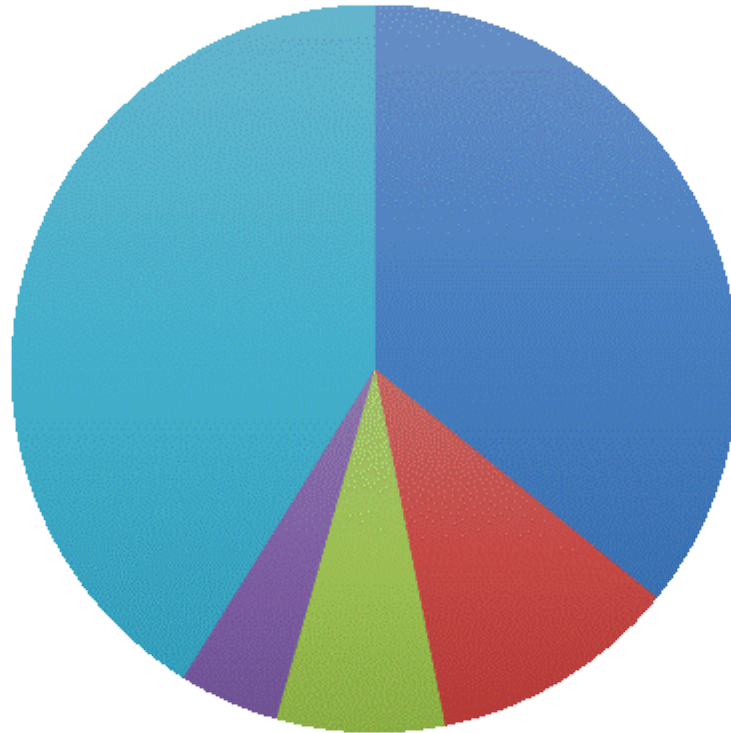


Case Study Report

Global Health Funding



Group 10

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1. Executive Summary

Observations

Simultaneous consideration and analysis of GHE and GBD Data reveals:

1. About 41% of the average of total DALYs is clustered under the age group of 0-5 years
2. About 28% of the average of total Deaths is clustered under the age group of 0-5 years
3. Mortality rate under age 5 years and deaths and DALYs under age 5 years are the highest in Ethiopia for all the years
4. Deaths and DALYs under age 5 years as a percentage of total Deaths and DALYs respectively are the highest in Sierra Leone for all the years
5. Out of pocket expenditure as a percentage of Current Health Expenditure is about 38% for Ethiopia
6. Per capita Out of Pocket Expenditure is the highest for Sierra Leone

Recommendations

Investments targeting on Neonatal Disorders in Ethiopia along with Neonatal, Malarial and Diarrheal Disorders in Sierra Leone shall have far reaching and the most alleviating impacts on health expenditure and scenario in the respective countries compared to all other instances because:

1. For the year 2016, about 61% of children under age 5 years died in Sierra Leone due to Neonatal, Malaria and Diarrheal and 60% of the DALYS for children under age 5 years was caused by the same set of disorders.
2. In Ethiopia, about 37% of the total Deaths under age 5 years for the year 2016 were caused due to Neonatal Disorders and DALYS for the same criteria which account for 36%.

2. Introduction

In order to evaluate the best options based on both the datasets supposed to be used for this report, it is imperative to search for significant similarities or uniformities in them so as to facilitate most compelling outcomes. It is not difficult to deduce that the range of age-groups used in the data for Global Burden of Disease (GBD) lacks uniformity; the lowest range being that of 0-5 years i.e. the years of infancy and early childhood. Also, in Global Health Expenditure (GHE) there are certain fields that are highlighted separately based on age such as "Population under 5" and "Mortality rate under 5". Further evaluation based on these similarities/uniformities also reveals that the second highest number of average deaths and the highest number of average DALYS are germane to age group with the lowest range i.e. 0-5 years. Certainly investment in this strata means targeting improvement and sustenance of health at the most nascent age level. This shall provide for benefits that shall last for the most significant parts of a human lifetime and salvage the highest number of any country's manpower years.

