



The Impact Of The Country's Health Services' Expenditure On The Success Of Mdgs, Goal 4/Sdg 3: Reduction Of Child Mortality In Uganda (2000-2016)

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ABSTRACT

Safeguarding access to health services is a serious challenge for poor countries if the Sustainable Development Goals (SDGs) are to be achieved. This paper scrutinizes the case of Uganda, a country which is trying to improve its health sector amid a lot of challenges between 2000-2016 to assess how the country has performed in the reduction of child mortality given its expenditure. This study involved analyzing the available data drawn from various sources i.e., time series data on public health expenditure was obtained from Ministry of Health reports and the budget and Ministerial Policy Statements for the period 2000-2016. This data was further demarcated into parameters such as per capita government spending on health in Uganda shillings, health spending as a proportion of Gross Democratic Product (GDP) and private health spending as a proportion of total health spending. Findings revealed that non-significant negative effect of GDP per capita growth on infant mortality rate from 2000 to 2016, a negative effect of GDP per capita on under-five mortality in Uganda from 2000 to 2016, albeit the effect is non-significant ($P > 0.05$), decline in Maternal Mortality Rate (MMR) from 527 death per 100,000 live birth in 1995 to 336 death per 100,000 live birth in 2016, and there is a negative but insignificant effect of health sector budget allocation on the MMR in Uganda since the P-value (0.199). Maternal mortality fell significantly in Uganda due to some interventions in the health sector. The decline is likely to have been cause due to supply and demand situations. There is need to improve funding in the health sector in order to improve quality health services through better coordination, health management, transportation, access, infrastructure at the district level.

Key words: Health services, MDGs, Goal 4/SDG 3, Child Mortality and Uganda.

INTRODUCTION

Under the commitment to the right to development, to peace and security, to gender equality, to the eradication of the many dimensions of poverty and to sustainable human development, at the beginning of the new millennium, world leaders gathered at the United Nations and proclaimed the United Nations Millennium Declaration of 2000. Embedded in that Declaration, which was

adopted by 147 heads of State and 189 states, were what have become known as the eight Millennium Development Goals (MDGs), including 18 time bound targets, and agreed to be achieved by the year 2015 (UN, 2015a). Out of these MDGs was Goal 4: Reduce child mortality, which is the focus of this paper. MDG 4 only target 4.A was reduce by two-thirds, between 1990 and 2015, the under-five mortality rate, and with 3 indicators for monitoring progress as; under-five mortality rate, infant mortality rate, and proportion of 1 year-old children immunised against measles (UN, 2015b).

Health care is a core component of human capital investment, which in turn rising its spending also raises quality of life, prolonged life expectancy, reducing morbidity and mortality rates (N. V. Murthy & Okunade, 2000; V. N. Murthy & Okunade, 2009). On other hand, health outcomes symbolize how healthy a country is and assesses the quality of health care in the country (Deluna Jr & Peralta, 2014). Thus, infant and under-five mortality are known to be the most important indicators for early childhood development and health status of population for given countries (Deluna Jr & Peralta, 2014; Ssozi & Amlani, 2015). By definition, the under-five mortality rate is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates. Similarly, the infant mortality rate is typically defined as the number of infants dying before reaching the age of one year per 1,000 live births in a given year (UN, 2015b).

Mortality Rate (MR) is one of the most vital health indicators and is impacted and influenced by a number of factors. One of the most important one could be public health spending (Shetty & Shetty, 2014). In fact government spending on health and public health indicators suggested that public health spending had an important influence upon health and particularly upon infant mortality (Franco, Gil, & Álvarez-Dardet, 2005). Therefore, health care expenditure remains a crucial component of health status improvement in sub-Saharan African countries (Novignon, Olakojo, & Nonvignon, 2012). To this effect, the government of Uganda stepped up the expenditure on health tremendously for example Uganda's total health expenditure increased from 280.9 billion Uganda shillings in 2008/9 to 930.5 billion Uganda shillings in 2013/14 (Kato, Mugarura, Kaberuka, Matovu, & Yawe, 2018).

Furthermore, while the poverty levels in Uganda have been declining over the years from 52% in 1992/93 to 19.7% in 2013, under-five mortality has remained high and stagnant around 90 per 1000 live births in 2012 (GoU, 2013). Under five mortality rate reduced from 137 per 1,000 live births in 2007 to 90 per 1000 live birth in 2012 way above the Millennium Development Goals (MDG) target of 56 per 1000 live births in 2015 (GoU, 2013). Effective health reforms have been implemented such as Immunization, Integrated Management of Childhood illness and Home Based Management of Fever with hope of reducing under-five mortality to MDG target (Kato et al., 2018).

