

Emerging issues in public health: a perspective on Ghana's healthcare expenditure, policies and outcomes

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Abstract Ghana's healthcare expenditure has increased over the past two decades. Increased healthcare expenditures are required to enhance the acquisition of better hospital resources that may improve healthcare. This study presents an overview of healthcare expenditures and health outcomes (i.e. infant mortality, under-5 mortality and life expectancy) from 1995 to 2014 in Ghana. Infant and under-5 mortalities have declined by 50 and 25%, respectively, as of 2014, while life expectancy has increased from 60.7 to 64.8 years. Private spending on health, especially out-of-pocket payments, declined but is higher than the World Health Organization's recommended financial threshold. Non-communicable diseases (NCDs) are rising with healthcare costs leading to catastrophically high healthcare expenditures in the future. While government's investments on healthcare have yielded positive results, the improvement in the health outcomes cannot be attributed to increased health expenditure alone. Therefore, this paper outlines policies on maternal health, national health insurance and healthcare reforms that have influenced health outcomes. In parallel, the paper highlights challenges of the

Ghana health system of which the major ones are (1) inadequate financial investments in health and (2) limited health workforce and facilities. These challenges can be ameliorated by (1) establishing new health institutions and expanding existed ones; (2) providing incentives to discourage the exodus of health workers; (3) introduction of the concept of predictive, preventive and personalized medicine (PPPM) for treating NCDs; and (4) alternative insurance schemes for vulnerable groups. This, coupled with the will of the government to curb misappropriation of funds, will be important to achieving better health outcomes.

Keywords Healthcare expenditure · Health policy · Life expectancy · Infant mortality · Under-5 mortality · Predictive preventive personalized medicine

Introduction

Public spending on healthcare enhances the efficiency of healthcare services and boosts health outcomes, and therefore, establishing a robust health financing system has been a priority among many countries worldwide [1]. However, increasing health expenditure has been challenging even among wealthy countries because of frequent economic recession and rising healthcare costs [2]. In low-income countries, public healthcare spending has been relatively low, despite the potential benefits that could be achieved in regard to health outcomes [3]. The little public healthcare spending that happens in these countries is mainly financed with insufficient tax revenues, internal and external loans and restricted foreign grants [3]. Other healthcare funding sources available are either private or out-of-pocket payments, fee-for-service and private health insurance schemes [3–5].

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In the past two decades, Ghana has experienced rapid economic growth, along with the increase in spending on health [6, 7]. Since 2001, the country has increased its public healthcare spending by 11%, which is 15% higher than the accompanying increase in government revenues [8]. Concurrently, there has been a tremendous population growth over the past decade with at least 65% of the populace expected to be urban dwellers by 2030 [9, 10]. With this growth in population coupled with ageing, rapid urbanization and increasing adoption of sedentary lifestyle, there could be a shift in focus from communicable diseases (CD) to non-communicable diseases (NCD), which would place further pressure on the scarce healthcare resources [11, 12].

The positive association between increased healthcare spending on health outcomes has been shown in other studies [3, 11]. Nonetheless, there has to be a reassessment of the impact of healthcare spending in tandem with public healthcare policies on health outcomes. This study presents an overview of healthcare expenditures and health outcomes (i.e. life expectancy, infant mortality and under-5 mortality) in Ghana. The paper also outlines and compares the baseline information in terms of the three health outcomes since the implementation of policies on maternal health and the national health insurance.

Total healthcare expenditure

Total health expenditure is defined as the measure of the sum of revenues collected from different sources and comprises general, private and out-of-pocket. In Ghana, general expenditures rose after 2003 and slightly decreased in 2008. Apart from Ghana's socioeconomic problems, this decrease could be attributed to the global financial crisis [8] (Fig. 1). Yet

compared with neighbouring countries such as Togo, Benin, Niger, Nigeria, Burkina Faso and Cote d'Ivoire, Ghana seems to have performed better in its commitment to health. The general government health expenditure increased from 53 per capita US\$ in 1995 to 60 per capita US\$ in 2014 (Fig. 2).

Both private and out-of-pocket expenditures were high between 1995 and 2004 but declined after 2005. The introduction of the National Health Insurance Scheme (NHIS) in 2004 could have resulted in high general healthcare spending and a reduced share of private and out-of-pocket spending (Fig. 1).