Delving into further analysis based on the foregoing deductions, it becomes important to evaluate country-wise data with following two-angles

- 1) Absolute number of Deaths and DALYS (Disability Adjusted Life Years) under age 5 years.
- 2) Deaths and DALYS under age 5 years as a percentage of total Deaths and DALYS respectively.

Ethiopia ranks highest in terms of absolute population under age 5 with the year 2014 figure going up to 14,415 thousands which is a considerable 5601 units more from that of the second highest country Tanzania. In terms of country-wise percentage of population under age 5 years for the year 2014, the figures for all the countries range from 10%-20%, which is not a very significant composition of their respective total population. Hence, when compared with other age groups with much larger range, deaths and DALYS are higher while the population is lower in age-group 0-5.

Additionally, one of the criteria is to reduce burden posed by Out-of-Pocket Expenditure which requires evaluation of more than one macro-economic parameters provided so as to form a more logically acceptable opinion. It becomes

necessary to look at Per Capita Income (calculated by dividing GDP to total population for every country) viz-a-viz Per Capita Out of Pocket Expenditure. Moreover, it is also important to pay attention to the percentage of Out of Pocket Expenditure in the Total Current Health Expenditure. For the year 2015, Per Capita Out of Pocket expenditure as a percentage of Per Capita Income is the highest for Sierra Leone at 7%. For all other countries it ranges from 1-3%. Also for the year 2015, Out of Pocket Expenditure as a percentage of Current Health Expenditure is the highest for Uganda at 41% while Sierra Leone and Ethiopia are not far behind at second with 38%. It is important to note that even though per capita out of pocket expenditure for South Africa has been the second highest for most of the given years, it has also been the country with the highest Per Capita Income for all the given years. Thus, in terms of affordability, an average South African does not suffer a huge out of pocket health expenditure burden compared to other nationals.

At the same time, the choice of investment in four instances distributed over two countries becomes a challenging task because it entails for:

- 1) Disease-wise/Cause-wise evaluation of total Deaths and DALYS under age 5 for every country.
- 2) Age-group-wise evaluation of total Deaths and DALYS due to a particular disease/cause in every country.

3. Key Contextual Consideration

This section will provide the detailed analysis about the causes selected focusing on the age group of under 5 years.

a. Neonatal Disorder – Ethiopia and Sierra Leone

Neonatal Disorders represent the dysfunction or abnormality of a newborn's organ or body (Greenough & Parker, 1995). Hence, this particular disorder will only apply to the 0 – 5 age group. Statistics from the GBD dataset show that Ethiopia has one of the highest rate of deaths under the age of five years due to neonatal disorders with 37%. While other countries such as Ghana and Zimbabwe also have a high rate of death in the 0 – 5 age group caused by neonatal disorders, their absolute number of deaths are insignificant in comparison. Furthermore, neonatal disorders are the prime cause of deaths in infants aged 0 – 5, as it makes up 26% of deaths under 5 years. This highlights the true significance of this disease. To compound this, 31% of deaths of all ages are those under 5 years in Ethiopia. Again, there are countries that have a higher rate of under 5 years deaths across all ages, but Ethiopia has a more significant absolute number in comparison. 54% of this 31% of deaths of all ages are those under 5 years in Ethiopia are caused by neonatal disorders. This illustrates the significance of this disease under at the age of 5 years across all ages in Ethiopia.