Monitoring of the Millennium Development Goals is taking place globally, through annual reports of the United Nations Secretary-General to the General Assembly and through periodic country reporting. For global reporting, use is made of indicators compiled by international organizations. For country reporting, use is generally made of indicators compiled from national sources, generally by the national statistical system. The metadata sheets for the indicators reflect national and international standards (UN, 2015a). Globally, under-five mortality rate has decreased by 53%, from an estimated rate of 91 deaths per 1000 live births in 1990 to 43 deaths per 1000 live births

in 2015. The average annual rate of reduction in under-five mortality has accelerated from 1.8% a year over the period 1990–2000 to 3.9% for 2000–2015 but remains insufficient to reach MDG 4 (WHO, 2010, 2018) and about 19 000 fewer children died every day in 2015 than in 1990.

The government of Uganda has continued increasing the proportion of per capita health expenditure every year as mechanism of improving the status of health sector with the hope of increasing accessibility and quality that would bring efficiency and effectiveness in the health sector service delivery. The total expenditure on health as a percentage of GDP was 8.5 percent in 2015 (WB, 2015, 2018), and quite number of strategies to improve the health status in the country were implemented with the purpose of achieving MDGS targets such as reducing under-five mortality by two thirds in 2015. Despite these initiatives, the under-five mortality rate has reduced at a slow rate and has remained high compared to MDGs target of reducing it by 2/3 by 2015 (56 deaths per 1000 live births). To illustrate this, the Ministry of Health Annual health sector performance report for financial year (FY) 2014/2015 indicated that about 69 death cases occurred among the child under-five years in 2014 (GoU, 2015a). This makes everyone to wonder whether there is or not a correlation between increased public health expenditure and improved health status in particular child health care and reduction in child mortality. This study therefore set out to examine if there is a positive relationship between public spending on health expenditure and reduction of under-five mortality rate in Uganda according to the MDGs' target 4A.

Objective

- i. To examine the effect of GDP per capita and public health expenditure as a share of GDP on infant mortality in Uganda from 2000 to 2016
- ii. To examine the effect of GDP per capita and public health expenditure as a share of GDP on under-five mortality in Uganda from 2000 to 2016
- iii. To establish the relationship between expenditure on health services and infant mortality rate in Uganda from 2000-2016

The main objective of this study was to examine if there is a positive relationship between public health expenditure and health outcome of reduction in child mortality (infant and under five mortality rate) in Uganda over the period 2000 to 2015, the MDGs' timeframe. This is because one assumes that rapid economic growth and declining poverty levels in Uganda over the years from 52% in 1992/93 to 19.7% in 2013 plus sustained increase in public health expenditure and several childcare initiatives would signified an improved health care in the country where the under-five mortality rate is low but interestingly instead it has remained around 90 per 1000 live births in 2012 (GoU, 2013), way above the Millennium development Goals (MDG) target of 56 per 1000 live births in 2015 (GoU, 2015b).

Ha1: GDP per capita and public health expenditure as a share of GDP have a significant effect on infant mortality in Uganda from 2000 to 2016

Ha2: GDP per capita and public health expenditure as a share of GDP have a significant effect on under-five mortality in Uganda from 2000 to 2016

Ha3: Expenditure on health services is significantly related with infant mortality rate in Uganda from 2000-2016

LITERATURE

Despite the rapid economic growth and declining poverty levels in Uganda over the years from 52% in 1992/93 to 19.7% in 2013 (Appleton & Ssewanyana, 2002; Kato et al., 2018), there is a concern among policy makers and stakeholders' other dimensions of well-being, especially health, are not improving over time despite the substantial increases in Ugandans' incomes, and as a result seem to be on the path to meet all the MDGs targets. In particular, several reports have noted that infant and child mortality rates improved rapidly as the country emerged from the protracted civil conflicts of the 1970s and 1980s, but then leveled off in the mid-1990s, even though economic growth continued (GoU, 2015a; Lindberg, Ahlner, Ekström, Jonsson, & Möller, 2002; UBOs, 2019). It is especially disturbing that infant mortality rates in Uganda remain among the highest in Africa and the world.

To address this paradox the Uganda government through its ministries and agencies designed and implemented strategies for interventions to improve infant mortality rates drawing from other countries' experiences in five key areas of intervention identified as the most effective ways of reducing infant and maternal mortality, including malaria control, improving quality of health care, sanitation, community development, and family planning (Ssewanyana & Younger, 2008). Effective health reforms such as Immunization, Integrated Management of Childhood illness and Home Based Management of Fever with hope of reducing under-five mortality to MDG target implemented and supported through a sustained public health expenditure increase (Kato et al., 2018).