Although private and out-of-pocket expenditures have declined over the years, the financial protection in Ghana has been inadequate [8] (Table 1). Some of the determinants of increased out-of-pocket expenditures are inadequate health insurance coverage and poverty [7, 13, 14]. Government's investments have not been enough to meet the rising healthcare costs. Funding inadequacy has therefore fuelled hospital commercialization. Thus, hospitals are compelled to increase service prices to generate funds for maintaining medical equipments. It has been predicted that high out-of-pocket expenditures on healthcare will continue to have a devastating effect on the socioeconomic status of households unless pragmatic steps are taken to address the prevailing challenges [3].

Another factor that may have contributed to the high out-of-pocket expenditures is over-dependence on foreign aids and grants for financing healthcare [3, 10]. External sources rose from 1999 but declined after 2003. A study that analyzed data from the World Bank suggested that remittances to developing countries, including Ghana, reduced by 5.5% (US\$307 billion) in 2009 [15]. Workers' remittances to Ghana also reduced from US\$126 million in 2008 to US\$114 million in 2009 [15].

Fig. 1 Types of health expenditures in Ghana from 1995 to 2014. Data from the WHO and Gapminder databases (<http://apps.who.int/nha/database/ViewData/Indicators/en>) (<http://www.gapminder.org/data/>)

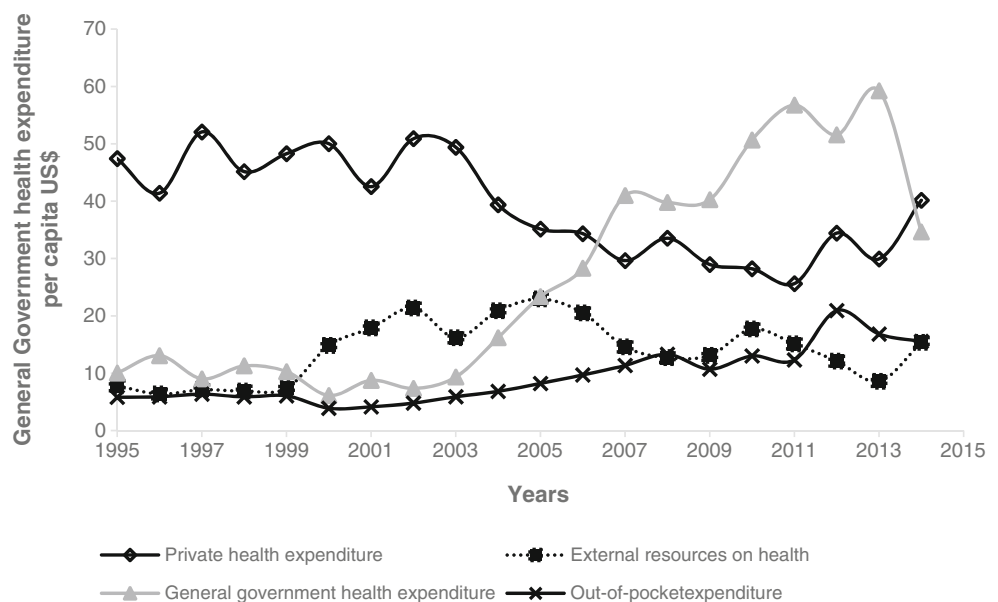
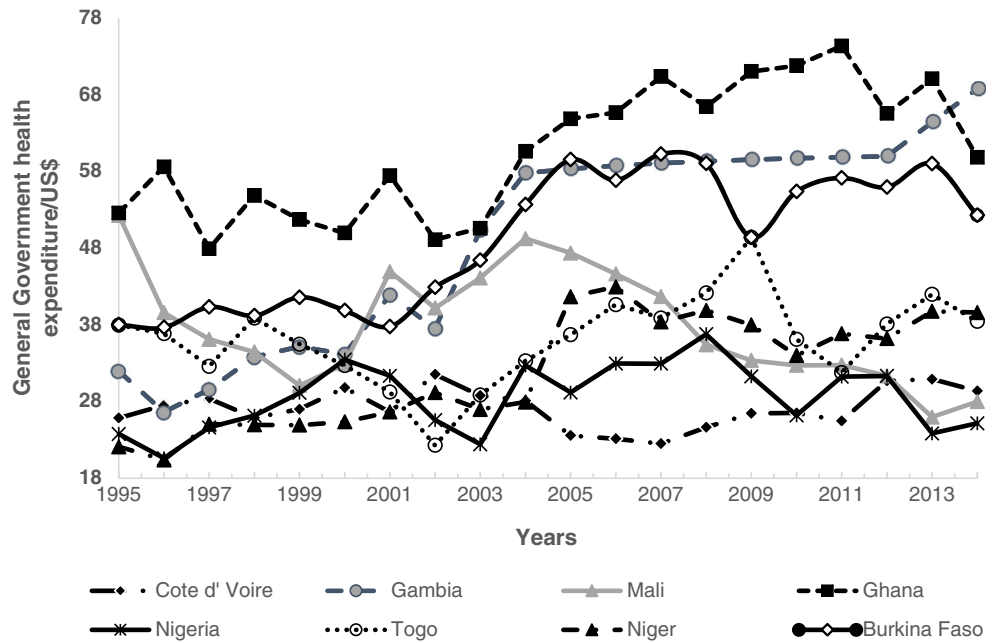