In addition to deaths, DALYS is also taken into consideration to measure the disease burden. Indeed, Ethiopia has a high 36% for those aged under 5 years due to neonatal disorder, which provides more besides the death count. However, another criterion that the decision is based on is the Out of Pocket expenditure of a country, which brings the discussion to Sierra Leone. Whilst its population is dwarfed by the aforementioned countries plagued by this disease, the out of pocket expenditure is far more significant than the other countries with an out of pocket expenditure per capita of 41usd. This high sum of out of pocket expenditure justifies the choice for selecting neonatal disorders in both Ethiopia for death rate reasons and Sierra Leone for out of pocket expenditure reasons.

b. Diarrheal Disorder – Sierra Leone

Regarding the GBD dataset, Diarrheal has been one of the four main causes of death in infants aged below five years old affected in many countries of Africa throughout the period from 2000 to 2016. The data also indicated that the proportion of Sierra Leonean newborns underwent the disease and died shared the most percentage of all ten countries.

To elaborate, Although Sierra Leone was the least populated country and shared the lowest amount of mortality rate of all ages, the deaths arising from the first four causes in newborns, accounted for almost 50% of its nation. By this proportion, there are approximately 82% of Sierra Leone in all years infants aged under five were suffered from Diarrheal and 68% of them were death. Apart from the data, it could be implied that the disease has been considered as the primary cause that took Sierra Leonean infant's life aged below five. Controlling the disease may contribute to the great impact on an overall mortality rate and DALYs of this nation. Besides, according to GHE dataset, in term of financial perspective, its current health expenditures per Capita as percentage of per capita income indicated a gradual increase ranging from 9%-20% throughout the period, which was higher than the richest country in Sub-Saharan nation, South Africa, at almost 7% and ranked the second in domestic private health expenditure per capita. This suggested a better opportunity of successful investment over the other countries.

c. Malaria – Sierra Leone

From the perspective of mortality, in Sierra Leone, the total deaths under 5 years old due to all causes is ranked the last one whether it's from the past 16 years or the last 5 years. However, it's worth noting that total deaths under 5 years old due to Malaria is quite high (approximately 29%). For example, compared with Ethiopia where the deaths under 5 years old are the highest and total deaths under 5 years old due to Malaria is only about 2%. By calculation, it is surprising that total deaths due to Malaria under 5 years old account for 80% of total deaths due to Malaria for all ages.

In DALYs terms, compared with other countries, even if the deaths of all diseases under 5 years old are still the lowest, the deaths due to Malaria is the highest (nearly 28%) and it has not been significantly improved in the past few years. In Sierra Leone, total DALYs due to Malaria hasn't experienced many changes, but total deaths due to Malaria under 5 years old made up 82% of total deaths due to Malaria for all ages.

4. Conclusion

Based on the result of the analysis that shows high mortality and casualties in the infant age group under 5 years, this report has focused on the infant age group and selected diseases that show high mortality in the infant age group. The 41% of total DALYs and 28% of total Deaths is clustered under the infant age group, and the mortality rate is also high in this age group for the current 5 years, especially in Ethiopia. Although Sierra Leone shows relatively low mortality compared to Ethiopia, it shows the highest 'Per capita Out-of-Pocket Expenditure' among ten countries. For Ethiopia, it shows one of the highest Out-of-Pocket Expenditure as a percentage of Current Health Expenditure with the share of 38%. Accordingly, the age group of the infant under 5 years are determined to be targeted. When focusing on the mortality and casualties of infants, the analysis has found that Ethiopia shows the highest total Deaths for the age under 5 years with the share of 37% which is derived from the Neonatal Disorder. For Sierra Leone, 61% of 0-5 age group died due to Neonatal, Malarial and Diarrhoeal Disorders, and it shows 60% of DAYS for the same age group with the same disorders.