Uganda's total health expenditure increased from 280.9 billion Uganda shillings in 2008/9 to 930.5 billion Uganda shillings in 2013/14 where private funds from households, Not for Profit organisations, local Non-Government Organizations (NGOs) and private firms contributed 50%, 2008/09 and 49%, 2009/10, while public funds accounted only 16%, 2008/9 and 15%, 2009/10. Other funds came from donors, International NGOs and Global Health Initiatives making up 34%, 2008/9 and 36%, 2009/10 (Kato et al., 2018). Expenditures on curative functions remain extremely high for example in FY2008/9 was 108.99 billion Uganda shillings (64%), preventive functions was 639.83 billion Uganda shillings (23%) and others was 362.98 billion Uganda shillings (13%) while in FY 2009/10 compared to 180.235 billion Uganda shillings (56%) for curative, 774.77 billion Uganda shillings (24%) for preventive and 657.83 billion Uganda shillings (20%) for others (GoU, 2010, 2015b).

The government of Uganda has continued increasing the proportion of per capita health expenditure every year and implementing a number of health care strategies as mechanism of improving the status of health sector with the hope of increasing accessibility and quality that would bring efficiency and effectiveness in the health sector service delivery and meet MDGS targets such as reducing under-five mortality by two thirds in 2015. The total expenditure on health as a percentage of GDP was 8.5 percent in 2015 (WB, 2015). Despite the above Government initiatives, the under-five mortality rate has reduced at a slow rate and has remained high compared to MDGs target of reducing it by two thirds by 2015 of 56 deaths per 1000 live births (Kato et al., 2018).

Globally, under-five mortality rate has decreased by 53%, from an estimated rate of 91 deaths per 1000 live births in 1990 to 43 deaths per 1000 live births in 2015. The average annual rate of

reduction in under-five mortality has accelerated from 1.8% a year over the period 1990–2000 to 3.9% for 2000–2015 but remains insufficient to reach MDG 4 (WB, 2015, 2018) and about 19 000 fewer children died every day in 2015 than in 1990. This could be attributed to a number of factors and the most notable one public health expenditure. To illustrate this, data presented in table 1 below, indicates that there has been a slight reduction in Under-five mortality rate from 1980 to 2013 that is 206 per 1,000 live births to 90 per live births while public health expenditure has increased from 6.43 percent in 1980 to 12.19 percent in 1990, reduced in to 9.5 percent in 2012.

Table 1: Under-five Mortality, Public expenditure, MDGs and Abuja target, Year 1980 1990 2005 2014 2015 target

Year	1980	1990	2005	2014	2015 target
Under-five mortality (per 1,000 live births)	206	177	152	68	56 (MDG)
Public health expenditure (percentage of government expenditure).	6.43	12.19	11.21	10.1	15 (Abuja)

Source: MDG Report, 2010; World Bank Indicators, 2015 (WB, 2015)

On the other hand, Uganda's under-five mortality rate has remained high that is 68 per 1000 live birth in relation to MDGs target of 56 per 1000 live birth in 2014. This shows that Uganda failed to meet 2015 MDG target of reducing under-five mortality to 56 per 1,000 live births. The MDGs assessment report by United Nation Development Programme (UNDP) shows that the low level of public health expenditure is a major factor determining poor child health outcomes in Uganda. However empirical evidence on the health expenditure and its effect on under-five mortality rate have remained inconclusive (Kato et al., 2018).

Under various studies in different countries showed that some governments spend less than 1% of their gross domestic product (GDP) on both preventative and intervention health services (Goel & Garg, 2016; Hilaire, 2018; Rajkumar & Swaroop, 2008). It also differs in public health expenditure depending on their level of developments. For example, per capital health expenditure during the year 2001 was \$29 in Sub-Saharan Africa and \$ 4887 for the U.S. In the same year the average GDP percent devoted for health in Sub-Saharan Africa was 6% and almost 14% in the U.S (Rajkumar & Swaroop, 2008).

Furthermore it was observed that countries with high level of public health spending have secured better health outcomes compared to countries with low level of public health spending (Sachs, 2008). This is an indication that the size of the public fund in health sector matters for better health outcomes. Equally, (Issa & Ouattara, 2005) found that at low levels of development public health expenditure has stronger effect on mortality rates compared with private expenditure while a country at high development levels the opposite is true. The given evidence in this regard shows a wide variation of per capital health expenditure and public health expenditure within and between different countries in the world according to their levels of development. In most developing countries, public health expenditure has failed to translate into better health status due to inherent difficulties of monitoring and controlling the behaviour of public health employees (Filmer, Hammer, & Pritchett, 2000; Yaqub, Ojapinwa, & Yussuff, 2012).