Fig. 2 General government health expenditures among neighbouring countries. Data from the WHO and Gapminder databases (<http://apps.who.int/nha/database/ViewData/Indicators/en>) (<http://www.gapminder.org/data/>)



Health expenditures and the impact on life expectancy

From 1995 to 2014, the life expectancy of Ghanaians has increased steadily (Fig. 3). Life expectancy at birth increased from 60.7 to 64.8 years. Expenditures on healthcare as a share of per capita total healthcare expenditures show a positive association with life expectancy at birth. Other studies not limited to Ghana that investigated the association between public healthcare spending and health outcomes have reached similar conclusions [3, 16, 17]. This important data shows that the healthcare system has somehow done well in certain areas of measurable outcomes. The increased life expectancy may be attributed to several factors, such as new

medicines and vaccines, good governance, education, social structures, income distribution, environmental changes and lifestyle changes [11].

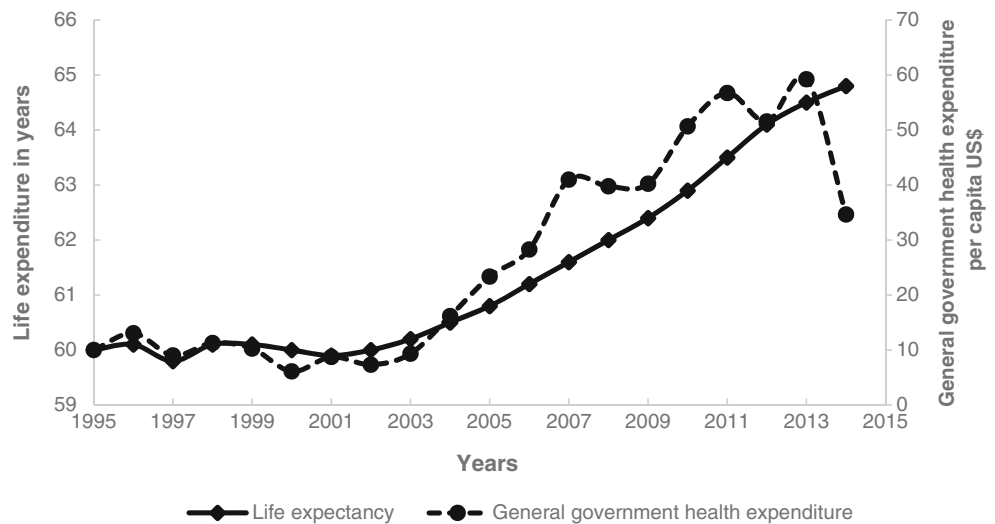
Health expenditures and the impact on infant and under-5 mortalities

Increased public healthcare spending has reduced infant and under-5 mortalities. In the years when total healthcare expenditures per capita were very low (~US\$10), infant and under-5 mortalities were high, 72/1000 live births and 111/1000 live births, respectively. As total healthcare expenditures increased, mortality declined, and by the end of 2014, these figures have reduced to 44.2/1000 live births and 78/1000 live

Table 1 Descriptive statistics of health expenditure and health outcomes from 1995 to 2014

