



# Can Results-Based Financing Help Reduce Wealth-Based Disparities in Maternal and Child Health Outcomes in Zimbabwe?

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## **Abstract**

Results-based financing (RBF) programme evaluations in sub-Saharan Africa (SSA) have concentrated on quantifying the impact of such programmes on maternal and child health outcomes, worker satisfaction, and quality of care. Very few studies have considered assessing the effectiveness of these programmes from a distributive perspective. This study uses nationally representative data from the Zimbabwe demographic and health survey complemented with geographic location data. As a first step, the empirical approach quantifies wealth-related inequalities in selected maternal and child health outcomes using concentration indices at the district level. A standard

difference-in-difference model complemented by kernel-based propensity score matching was used to consistently estimate the impact of the RBF programme on the equality of maternal and child health outcomes across socioeconomic gradients in Zimbabwe by comparing the changes in concentration indices between 2010 and 2015 in ten districts with RBF and thirty districts without the RBF programme for 12 indicators of access to maternal health care and nine indicators of child health outcomes. The results show that the RBF programme was associated with greater and significant improvements in equity related to several outcomes. These outcomes included: prenatal care use (four or more prenatal care visits), family planning, quality of prenatal care (blood pressure checks, iron tablets, and tetanus toxoid vaccinations), child full immunizations, and treatment for fever occurring in the two weeks before the survey. The RBF programme did not appear to ameliorate wealth-related inequality in terms of child low birth weight, neonatal mortality, stunting, diarrhoea prevalence, treatment for diarrhoea, and fever prevalence. A sensitivity check of the estimates indicate that our results are weakly robust to the consideration of absolute measures of inequality (slope index of inequality and the generalized Gini index). From a policy perspective, the results have important implications for public health policies geared towards improving access to maternal and child health care services in developing countries. Our analysis reveals that RBF programmes do not necessarily eliminate wealth-related inequality in maternal and child health outcomes in Zimbabwe but are certainly a useful complement to equity-enhancing policies in the country.

## Introduction

Over the last few years, results-based financing (RBF) schemes have gained considerable support among low- and middle-income countries as essential mechanisms to improving health system functionality and health outcomes of vulnerable groups such as women and children under the age of five years. Broadly defined, RBF strategies comprise a mix of demand- and supply-side incentives that encourage the use of health services as well as reward health service providers for providing quality health services or for enhanced system performance (Eichler & Levine, 2009). The RBF schemes in their numerous forms include performance-based financing, performance-based contracting, vouchers, and output-based financial assistance (Musgrove, 2011). Performance-based financing (PBF) is a form of RBF consisting of three conditions. These conditions are: (i) incentives are channelled to providers only and not to beneficiaries; (ii) awards are purely financial in nature; and (iii) payment depends explicitly on the degree to which services are of required quality (Musgrove, 2011). Performance-based contracting (PBC) is the mechanism through which any results-based incentive is expressed in a formal agreement between involved parties (Musgrove, 2011). In this instance, PBC does not describe a distinct type of scheme as any form of RBF will involve contractual agreement specifying what

