coverage was significantly low in Maldives (30 %) followed by India (44%), Bangladesh (53%), Pakistan (59%) and Sri Lanka (58%).

Nearly 95 percent households of Maldives and Sri Lanka had access to at least basic sanitation and water source in 2015, which is significantly higher than other SA countries. More than 50 percent households had insufficient basic water and sanitation facilities in India (56%), Nepal (54%) and Bangladesh (53%) while more than 39 percent households of Pakistan (42%) and Bhutan (37%) had no access to basic water and sanitation.

Non-communicable diseases:

The prevalence of hypertension (cardiovascular diseases) and mean fasting plasma glucose (mmol/L) (Diabetes) are used in UHC index as proxy measures, which are meaningful as indicators of both the success of prevention efforts and screening and treatment programs. The average prevalence of normal blood pressure and mean fasting plasma glucose (including those whose blood pressure/ Diabetes were controlled by medication) were 73.6 percent and 5.4 mmol/L in this region in 2015. 30% individuals had untreated high blood pressure in Nepal and Pakistan respectively which is the highest among these countries.

Among these countries, the highest 29 percent individuals used Tobacco in Maldives followed by Nepal (24%), Bangladesh (23%), Pakistan (20%), Sri Lanka (14%) and India (12%) in 2015. Only 6 percent individuals of Bhutan used tobacco that year.

Service capacity and access:

Bangladesh, India, Pakistan and Nepal had less than 10 beds, physicians and physicatrist per 10,000 population while less than 10 surgeons in Bhutan, Nepal and Sri Lanka in 2015. In comparison to other countries of this region, Maldives had the highest density of hospital beds (43), physicians (16), psychiatrist (37) and surgeons (88) per 10,000 population in 2015. Nepal had the lowest density of hospital beds (3), physicians (2), psychiatrist (2) and surgeons (9) per 10,000 population.

5.0 Policy: Situation and Implication

The SA countries have made remarkable progress in the health of their population in the recent years, but presently face the challenges of non-communicable disease as discussed previously in the study. SA countries have adopted a wide range of health sector programmes and interventions. A synopsis of the

current ongoing health interventions in SA countries have been listed in the annex. Primary healthcare should be integrated as a core component in health systems where SA countries are lagging behind. SA countries are investing less than 4% of their GDP on health sector resulting in insufficient investment in health facilities and less priority of specialty training in the community set up. This region is in urgent need of a strong and wel-functioning primary healthcare system. Nutrition interventions which are insufficient and sporadic in this region, covers only small portion of total population. Therefore, robust and expanded nutritional programmes need to be launched in the region.

Though SA countires have progressed in recent years in health sector, there is a real need to review their strategies for meeting the health needs of their populations.

- Governments along with private sectors required to monitor progresses and trends of Communicable and NCDs and their risk factors to direct policy and priorities.
- Public sector investment in health is low. So more investment needs to be mobilized from public sector.
- Under 5 mortality is still high. Therefore, dedicated programmes need to be taken in SA countries.
- High impact essential NCDs interventions such as early detections and timely treatment of NCDs through primary health care approaches can reduce the common modifiable risk factors. Collaborations among all sectors including health, finance, transport, education, agriculture, planning and others are required for efficient NCD managements in SA countries.
- Health care coverage needs to be expanded through dedicated programs and investment in health.
- Health service capacity and access need to be enhanced through providing more physician and hospital beds.
- As complementary to health sector development, special programs on sanitation and fresh water access need to be expanded.
- North-South and South-South collaboration should be sough out to address the challenges among the SA countries.

Ethical clearance: We did not approach to any committee for ethical clearance as we used secondary publicly avaible data for this study**.**

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