	Minimum	Maximum	Median (IQR)	Mean (SD)	95% CI of Mean	SEM
Life expectancy (years)	59.8	64.8	60.65 (60.0–62.8)	61.43 (1.70)	60.63–62.22	0.38
Infant mortality rate (per 1000 births)	44.2	72	57.45 (50.6–66.3)	58.09 (8.80)	53.97–62.21	1.97
Under-5 mortality rate (per 1000 births)	78	111	93.30 (84.5–103.1)	93.80 (10.36)	88.95–98.65	2.32
Amount per capital USD						
General government expenditure on health (GGHE) as % of THE	6	59	19.5 (9–41)	26.3 (18.77)	17.52–35.08	4.20
Private expenditure on health (PvtHE) as % of THE	26	52	39.50 (31–48)	39.25 (8.52)	35.26–43.24	1.90
External resources on health as % of THE	6	23	15 (8–18)	14.00 (5.36)	11.49–16.51	1.19
Out-of-pocket expenditure as % of THE	4	21	7.5 (6–13)	9.4 (4.75)	7.18–11.62	1.06
Total expenditure on health/capita at exchange rate	3	5	4 (3–5)	4.05 (0.94)	3.61–4.49	0.21

Fig. 3 Life expectancy by per capita total health expenditures from 1995 to 2014. Data from the WHO and Gapminder databases (<http://apps.who.int/nha/database/ViewData/Indicators/en>) (<http://www.gapminder.org/data/>)



births, respectively (Figs. 3 and 4). It is also possible that certain factors have had contributed to the decrease in mortality other than health spending alone. Improvements in health outcomes can be attributed to the structure of the Ghana healthcare system that strengthens healthcare service provisions [8]. The healthcare system is distributed across the national, regional and district levels to promote accessibility, quality and easy transmission of healthcare information within the various levels in the sector [8]. Additionally, positive health outcomes can be attributed to the introduction/implementation of various healthcare policies by the Ministry of Health (MoH) in Ghana [18] (Fig. 5). While there are many of such healthcare policies, this paper will highlight the major ones.

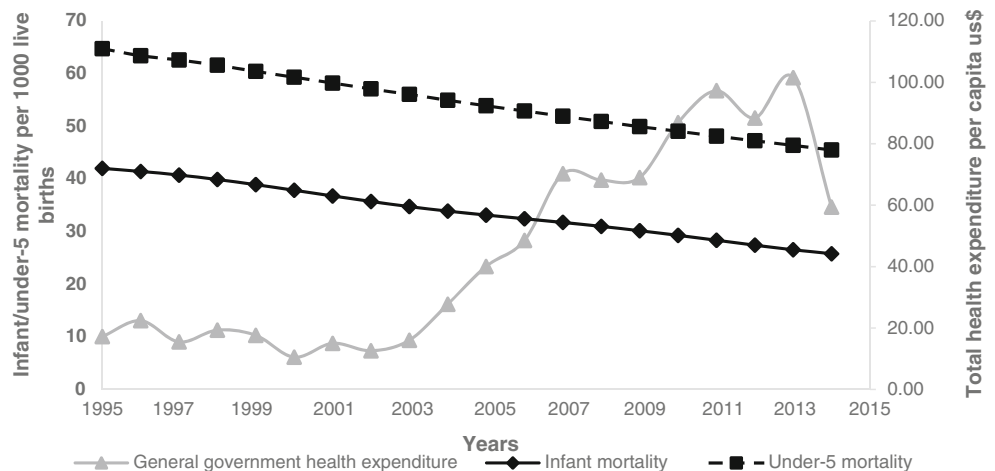
Child healthcare policies

United Nations Children Fund (UNICEF) reports that one in 12 children worldwide dies before the 5th birthday [19]. In 2011, nearly 2.9 million children representing 44% of children

under 5 years died worldwide mainly from preventable childhood diseases [20]. Some identified causes of these deaths include child malnutrition, sepsis, pneumonia, meningitis, malaria, diarrhoea, upper respiratory infections, asphyxia, prematurity and low birth weights [21–24]. Child stunting, defined as growth retardation due to inadequate consumption of food, is also a major contributor to child deaths [24]. Child malnutrition and stunted growth account for 40% and 20% of childhood deaths in Ghana, respectively [22].

Two of the interventions are the Ghana Child Health Policy (CHP) and the Child Health Strategy (CHS) [22]. These interventions focus on ways to improve accessibility to healthcare, guarantee quality of medical care and increase the demand for essential services [22]. Predominant diseases, such as cholera and diarrhoea that mostly affect infants, are targeted. Low-osmolarity oral rehydration salts and zinc are adopted to manage diarrhoea, and new vaccines against measles, pneumococcal disease and rotavirus are introduced. Immunization programs are widespread in Ghana, and there was an improvement in the immunization rate for measles from 68.8% in

Fig. 4 Infant and under-5 mortality by per capita total health expenditures from 1995 to 2014. Data from the WHO and Gapminder databases (<http://apps.who.int/nha/database/ViewData/Indicators/en>) (<http://www.gapminder.org/data/>)