Shetty and Shetty (2014) in their study to establish the correlation of health spending and infant mortality rate in Asian countries found that Infant Mortality Rate (IMR) is one of the most vital health indicators and a number of factors impact and influence it. According to them, one of the most important ones is public health spending and per capita state spending on health was the most important determinant of IMR in their study and countries with higher per capita spending on health had significantly lower levels of IMR (Shetty & Shetty, 2014). While in another study by Barenberg, Basu, and Soylu (2017) on the impact of public health expenditure on the infant mortality rate (IMR), after controlling for other relevant covariates like per capita income, female literacy, and urbanization found that public expenditure on health care reduces IMR (Barenberg et al., 2017).

Novignon et al. (2012) mentioned that both public and private health care spending showed strong positive association with health status even though public health care spending had relatively higher impact in their study on the effects of public and private health care expenditure on health status in sub-Saharan Africa: new evidence from panel data analysis. The failure to bring impact on health outcomes (infant and under five mortality) was probably due to its low level of public health spending (Byaro & Musonda, 2016).

Contrary to what many had indicated that public health expenditure impacts health outcomes (like reduction of child mortality rate), others have castigate this saying it is not the case probably for some other reasons. For example in their study, (Byaro & Musonda, 2016) found that despite changing patterns on government health expenditure over the period 1995 to 2013, still government health expenditure had no impact on health outcomes (infant and under five mortality) in Tanzania (Byaro & Musonda, 2016). Dollar and Burnside (1999) also show that there exists no significant relationship between health care expenditure and change in infant mortality in low-income countries.

Other studies have found no evidence that health related spending has any effect on health outcomes (Musgrove, 1996). Filmer et al. (2000) provided evidence to show that while health care spending impact on child mortality, it is not the dominant driver of this health outcome. Factors such as education, technological change, income and cultural differences have been identified by some researchers as major drivers of health outcomes rather than health care spending. Similarly, (Ssewanyana & Younger, 2008) identified the vital factors that impact on child survival as, household income, availability of health services and the vaccination of children. Out of pocket payments remained the largest form of payment within Uganda's health sector, contributing over 60% (Filmer & Pritchett, 1997).

This has fostered inequality in accessibility to health services especially by the poor people thereby reducing the chances of child survival (GoU, 2015b). Urban Vs rural factor where it was found out that children born in Kampala have few risks of being affected by communicable disease compared to those born in rural areas like Karamoja (Bbaale & Buyinza, 2012) and increase in the share of urban population by 10% points would reduce the infant mortality rate by 3.5 infant death per 1000 live birth (Barenberg et al., 2017).

Furthermore, Ssewanyana and Younger (2008) asserted that mothers' education attainment has increasingly large impact on the under-five mortality. Children whose mothers have attained

secondary are 34 per 1,000 lower than those children whose mothers did not complete primary education. In addition effect of women literacy rate on under-five mortality is examined by Filmer and Pritchett (1997) within health production function using 1960 -1992 data across 20 OECD. The study revealed that under-five mortality depends on the female literacy, found out that roughly 10 percent lower mortality per additional year of female schooling, having four more years of female education than the current average (5years) is associated with 39 percent lower under-five mortality. Relatedly, breastfeeding has significant association with lower relative risks of child mortality and stunting (Bbaale & Buyinza, 2012).

METHODS

This study involved analyzing the available data drawn from various sources. The time series data on public health expenditure was obtained from Ministry of Health reports on background to the budget and Ministerial Policy Statements for the period 2000-2016. This data was further demarcated into parameters such as per capita government spending on health in Uganda shillings, health spending as a proportion of Gross Democratic Product (GDP) and private health spending as a proportion of total health spending.

Current time series of data on child mortality rate for Uganda was obtained from the World Bank health indicators database, Uganda's Demographic and Health Surveys (UDHS), UBOS, WHO and UN all report on all or some years between 2000 and 2016. In addition to providing a long time series of data offers the advantage of a very large sample of more than 60,000 births. As Mosley and Chen (1984) noted, infant mortality is a rare and statistically noisy event, so it is essential that any analysis of its determinants be based on a large sample. The IMR parameters were later matched with the health spending data to determine if a country's higher per capita state health expenditure lead to better or low IMR rates.

The study used full Bayesian time series approach based on Markov Chain Monte Carlo (MCMC) methods in WinBUG1.4 statistical package to examine the impact of public health expenditure on health outcomes (infant and under-five mortality). The MCMC utilizes time series because; it's set up contains all information to time t and for time t-1. The Metropolis-Hasting algorithm enables a wide class of time series models to be estimated by Metropolis-Hasting Markov Chain Monte Carlo (Guerrón-Quintana & Nason, 2013). The dataset was drawn with a normal distribution of mean.