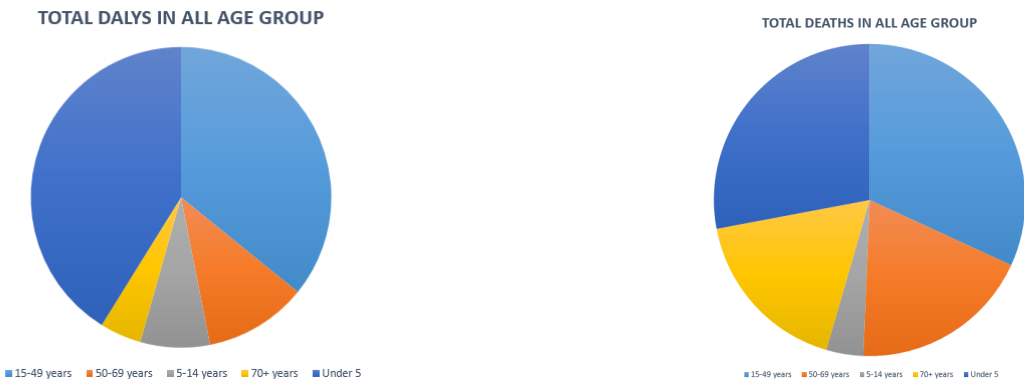
This result is difficult to ignore that the age group that requires the largest help and aids are the infants and children, considering that about half of the children died were suffering from these diseases. If so, the age group that requires the largest help and aids is the infants and children in those two countries, which suffer a significant burden of diseases and financial scenarios are relatively less suitable. Therefore, the investment on health and living of Sub-Saharan Africa should be concentrated with priority on to the children in Ethiopia with an aim to reduce the burden of Neonatal Disorder and children in Sierra Leone affected by Neonatal, Malarial and Diarrhoeal Disorder. By setting the goals to reduce these significant shares of mortality and casualties, the impact expected from the investment should be substantial.

5. Reference

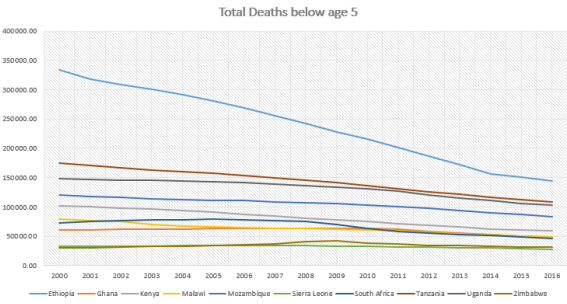
Greenough, A. & Parker, A., 1995. Common Neonatal Disorders. Paediatric Respiratory Care, pp. 105-121.

6. Appendix

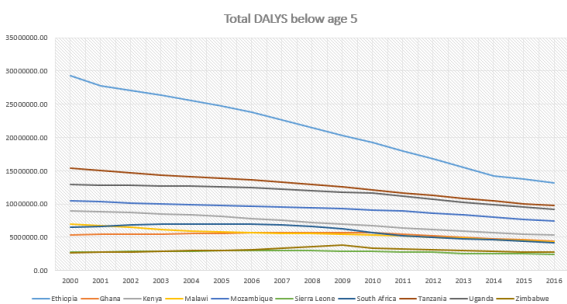
a. Total DALYs and Total Deaths in all age groups