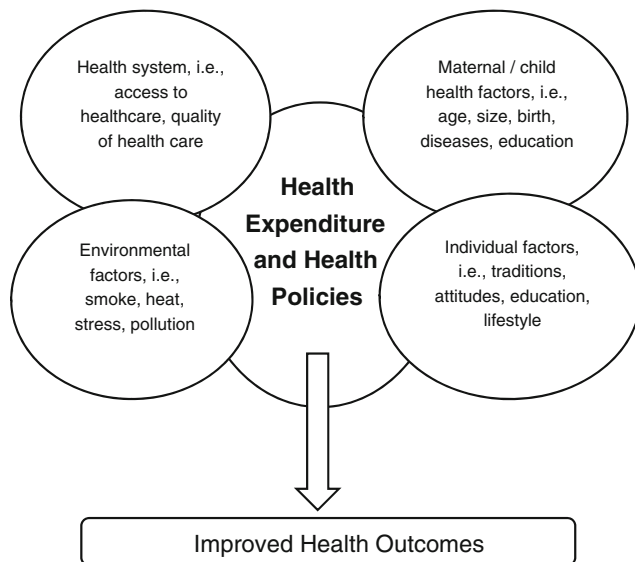


Fig. 5 Factors that influence health outcomes

1998 to 79.9% in 2008 and 87.7% in 2010 [22]. In 2000, community-based health planning and services (CHPS) and the Ghana Essential Health Intervention Project (GEHIP) were also established to reduce child mortality, particularly in rural areas [22, 25]. Under the CHPS and GEHIP, community healthcare officers are trained to treat malaria, diarrhoea, acute respiratory diseases and administer child immunizations [25]. These implemented policies have fuelled a drastic reduction in both infant and under-5 mortalities as shown in Figs. 3 and 4. Therefore, when compared with some states within the West African region, Ghana seems to have performed better in terms of reduction in under-5 mortality rates. For example, under-5 mortalities per 1000 live births in the selected West African countries are Mali (115/1000), Guinea Bissau (93/1000), Guinea (94/1000), Burkina Faso (89/1000), Niger (96/1000), Nigeria (109/1000) and Cote d'Ivoire (93/1000). Likewise, Ghana is better in infant mortality rates compared to Mali (75/1000), Guinea Bissau (60/1000), Guinea (61/1000), Burkina (61/1000), Nigeria (69/1000) and Cote d'Ivoire (67/1000) [26].

However, comparing under-5 mortality rate (per 1000 live births) with developed countries such as UK (4/1000), Australia (4/1000), Canada (5/1000), Italy (4/1000), Germany (4/1000), USA (7/1000) and Japan (3/1000) and infant mortality UK (4/1000), USA (6/1000), Australia (3/1000), Canada (4/1000), Germany (3/1000), Italy (3/1000) and Japan (2/1000), under-5 and infant mortality rates in Ghana are high [26]. Apparently, Ghana is not able to achieve the millennium development goal of reducing child mortality to 43/1000 live births [26].

Similarly, compared to other advanced/rapid developing countries such as Singapore (2/1000) and Malaysia (6/1000) and China (9/1000), Ghana lags behind in reducing infant and under-5 mortalities [26]. Surprisingly, many of these countries

attained independence nearly the same period as Ghana [Ghana (1957) [27], Malaysia (1957) [28] and Singapore (1965) [29]. This indicates that the performance of the healthcare system has been sub-optimal, and the education aspects of the policies have not yet trickled down to remote communities. Some communities, for instance, still perceive child stunting (measure of chronic malnutrition in children) as normal, and therefore, related medical advice was sometimes neglected. Childhood malnutrition should be researched in depth. It is also imperative not to limit malnutrition to just weight, but also to the height of the child. Measuring height should be a critical part of assessing child growth. Breastfeeding programs should emphasize exclusive breastfeeding for the first 6 months to ensure that babies develop normally.