Table 2: Normality test on the study variables

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GDP per capita growth (annual %)	.126	17	.200	.950	17	.461
Current health expenditure (% of GDP)	.117	17	.200	.949	17	.445
Infant mortality rate (per 1,000 live births)	.109	17	.200	.938	17	.295
under-five mortality rate (per 1,000 live births)	.106	17	.200	.943	17	.349
Budget allocation to health sector (Billion UG shillings)	.145	17	.200	.920	17	.146
<i>Null Hypothesis: The variables are normally distributed at 5% level of significance</i>						

Source: Author's computations from World Bank Development Indicators (2020) and MFPED (2020)

Table 1 above presents the normality test for GDP per capita, Health expenditure as a share of GDP, infant and under-five mortality as well as Budget expenditure on health. The P-values of

Kolmogorov-Smirnov and Shapiro-Wilk test were all above 0.05 level of significance, thus an indication that all the series on the variables were normally distributed from 2000 to 2016.

RESULTS

Table 3: Effect of GDP per capita and public health expenditure as a share of GDP on infant mortality in Uganda from 2000 to 2016

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.330 ^a	.109	.018	16.9269		
a. Predictors: (Constant), Health expenditure as a % share of GDP, GDP per capita growth (% annual)						
b. Dependent Variable: Infant mortality rate (per 1000 live births)						
ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	490.327	2	245.163	.856	.446 ^b
	Residual	4011.295	14	286.521		
	Total	4501.621	16			
a. Dependent Variable: Infant mortality rate (per 1000 live births)						
b. Predictors: (Constant), Health expenditure as a % share of GDP, GDP per capita growth (%annual)						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29.484	24.147		1.221	.242
	GDP per capita growth (%annual)	-.692	2.773	-.089	-.250	.806
	Health expenditure as a % share of GDP	3.513	3.234	.387	1.086	.296
a. Dependent Variable: Infant mortality rate (per 1000 live births)						

Source: Author's computations from World Bank Development Indicators (2020)

The linear regression results revealed a non-significant negative effect of GDP per capita growth on infant mortality rate from 2000 to 2016 as explicitly indicated by P-value (0.806) which is above 0.05 level of significance. The findings may imply that reduction in infant mortality rate per year may not be as a result of growth in per capita GDP in Uganda. In the same vein, table 1 reveals that there is no significant effect of Health expenditure as a share of GDP on infant mortality rate in Uganda from 2000 to 2016 ($P > 0.05$). This is an indication that Health expenditure as a share of GDP is not a determinant of infant mortality rate in Uganda.

Table 4: Effect of GDP per capita and public health expenditure as a share of GDP on under-five mortality in Uganda from 2000 to 2016

Model Summary ^b						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.345 ^a	.119	.007	31.4120		
a. Predictors: (Constant), Health expenditure as a % share of GDP, GDP per capita growth (% annual)						
b. Dependent Variable: Under five mortality rate (per 1000 live births)						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1865.655	2	932.828	.945	.412 ^b
	Residual	13814.020	14	986.716		
	Total	15679.675	16			
a. Dependent Variable: Under five mortality rate (per 1000 live births)						
b. Predictors: (Constant), Health expenditure as a % share of GDP, GDP per capita growth (% annual)						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	36.157	44.811		.807	.433
	GDP per capita growth (%annual)	-1.307	5.146	-.090	-.254	.803
	Health expenditure as a % share of GDP	6.824	6.002	.402	1.137	.275
a. Dependent Variable: Under five mortality rate (per 1000 live births)						

Source: Author's computations from World Bank Development Indicators (2020)

The linear regression results show a negative effect of GDP per capita on under-five mortality in Uganda from 2000 to 2016, albeit the effect is non-significant ($P > 0.05$). This may imply that decrease in under-five mortality rate in Uganda may not fundamentally be determined by growth in GDP per capita. Similarly, the regression findings enlightened that Health expenditure as a share of GDP had no significant influence on under-five mortality in Uganda, thus highlighting that Health expenditure as a share of GDP is not a significant predictor of under-five mortality in Uganda.

Figure 1 shows the trends of GDP per capital and public health expenditure as a share of GDP on health outcomes (infant and under-five mortality) in Uganda over the period 2000 to 2016.

Budget Allocation To The Health Sector And Maternal Mortality Rate (MMR) In Uganda

This assessed how the budget allocation to the health sector influences the MMR in Uganda.