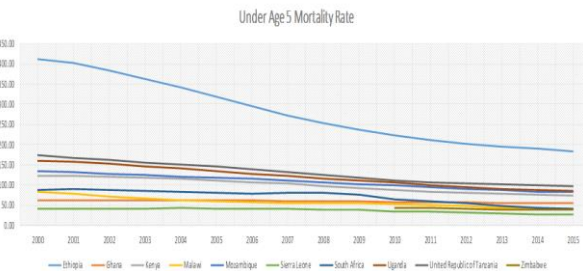
b. Total Deaths below age 5 years



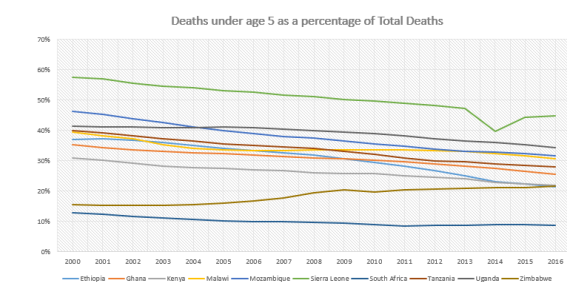
c. Total DALYs below age 5



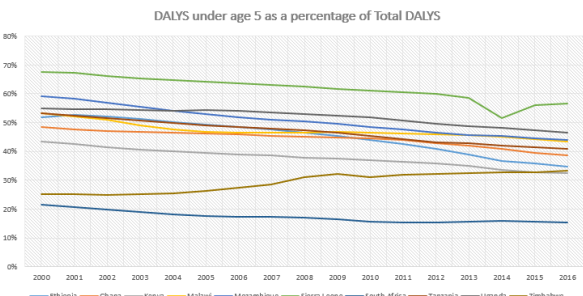
s. Mortality Rate below age 5



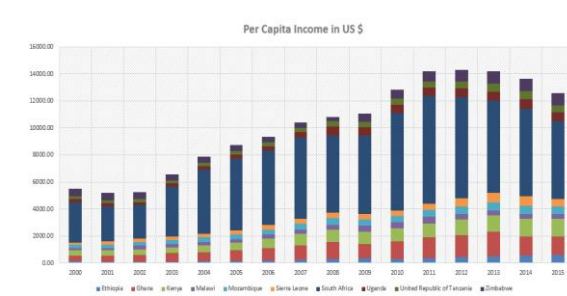
e. Deaths under age 5 as a percentage of Total Deaths



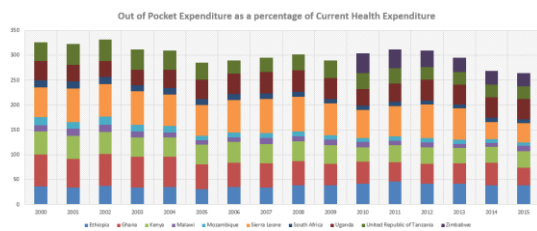
f. DALYs under age 5 as a percentage of Total DALYs



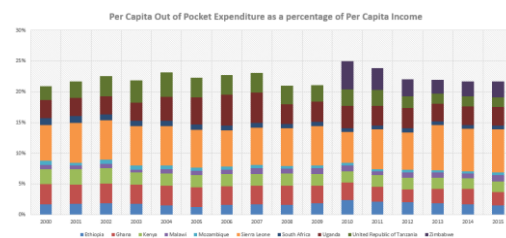
g. Per Capita Income in US\$



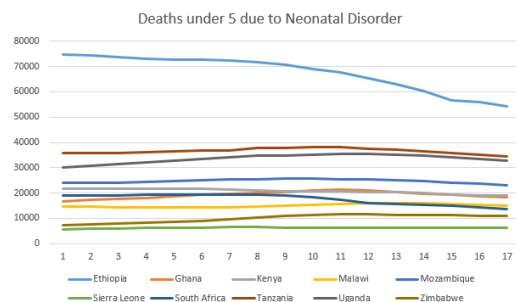
h. Out of Pocket Expenditure as a percentage of Current Health Expenditure



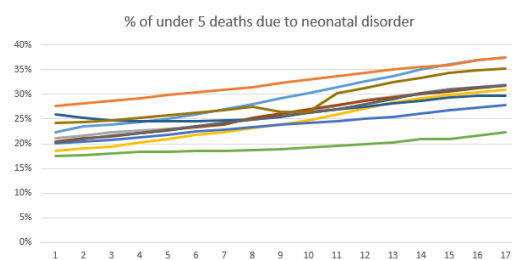
i. Per Capita Out of Pocket Expenditure as a percentage of Per Capita Income