Maternal healthcare policies

Maternal mortality accounts for 14% of all female deaths, making it the second leading cause of female mortalities in Ghana [30, 31]. Before 2000, it was estimated that between 540 and 650 mothers died for every 100,000 live births in Ghana [31, 32]. With this high maternal mortality rate, the Ghana Health Service (GHS) implemented several policies that can help improve maternal health and reduce maternal deaths. First, there was the introduction of an antenatal care policy and a safe motherhood initiative 1998 [31]. These policies had a limited effect on maternal mortality. Financial inadequacies and preference for unskilled maternity care services were major contributors for maternal mortalities [31]. Therefore, the MoH introduced the delivery exemption policy in 2003 to provide free maternal delivery and reduce the financial constraints associated with using skilled maternal services [31, 33, 34]. The inclusion of the free maternal care policy in the NHIS has been beneficial. The number of mothers registered in the NHIS rose from 421,234 in 2008 to 754,648 in 2012, and on-going participation growth is evident [15, 35]. The policy covers normal deliveries, assisted deliveries, caesarean sections and management of complications arising from maternal deliveries [35]. Ghana improved its maternal care by increasing the skilled care coverage from 47% in 2003, 55% in 2010 [33–37] and 68% in 2015 [37]. Because of these policies, maternal mortalities declined to 350/100,000 live births by 2013 [15] and 319 deaths in 2015 [38]. Although the implementation of these initiatives have improved access to medical care, maternal mortality in Ghana remains high. When compared with some states within the West African region, Ghana seems to have performed well in terms of reduction in maternal mortality rates. For example, maternal mortality per 100,000 live births in the selected

West African countries are: Mali (587/100,000), Guinea Bissau (547/100,000), Guinea (679/100,000), Burkina Faso (89/100,000), Niger (553/100,000), Togo (368/100,000), Nigeria (814/100,000) and Cote d'Ivoire (647/100,000) [38]. However, comparing maternal mortality rates (per 100,000) in selected developed countries such as UK (9/100,000), Australia (6/100,000), Canada (7/100,000), Italy (4/100,000), Germany (6/100,000), USA (14/100,000) and Japan (5/100,000), the maternal mortality rate in Ghana is high and unacceptable [38]. Similarly, Ghana's maternal mortality rate is high compared to Singapore (10/100,000), Malaysia (40/100,000) and China (27/100,000) [38]. Several factors can be attributed to this: inadequate healthcare facilities in rural areas, preference for traditional birth attendants (TBAs) and lack of funds for transporting emergencies to better-resourced hospitals. An inadequate data set for the medical history of expectant mothers also impedes proper healthcare investigations [30, 31, 37]. Further, maternal mortalities are fuelled by limited access to contraceptives especially among women residing in the rural areas. Contraceptive use can assist in preventing unwanted/unplanned pregnancies, allows adequate spacing of pregnancies and limits the incidence of unsafe abortions [38].

More research on ways to improve the quality of life of expectant mothers after caesarean sections and maternal experiences after childbirth should be a priority while at the same time, efforts should be strengthened to scale up health impact interventions that will increase deliverability in health facilities [19, 37]. For mothers that do not have health insurance especially those in the rural areas, medicines for treating sepsis and preterm births and vaccines against infections should be affordable and easily accessible.

The National Health Insurance Scheme policy

An estimated 150 million people globally experience financial hardship after accessing medical care through out-of-pocket payments [39–42]. Therefore, protecting the poor from catastrophic healthcare spending has become a priority in most countries [39–42]. Ghana spearheaded a community-based health insurance scheme (CBHIS) experiment in Sub-Saharan Africa (SSA) [43]. The scheme covered only 1% of the population and failed to improve the accessibility for the poor [43, 44]. A more inclusive national policy led to the enactment of the National Health Insurance Law in 2003, which was later referred to as the National Health Insurance Scheme (NHIS) in 2004 [45, 46].

The inception of the NHIS has offered enormous benefits to the populace and presently covers 95% of all diseases in Ghana [46]. Active members in the scheme have risen from

2.5 million in 2004 to 8,885,757 million in 2012 and 10,145,196 million in 2013 [45], covering 38% of the entire Ghanaian population [46]. Insured individuals pay half the cost of their healthcare treatments and, thus, have greatly reduced out-of-pocket expenditures [46]. Available data shows an increase in outpatient department cases, pharmaceutical usage, prenatal care, delivery services and maternal healthcare services [44–46].

Despite these important achievements, a high proportion of the populace (often rural citizens) are yet to enrol because of poverty, as they are unable to afford the NHIS registration fee [47, 48]. This implies that universal health coverage has only become a vision. For instance, poverty-stricken regions in Ghana, primarily in the upper west, upper east and northern areas, have recorded low enrolment in the scheme compared to urban areas [47, 48].