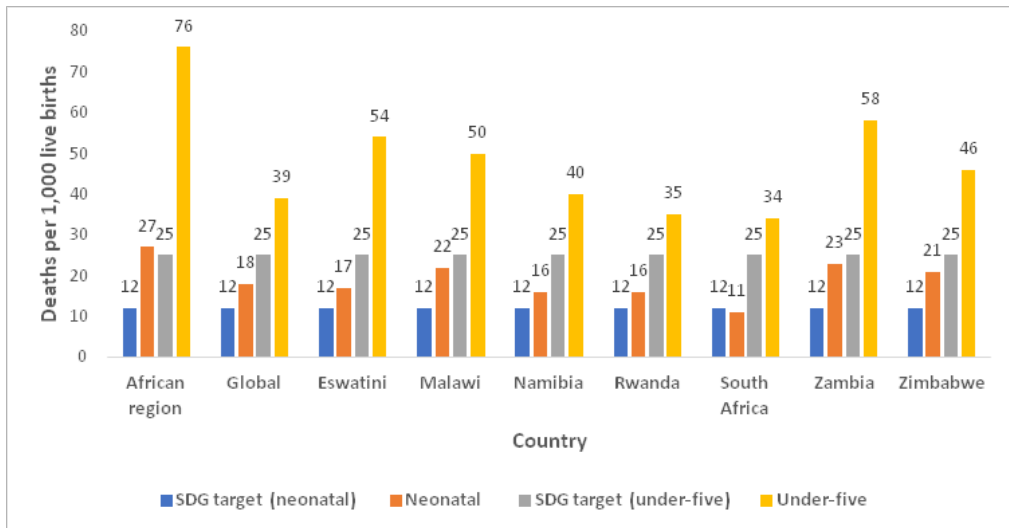
is to be paid for and under what conditions. Output-based aid (OBA) or output-based financial assistance is a subset of RBF that usually applies to non-health sectors and does include financial rewards only. In this instance, the principal is an aid donor while the agent is typically the receiving government or public agency (Musgrove, 2011). Supporters of RBF programmes strongly contend that the initiative is a reform strategy with a potential to positively influence health service provision. This is likely to improve health outcomes through increased provider autonomy and good national oversight (Meessen *et al.*, 2011) in low-income countries especially in sub-Saharan Africa (SSA) where such outcomes have lagged behind. Other scholars note the flexibility of the RBF programme particularly in adapting to the ever-changing health priorities and the dynamics related to country contexts (Basinga *et al.*, 2011; Soeters *et al.*, 2011). On the other hand, critics of the RBF programme cite the lack of empirical evidence regarding its effectiveness, impact on non-incentivised health services, as well as on its ability to address unjustifiable disparities in health (Priedeman Skiles *et al.*, 2013).

There is ample evidence in low-income countries to suggest that access to health services mostly favours individuals living in families of high socioeconomic status (see, e.g., Creanga *et al.*, 2011; Gage, 2007; Houweling *et al.*, 2007; Makate & Makate, 2017). Low-income families are, not only constrained financially, but are also less knowledgeable about the benefits of and value of health services (Priedeman Skiles *et al.*, 2013). In low-income countries, the existence of user fees within the health system is often cited amongst the largest barriers to accessing health services (Dzakpasu *et al.*, 2014). One of the provisions in the RBF programme is the removal of user fees associated with access to health services. Thus, it is reasonable to, not only assess whether the introduction of the RBF programme has impacted access to health services and health outcomes, but also to ascertain the extent to which the programme has narrowed the gap between the rich and the poor (this is the distributional or equity effect of RBF exploring its potential impact on socioeconomic status-related disparities in access to health services). In this case, by distributional effect we refer to the differing impacts of the RBF programme among groups of individuals in terms of access to health care services or affordability of such services. The distributional effect can be expressed as a benefit to a specific group of individuals and the loss to another group. For the purposes of this report, the term distributional effects and equity effects are assumed to have the same meaning and thus would be used interchangeably.

The primary goal of this study is to examine the impact of the RBF programme on wealth-related health inequality of selected maternal and child health outcomes. Our interest lies in comparing the changes in health inequality of selected maternal and child health outcomes in districts with RBF to those without the programme. The empirical strategy adopts a quasi-experimental strategy (in difference-in-differences) complemented by kernel propensity matching to minimize the prospect

of selectivity bias and uses data from multiple sources including the Zimbabwe demographic and health survey (ZDHS) data, Zimbabwe DHS geographical data sets and from the Global Administrative Areas. Despite making good progress in terms of access to maternal and child health services in the last few decades, previous empirical research suggests that socioeconomic status-driven inequalities in maternal and child health outcomes have risen in Zimbabwe between 1994 and 2011 (Makate & Makate, 2017). Zimbabwe's levels of poverty are amongst the worst in the African region, with an estimated 70.5% and 29.3% of the population believed to be in general poverty and extreme poverty, respectively (Zimbabwe Vulnerability Assessment Committee [ZimVAC], 2020). The number of households classified as poor is projected to rise by an estimated 300,000 per year given the projected economic growth rates with vulnerable groups such as pregnant women and children expected to bear the larger burden. Moreover, maternal and child health outcomes remain unsatisfactory in the country when compared to other countries in the African region and globally (World Health Organization [WHO], 2020). An overview of selected maternal and child health outcomes for Zimbabwe relative to just a few countries (arbitrarily chosen) including the averages for the African region and globally are presented in Figure 1 and Figure 2.