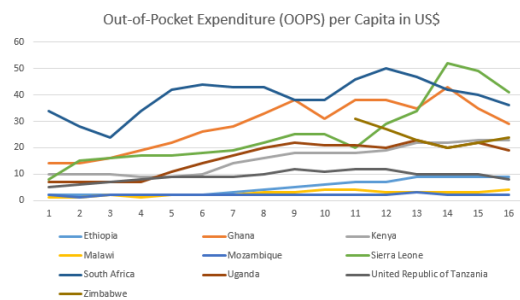
j. Deaths under 5 due to Neonatal Disorder



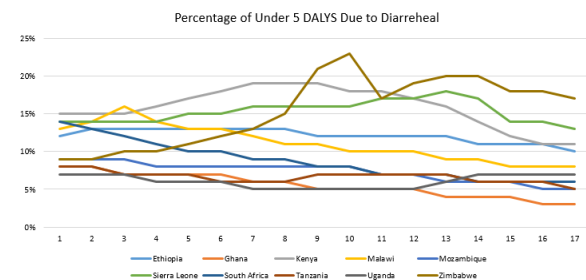
k. Percentage of under 5 deaths due to neonatal disorder



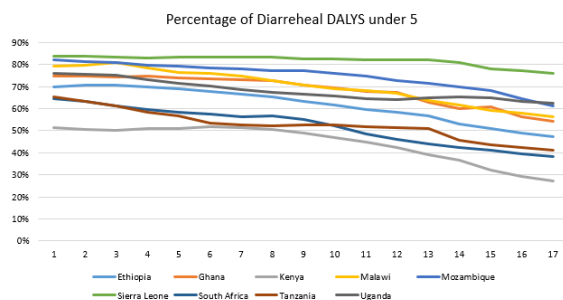
l. Out-of-Pocket Expenditure (OOPS) per Capita in US\$



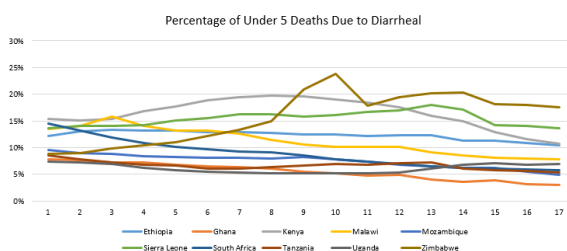
m. Percentage of Under 5 DALYS Due to Diarrheal



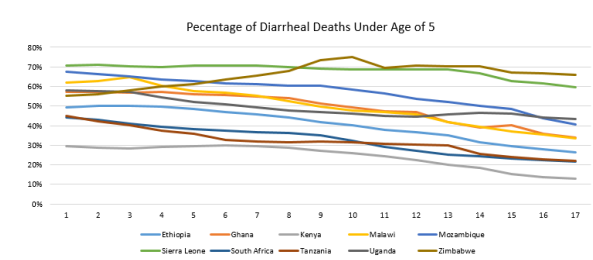
n. Percentage of Diarrheal



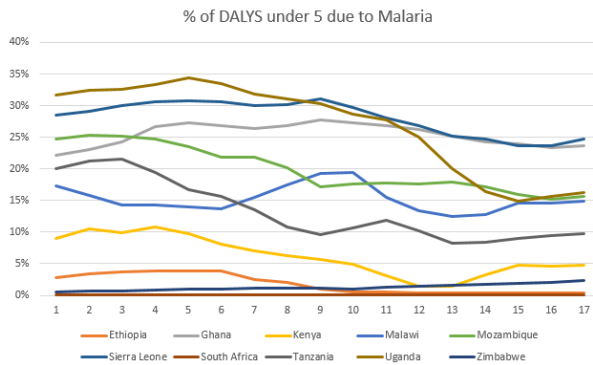
o. Percentage of Under 5 Deaths Due to Diarrheal



p. Percentage of Diarrheal Deaths Under Age of 5



r. Percentage of DALYS under 5 due to Malaria



q. Percentage of under5 deaths happening due to malaria in total malaria