Chronic non-communicable diseases and policy interventions

The distribution of health outcomes (i.e. life expectancy, maternal, infant and under-5 mortalities) has been influenced by the pattern of disease. Rapid urbanization, affluence and globalization have led to physical inactivity and sedentary lifestyles. Additionally, the pattern of nutrition especially in the urban cities of Ghana has largely been skewed towards refined carbohydrates, red meats, snacks, processed and fats foods, while those rich in fibre, legumes and vegetables are abandoned [12, 49, 50]. Taken together, these behaviours have fuelled the prevalence of NCDs. NCDs are responsible for the death of an estimated 86,200 people in Ghana each year [51]. Presently, the leading causes of NCD deaths are cardiovascular (18%), cancer (5%), chronic respiratory (2%), diabetes (2%) and other NCDs (14%) [51]. Despite these alarming NCD-related deaths and its associated burden on the people affected, the majority of people living with known risk factors including hyperglycaemia, high blood pressure, dyslipidaemia among others, are not aware [49, 50]. Surprisingly, Ghana does not have a comprehensive chronic disease policy yet [51]. At the same time, treatment for most of the NCD diseases is not covered by the NHIS, and with the limited government subsidy on prescription medicines, patients are compelled to pay before they could access medical care [15], which has also led to increased out-of-pocket and catastrophic expenditures.

Ghana relies on low-level interventions that emphasize healthcare promotions and lifestyle modifications. It is therefore not surprising that health outcomes particularly life expectancy in Ghana (61.4) is still low when compared to developed countries such as Japan (83.59 years), Australia (82.25 years), USA (78.94 years), Canada (81.96 years), Italy (82.69 years), Germany (80.84 years) and the UK (81.06 years) [52].

It should be clear by now that the present health outcomes in Ghana are because of the combined effects of increasing health expenditure and healthcare policies. However, this paper cannot conclude without highlighting the main challenges that have been affecting the health sector in general.

Challenges facing the health system

A major problem facing the healthcare system is finance, and this is partly attributed to the Government of Ghana's (GoG) low fiscal capacity and commitment to health [53]. For example, the government spent 4.9% of its gross domestic product (GDP) on healthcare in 2009 and increased it to 5.2% in 2012. As a result, Ghana could not honour the Abuja Declaration pledge where governments promised to allocate 15% of their GDP to health [2, 53] and obviously, the insufficient budgetary health investment could not meet Ghana's rising healthcare needs [8]. The MoH also reported that budgetary allocation on healthcare rose from GH¢771 million (US\$191.078 million) in 2011 to GH¢1750 million (US\$433.705 million) in 2012. Nonetheless, this increment was inadequate and has not made a significant impact [54]. On the other hand, financial obstacles amidst incessant financial losses have largely affected the smooth running of the NHIS. In 2012, the total revenue accrued by the NHIS was GH¢773.83 million (US\$191.779 million) and total expenditures were GH¢788.32 (US\$195.371 million), representing a net deficit of GH¢14.49 million (US\$3.59 million) [45, 46]. By 2013, the total revenue has increased to GH¢904.3 million (US\$203.319 million) while the total expenditure was GH¢1001.10 million (US\$225.083 million) representing a net deficit of GH¢96.80 million (US\$21.76 million) [45, 46].

Besides inadequate funds for public health, financial mismanagement is a major setback for achieving improved health outcomes [15]. Adequate public spending on healthcare alone cannot improve health outcomes because it needs to be accompanied by proper financial management. The trend in the Ghana healthcare system does not show adequate financial management. An estimated 36% of healthcare expenditures are wasted due to inefficiencies and financial misappropriation [15]. Presently, millions of dollars are still lost due to rising costs and corruption. With appropriate financial management, the government could save at least 36% of its total expenditures, which is enough to pay approximately 23,000 nurses [15].

Ghana has been facing a shortage of healthcare personnel. The doctor-to-patient ratio was 1:10,000 in 2010 and 1:9,043 in 2014 while the midwife to patient ratio was 1:1077 in 2010 and 1:1374 in 2014 [54]. More concerning is that the distribution of the health workforce is largely skewed to the two popular urban cities in Ghana: Accra and Kumasi [54] while rural hospitals have few and less well-qualified health personnel. Consequently, the few health workforce are compelled to work

for extremely long hours without rest amidst poor working conditions. This results in substandard healthcare with most health workers feeling that they are not being rewarded for their efforts. The exodus of healthcare workers to developed countries, a concept known as 'brain drain', has therefore become prominent [14, 15, 55]. It is reported that more than 57% and 24% of doctors and nurses, respectively, are working abroad [14].