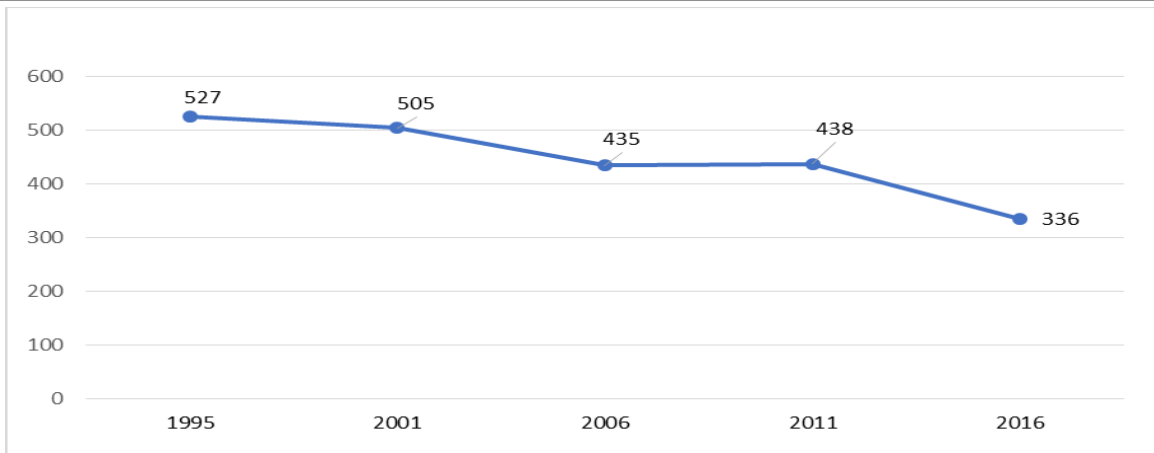


Figure 1: Trend of Maternal Mortality Rate in Uganda (per 100,000 live birth)

Source: Authors computations own from UBOS (2018)

The findings in figure 1 show that there was a decline in MMR from 527 death per 100,000 live birth in 1995 to 336 death per 100,000 live birth in 2016. The findings imply that there has been considerable decline in MMR in Uganda since 1995 which is a sign of improved health in the country. These findings are similar to those from Uganda Bureau of Statistics that reported a reduction in infant and maternal rates in 2016 (Namutebi, 2017). Ugandan government should put controls at the local level to enforce that all pregnant mothers deliver under the attendant of a health worker and must receive free antenatal care visits throughout their pregnancy. Government should continue with the distribution of mosquito nets in support to reduce the deadly malaria that would affect the lives of mothers.

The Effect Of Budget Allocation To The Health Sector On Maternal Mortality Rate In Uganda

Table 3: The effect of budget allocation to the health sector on Maternal Mortality rate in Uganda.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.951 ^a	.905	.810	25.29291		
a. Predictors: (Constant), Health sector budget allocation						
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6098.269	1	6098.269	9.533	.199 ^b
	Residual	639.731	1	639.731		
	Total	6738.000	2			
a. Dependent Variable: MMR						
b. Predictors: (Constant), Health sector budget allocation						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	477.491	28.202		16.931	.038
	Health sector budget allocation	-0.074	.024	-.951	-3.087	.199
a. Dependent Variable: MMR						

Source: Authors own computations from UBOS and MoFPED

The findings from table 3 reveal that there is a negative but insignificant effect of health sector budget allocation on the MMR in Uganda since the P-value (0.199) is above 5% level of significance. This implies that the maternal mortality rate keeps on reducing every year in Uganda but it's depending on the budget allocated to the health sector. This may imply that Government of Uganda needs to increase on budget allocation in Health and take health related issues as a priority in this country.

The government of Uganda needs to stick to its commitment made 2013 where they launched a road map and drive to end maternal deaths. The plan was reduced maternal deaths to below 26% by 2017. There is need to engage the development agencies, international and local non-governmental organizations, legislators, civil society, government ministries, private sector, government, population, religious and cultural leaders and local leaders to act vigorously support the drive to support target achievement (WHO, 2013).

Need to increase access to health services so that the vulnerable population is not deprived. There is need for high impact interventions to eliminate the causes of the deaths and strengthening mutual accountability.

Health priority can lure United Nations to provide government of Uganda full support to implement its plans to reduce on the number of women dying in the country. The health workers and health partners across Uganda should map their activities to ensure that interventions of reducing maternal deaths is upheld in all their activities.

Health workers should gain commitment to achieve both local and international development commitments such as Sustainable Development Goals and National Development Plan and put measures in place to monitor services delivered by the health sector.