**Figure 1: Distribution of average neonatal and under-five mortality (expressed as number of deaths per 1,000 live births) for selected countries in Africa, the African region, and globally for the year 2018**



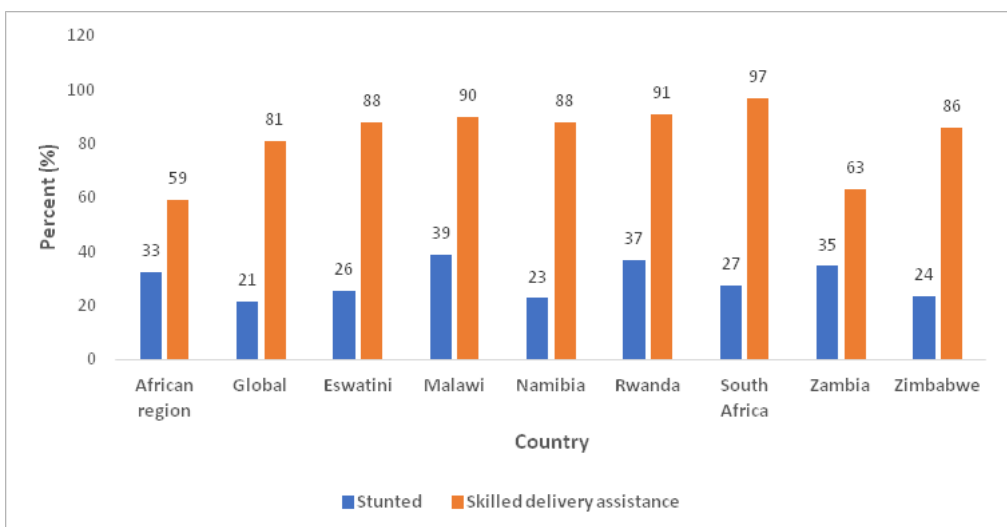
Source: Data are sourced from the World Health Statistics Report, 2020; graphs were drawn by the authors.

Figure 1 shows the average neonatal and under-five mortality rates for the African region, global, and selected countries in Africa for the year 2018. For each mortality indicator, we included a sustainable development goals target (=12 for neonatal mortality; =25 for under-five mortality). Among the countries shown in Figure 1, only South Africa has met its neonatal mortality target while other countries

still gravitating towards the required target for neonatal mortality of 12 deaths per 1,000 live births by the year 2030. While Zimbabwe is yet to meet both its neonatal and under-five mortality targets, Figure 1 shows that the country is making some good progress when compared to other countries in the African region. For example, the neonatal mortality rate for the country in 2018 was 21 deaths per 1,000 live births compared to 27 deaths per 1,000 live births for the African region (46 under-five deaths (Zimbabwe) vs 76 under-five deaths (African region)). Despite the noted progress, the mortality rates for children in Zimbabwe remain unsatisfactory.

In Figure 2, we show the average distribution of child stunting and skilled delivery assistance for the period 2010–2019. The data shows that an estimated 23.5% of Zimbabwean children aged five years and younger are still considered stunted. Stunting is a condition of impaired growth and development that children experience as a result of inadequate or poor nutrition, repeated infection, and inadequate psychosocial stimulation (World Health Organization, 2020). Linear growth in early life is an important marker of growth and development in later life. While the average stunting rate for Zimbabwe is lower than the African regional average, it is still relatively high and could be lower. The average skilled delivery assistance (86%) for Zimbabwe is well above the recommended target of 70% but appears to be lower when compared to other countries such as Rwanda (91%) and Malawi (90%).