A study has also shown that the number of hospital beds is low, and Ghana has not shown enough commitment to increasing key resources and infrastructure [8]. Medical equipment and logistics are generally inadequate for the enormous number of patients that access the health service. Additionally, transportation and communication poses are formidable challenge throughout the country. This leads to delays in getting to healthcare facilities with the situation even worse in the rural parts of the country where most districts do not have ambulance services to attend to emergencies. Increased pressure on limited resources and equipment is often the case, and consequently, many patients are denied access to proper healthcare [55].

Recommendations and outlook

There should be adequate investments in district and local hospitals to improve early disease detection and facilitate early treatment. Adequate incentives, such as affordable housing, vehicle allowances, scholarships for aspiring medical professionals among others, can encourage healthcare personnel to stay instead of leaving for better opportunities abroad. Like the University of Health and Allied Sciences that was set up to solely train health professionals, more of such institutions should be set up across the country to increase the total health workforce. Concurrently, existing healthcare institutions should be expanded and equipped with state-of-the-art facilities to improve healthcare delivery. There should be an increase in health revenues, better approaches for resource mobilization, tax exemptions on medical/diagnostic equipment and logistics, and strengthening public-private partnerships all of which will help bridge the funding gap and limit the impact of external resource decline [53, 56].

While the government is trying and looking for approaches to accelerate the enrolment of vulnerable people to the scheme, useful alternative will be to adopt the voluntary insurance scheme such as the one introduced by the Chinese Government (fastest/largest developing country in the world) in 2002. In this scheme, rural dwellers are allowed to voluntarily enrol while the scheme is supported with funds from private institutions, local government and the central government [57]. Utilizing this innovative scheme, 72 million people that make up 83% of the entire rural population were insured and it has hugely reduced the economic burden of diseases among rural dwellers in China [57].

As stated previously, NCDs have hugely affected health outcomes leading to several premature deaths. Some of these deaths could have been prevented or perhaps delayed with the

correct health education or health literacy. This is where the concept of predictive, preventive and personalized medicine (PPPM) comes in [58]. On the one hand, PPPM promotes the recognition of people who are intermediate in health and disease-suboptimal health and thus able to identify them (e.g. using screening tools) prior to clinical manifestation [59]. In such individuals, the potential progression to NCDs can be reversed with appropriate intervention. On the other hand, a unique characteristic of PPPM is to ‘identify the right patient, treat him or her with the right therapy with the right dose at the right time’ [58]. A person’s quality of life whether healthy or patient is influenced by multiple determinants such as environmental, economic, traditional and behavioural factors (Fig. 5). PPPM takes into consideration all these factors and thus providing a holistic platform for healthcare givers/professionals to treat and manage diseases [58–61]. Therefore, PPPM should be the next direction to improving healthcare in Ghana.

Hospital commercialization and the high level of uninsured individuals should not be politicized but should instead provide an overarching direction for increasing the utilization of healthcare services for all. We concur with the recommendation that there should be specialized healthcare agencies set up and tasked with regulating the allocation of healthcare resources within the sector. In other words, the government should strengthen these agencies and also set up independent anticorruption bodies to prevent financial mismanagement. Probity, transparency and accountability should also be priorities of the government and the healthcare sector so that citizens can hold the government accountable.

Conclusion

Based on our review, we conclude that the challenges of the healthcare system in Ghana can be ameliorated by (1) further investments in health, (2) establishing new health institutions and expanding existed ones, (3) providing incentives to discourage the exodus of health workers, (4) introduction of PPPM for managing and treating NCDs and (5) alternative insurance schemes for vulnerable groups. This, coupled with the will of the government to curb misappropriation of funds, will be important to realizing better health outcomes.

Abbreviation

CBHIS, community-based health insurance scheme; CDs, communicable diseases; CHP, Child Health Policy; CHPS, Community-Based Health Planning and Services; CHS, Child Health Strategy; GDP, gross domestic product; GEHIP, Ghana Essential Health Intervention Project; GHS, Ghana Health Service; GoG, Government of Ghana; MoH, Ministry of Health; NCDs, non-communicable diseases;

NHIS, National Health Insurance Scheme; PPPM, predictive, preventive and personalized medicine; SSA, Sub-Saharan Africa; UNICEF, United Nations Children Fund

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Compliance with ethical standards

Ethical approval None sought.

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Conflict of interest The authors declare that they have no conflict of interest.

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