There is need for efficient utilization of resources and line ministers should collaborate in support of the health sector in achieving set targets of reducing maternal mortality rates. The achievement of set targets requires combined efforts across all sectors (Namutebi, 2017).

Policy makers and program managers should take lessons and design similar approaches that could reduce or prevent maternal deaths. Promoting facility delivery is key and improve transportation to health centers. Local governments involvement and mapping to reduction of maternal deaths is a critical. Currently districts are non-interventional they perceived this dilemma as a mess to be cleaned up by central government as give excesses of lack of funding. There is need to launch full coverage initiative with control groups and pilot with a few districts before roll out with the intention of scope, timelines, and intensity with monitoring indicators.

CONCLUSION

Maternal mortality fell significantly in Uganda due to some interventions in the health sector. The decline is likely to have been cause due to supply and demand situations (Serbanescu et al., 2017). There is need to improve funding in the health sector in order to improve quality health services through better coordination, health management, transportation, access, infrastructure at the district level. There is need for district involvement in streamlining a district system with a strengthened approach that will focus on the reductions in the "three delays" as policy makers and

program coordinators design other intervention approaches to reduce maternal mortality in the country.

References

- Appleton, S., & Ssewanyana, S. (2002). Poverty analysis in Uganda.
- Barenberg, A. J., Basu, D., & Soylu, C. (2017). The effect of public health expenditure on infant mortality: evidence from a panel of Indian states, 1983–1984 to 2011–2012. *The Journal of Development Studies*, 53(10), 1765-1784.
- Bbaale, E., & Buyinza, F. (2012). Micro-analysis of mother's education and child mortality: Evidence from Uganda. *Journal of International development*, 24, S138-S158.
- Byaro, M., & Musonda, P. (2016). Impact of public health expenditure on infant and underfive mortality in Tanzania (1995-2013): An Application of Bayesian Approach. *Journal of Economics and Sustainable Development*, 7(12), 178-187.
- Deluna Jr, R., & Peralta, T. F. (2014). Public health expenditures, income and health outcomes in the Philippines.
- Dollar, D., & Burnside, C. (1999). Aid, the incentive regime, and poverty reduction: The World Bank.
- Filmer, D., Hammer, J. S., & Pritchett, L. H. (2000). Weak links in the chain: a diagnosis of health policy in poor countries. *The World Bank Research Observer*, 15(2), 199-224.
- Filmer, D., & Pritchett, L. (1997). Child mortality and public spending on health: how much does money matter? (Vol. 1864): World Bank Publications.
- Franco, Á., Gil, D., & Álvarez-Dardet, C. (2005). State size as measured in terms of public spending and world health, 1990-2000. *Gaceta sanitaria*, 19, 186-192.
- Goel, M., & Garg, I. (2016). Public expenditure on health and its impact on health infrastructure and health status in Haryana. *Voice of Research*, 5(2), 9-18.
- GoU. (2010). NATIONAL HEALTH ACCOUNTS FY 2008/09 and FY 2009/10. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiRiMvyl8noAhVT5uAKHd5CB4lQFjAAegQIBxAB&url=http%3A%2F%2Flibrary.health.go.ug%2Fdownload%2Ffile%2Ffid%2F548&usg=AOvVaw2jVEm6N0bngQq_6MJ1X1tz/file:///C:/Users/DIRECT~1/AppData/Local/Temp/National%20Health%20accounts%20Report%202013-1.pdf/ retrieved, May, 2019.
- GoU. (2013). Millennium Development GoalsReport for Uganda 2013. <https://www.undp.org/content/dam/uganda/docs/UNDPUG-2013MDGProgress%20Report-Oct%202013.pdf/> retrieved, November, 2019.
- GoU. (2015a). HEALTH SECTOR DEVELOPMENT PLAN2015/16 - 2019/20. <http://npa.go.ug/wp-content/uploads/2016/08/Health-Sector-Development-Plan-2015-16-2019-20-1.pdf/> retrieved, September, 2019.
- GoU. (2015b). Ministry of Health Annual health sector performance report ,FY2014/15 Kampala https://www.health.go.ug/docs/AHSPR_2013.pdf.
- Guerrón-Quintana, P. A., & Nason, J. M. (2013). Bayesian estimation of DSGE models. In *Handbook of research methods and applications in empirical macroeconomics*: Edward Elgar Publishing.
- Hilaire, H. G. (2018). Health expenditure and health outcome in Africa.
- Issa, H., & Ouattara, B. (2005). The effect of private and public health expenditure on infant mortality rates: does the level of development matters. Economics Department, University Of Wales Swansea, United Kingdom.
- Kato, K., Mugarura, A., Kaberuka, W., Matovu, F., & Yawe, B. L. (2018). The effect of public health spending on under-five mortality rate in Uganda. *African Journal of Economic Review*, 6(1), 47-71.
- Lindberg, M., Ahlner, J., Ekström, T., Jonsson, D., & Möller, M. (2002). Asthma nurse practice improves outcomes and reduces costs in primary health care. *Scandinavian Journal of Caring Sciences*, 16(1), 73-78.