**Figure 2: Distribution of average child stunting and skilled delivery assistance for selected countries in Africa, the African region, and globally for the period 2010–2019**



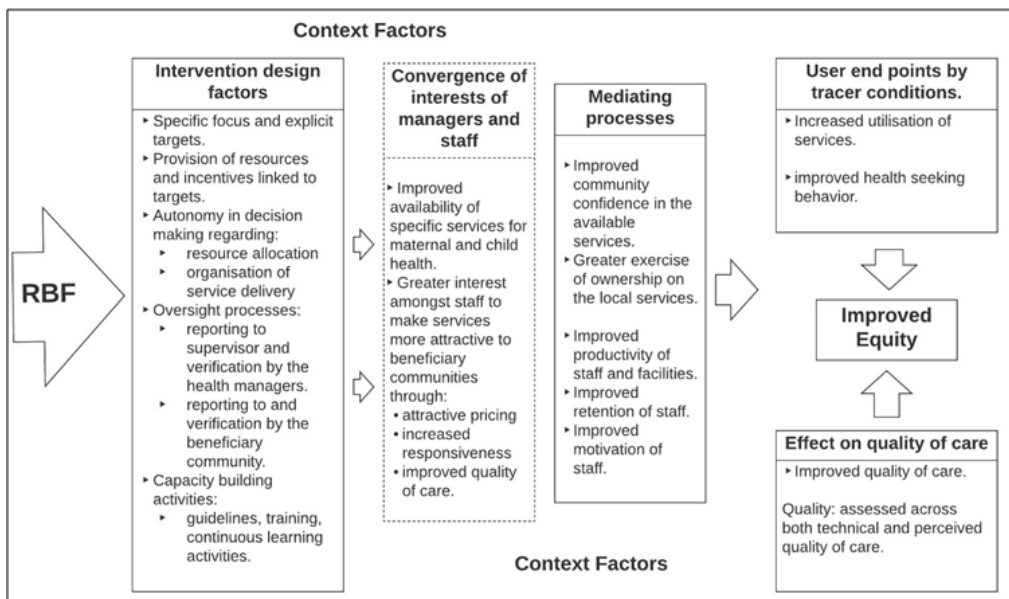
Source: Data are sourced from the World Health Statistics Report, 2020; graphs were drawn by the authors.

The statistics presented in Figure 1 and Figure 2 seem to suggest that Zimbabwe is doing reasonably well when compared to other countries of almost similar levels of development. However, there remain significant differences in stunting rates among specific subgroupings; for example, between gender, household wealth quintiles, and by rural/urban residence. According to a recent report, the prevalence of stunting is much higher among boys (34.5%) when compared to girls (24.3%) with variations also observed across provinces ranging from a low of 20.5% in the Midlands to a high of 41.6% in Manicaland province (ZimVAC, 2020). Stunting levels generally decrease with increasing household wealth status in Zimbabwe. For example, 17% of children from high wealth families are stunted compared to 33% of children from families in the lowest household wealth quintiles. Stunting rates are also higher in rural areas (29%) than urban areas (22%) (Zimbabwe National Statistics Agency & ICF International, 2016). The data clearly shows that stunting is problematic in Zimbabwe and particularly so among vulnerable segments of the population. However, what we cannot deduce from these numbers is whether the distribution is comparable among different socioeconomic status groups following the passage of health policies. Thus, our novel contribution to the literature is to examine whether the introduction of the RBF programme in the country has changed the distribution socioeconomic status driven differences in access to maternal and child health services.

## Conceptual framework

Results-based financing programmes are expected to impact both the quantity and quality of maternal and child health outcomes through the three-pronged incentive mechanism within the programme relating to the use (quantity aspect), quality, and client satisfaction component (Zimbabwe Ministry of Health and Child Care, 2016). The conversion of inputs to final outputs or results is a complex process involving several factors. In this study, we adopt a conceptual framework developed by the World Bank and is based on the RBF model's Theory of Change (World Bank, 2016). Figure 3 summarizes the RBF model's theory of change.

According to the theory of change RBF, the achievement of output, health outcomes, and effect of the intervention will depend on the interlinkages between the designs of the programme and the immediate effects of the policy. The short- to medium-term impact of these initiatives is to enhance the availability and accessibility of health services to all citizens regardless of socioeconomic status. In health care, the most fundamental concept of equity relates to the notion of horizontal equity—a situation where individuals with similar medical needs are treated the same regardless of their socioeconomic status, location of residence or race, among others (O'Donnell *et al.*, 2008).

**Figure 3: The theory of change RBF in Zimbabwe**

Source: This figure was adapted from the World Bank's evaluation report, but with slight modifications (World Bank, 2016).