- Mosley, W. H., & Chen, L. C. (1984). *Child survival: strategies for research*. In *Child survival: strategies for research*.: Cambridge University Press; Population & Development Review; supplement to
- Murthy, N. V., & Okunade, A. A. (2000). Managed care, deficit financing, and aggregate health care expenditure in the United States: a cointegration analysis. *Health Care Management Science*, 3(4), 279-285.
- Murthy, V. N., & Okunade, A. A. (2009). The core determinants of health expenditure in the African context: Some econometric evidence for policy. *Health Policy*, 91(1), 57-62.
- Musgrove, P. (1996). Public and private roles in health: theory and financing patterns.
- Namutebi, J. (2017). Uganda registers decline in infant, maternal mortality. https://www.newvision.co.ug/new_vision/news/1448674/uganda-registers-decline-infant-maternal-mortality/HTML, retrieved, May, 2019.
- Novignon, J., Olakojo, S. A., & Nonvignon, J. (2012). The effects of public and private health care expenditure on health status in sub-Saharan Africa: new evidence from panel data analysis. *Health economics review*, 2(1), 22.
- Rajkumar, A. S., & Swaroop, V. (2008). Public spending and outcomes: Does governance matter? *Journal of development economics*, 86(1), 96-111.
- Sachs, J. D. (2008). Scaling up health in low income settings. *Strategic issues and challenges in health management*, 1-6.
- Serbanescu, F., Goldberg, H. I., Danel, I., Wuhib, T., Marum, L., Obiero, W., . . . Stupp, P. W. (2017). Rapid reduction of maternal mortality in Uganda and Zambia through the saving mothers, giving life initiative: results of year 1 evaluation. *BMC pregnancy and childbirth*, 17(1), 42.
- Shetty, A., & Shetty, S. (2014). The correlation of health spending and infant mortality rate in Asian countries. *International Journal of Contemporary Pediatrics*, 1(2), 100-105.
- Ssewanyana, S., & Younger, S. D. (2008). Infant mortality in Uganda: Determinants, trends and the millennium development goals. *Journal of African Economies*, 17(1), 34-61.
- Ssozi, J., & Amlani, S. (2015). The effectiveness of health expenditure on the proximate and ultimate goals of healthcare in Sub-Saharan Africa. *World development*, 76, 165-179.
- UBOs. (2019). Public Health - Uganda Bureau of Statistics. <https://www.ubos.org/publications/statistical/25/pdf/> retrieved, April, 2020.
- UN. (2015a). The Millennium Development Goals Report 2015. [https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf), retrieved, Mrach, 2018.
- UN. (2015b). REDUCE CHILD MORTALITY. <https://www.un.org/millenniumgoals/childhealth.shtml.html>, retrieved, December, 2019.
- WB. (2015). World development indicators 2015. <http://documents.worldbank.org/curated/en/795941468338533334/World-development-indicators-2015/html>, retrieved, October, 2019.
- WB. (2018). Mortality rate, infant (per 1,000 live births). <https://data.worldbank.org/indicator/SP.DYN.IMRT.IN/html>, retrieved, November, 2019.
- WHO. (2010). WORLD HEALTH ASSEMBLY (1946) Constitution of the World Health Assembly WHA. World Health Organization.
- WHO. (2013). Government of Uganda launches national drive to end preventable child and maternal deaths. <https://www.afro.who.int/news/government-uganda-launches-national-drive-end-preventable-child-and-maternal-deaths/html>, retrieved, April, 2019.
- WHO. (2018). Millennium Development Goals (MDGs). [https://www.who.int/news-room/fact-sheets/detail/millennium-development-goals-\(mdgs\)/html](https://www.who.int/news-room/fact-sheets/detail/millennium-development-goals-(mdgs)/html), retrieved, May, 2018.

Madinah, N. (2020). The Impact Of The Country's Health Services' Expenditure On The Success Of Mdgs, Goal 4/Sdg 3: Reduction Of Child Mortality In Uganda (2000-2016). *Archives of Business Research*, 8(8), 69-82.

Yaqub, J., Ojapinwa, T., & Yussuff, R. (2012). Public health expenditure and health outcome in Nigeria: The impact of governance.