Notes: Context factors, independently and/or concurrently, influence the factors, performance, and the impact. Context factors include but are not limited to: community context (social networks, gender norms, culture, beliefs); political context (type and status of polity, security); and other context factors (legal system, other sectors, economy). Factors to the left have a direct influence on aspects immediately to their right and either a direct or indirect effect on aspects further to the right, including on impact. Subheadings are only illustrative and may not be comprehensive (only indicate the primary areas of interest).

The direct impact of the RBF programme on equality of health outcomes is rather ambiguous since other contextual factors will likely play a role in this. For example, the community context is likely to impact use of health services in that different communities exhibit different cultural practices, beliefs and norms that are likely to impact the utilization of health services regardless of the RBF programme's provisions. Previous evidence regarding the distributive effect of pay-for-performance programmes is limited. Some studies have concluded that inequalities in some health outcomes persisted after the introduction of a results-based financing programme, while in other instances inequalities in health outcomes declined (Alshamsan *et al.*, 2010). It is also imperative to note that RBF programmes are not the only way to achieve equality of health outcomes and constitute one policy among a set of other social policies that are deliberately designed to address inequalities in access to services. Thus, we expect that the RBF programme in Zimbabwe could be associated with a reduction in the level of inequalities among other health outcomes and an increase or no change in inequalities among some health outcomes as well.

## Data sources

For us to assess the distributional impact of the RBF programme on maternal and child health outcomes, we rely on microdata from multiple rounds of the Zimbabwe Demographic and Health Survey (ZDHS)—a nationally representative individual household-level data set collecting health-related information from women aged 15–49 years together with their children born in the five years preceding each survey. The ZDHS is a cross-sectional survey conducted every five years and has been collected in Zimbabwe since 1988. We use four rounds of the ZDHS collected in 1999, 2005/06, 2010/11, and 2015 and for which geographic data sets are available (Zimbabwe National Statistics Agency [ZIMSTAT], 2012). Geographic data sets collected by DHS is used in this study as it facilitates the identification of districts—which are not included as part of the standard DHS data files for Zimbabwe. The ZDHS adopts a two-stage cluster design grounded in the Zimbabwe national population census as the sampling frame (ZIMSTAT, 2016). Basic demographics and health indicators including fertility, contraceptive usage, early childhood mortality, maternal and child health and other behavioural outcomes are all collected. The ZDHS is increasingly becoming an excellent source for reliable and comparable cross-sectional survey data in low-middle-income countries. We use this data as it provides nationally representative and comprehensive health data for women of reproductive ages (15–49 years) and their children born in the five years preceding the survey. This survey allows us to test the equity impacts of RBF on several maternal and child health outcomes.

## Conclusions and policy insights

From a policy standpoint, it is imperative to know whether implemented policies or interventions designed to improve quantity and quality of health services and reduce socioeconomic status-connected inequalities have the direct and intended consequences of meeting their primary objectives over time. Our analysis of nationally representative survey data from Zimbabwe shows that the RBF programme was associated with faster improvements in equity of selected maternal and child health outcomes in Zimbabwe. We also established that the distributional impact of this programme was not uniform across maternal and child health outcomes. In other words, the programme appeared to favour equity of some health outcomes over others. Thus, future roll-out or support of this programme could deliberately be tailored to be specific to contexts, bearing in mind that the programme may not have similar distributional effects on certain outcomes. More specifically, greater emphasis should be placed to areas with relatively: low female employment, high concentration of low-wealth families (measured by household wealth), and unsatisfactory maternal and child-health outcomes. Such initiatives would carefully examine the socioeconomic context among other things, in the design and execution of the programme to



maximize the impact of such initiatives. These results have important implications for public health policies targeted at improving access to maternal health care services to pregnant women in developing countries like Zimbabwe. These results are also important inputs to future research interested in evaluating whether RBF strategies are good value for money or not. Our analysis clearly reveals that RBF programmes do not necessarily eliminate wealth-related inequality in maternal and child health outcomes in Zimbabwe but are certainly a useful complement to equity-enhancing initiatives/policies in the country. Soon, we are interested in extending this work to consider two aspects of inequality in the context of RBF. These two aspects are: (i) inequality of opportunity—inequality due to exogenous circumstances to which the child could not be held responsible such as quality of health care among others, and (ii) inequality due to endogenous effort. These are aspects that we will explore soon.

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