Demographic and Socio-economic Correlates of Birth Registration and Having Birth Certificates: Implications for the Civil Registration Authority in Zambia

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Abstract

Background: The study investigated socio-economic and demographic correlates of birth registration in Zambia; and determined implications for the Civil Registration System. Although the issue of unregistered children is a global problem, most unregistered children are found in Least Developed Countries, Zambia inclusive, where only 39 percent of the children under-five years are registered (UNICEF, 2013).

Methods: The study used data generated through the 2013-14 Zambia Demographic and Health Survey by pooling two datasets namely the Kids and Personal Record Datasets. A total of 12,229 children under five formed the basis of analysis.

Results: This study reveals that, overall birth registration among children under-5 years in Zambia is extremely low (11%) with only (4%) of those registered having a birth certificate. The major correlates of birth registration included household heads working status at the time of the survey and wealth index of households. For those who managed to be certified, the most significant correlates were, age, birth order (2nd), place of delivery, mothers educational level, religion and wealth index.

Conclusion: This study has revealed that while specific correlates apply generally and are true across space and regions, it is important to examine in detail influences of each of them on birth registration and certification. As a result, the need to ensure sustainable avenues of collecting birth data and motioning upon the citizenry of the importance of this exercise should be heightened.

Key words: *Birth Registration, Birth Certificate, Under-Five Children, Civil Registration, Zambia*

Introduction

Approximately one fourth of the global population of children under five have never been registered (United Nations Children's Fund, 2013). Although the issue of unregistered children is a global problem, most unregistered children are found in the Least Developed Countries (LDCs) where only 39 percent of the children under five years are registered (UNICEF, 2013). By comparison, just about 2 percent of births in developed countries are unregistered (UNICEF, 2013). This problem is most compounded in sub-Saharan Africa and South Asia, where only 41 percent and 71 percent of children are registered in each region, respectively. In rural areas, birth registration is far much lower. The situation in Eastern and Southern Africa is even more worrying: only 36 percent of children are registered, ranging from a paltry 3 per cent in Somalia to 85 percent in South Africa (UNICEF, 2013). Besides non-registration of births, there is also a serious problem with birth certificates. The world over, only about 45 percent or 290 million children have birth certificates (UNICEF, 2013).

Historically, birth registration in Africa dates as far back as 3340 BC when the Pharaohs' of Egypt issued such directives of counting populations, including births, for both military and taxation purposes. In more recent times, UNICEF (2010) reports that the African Conference of Ministers in Charge of Civil Registration reflected in full the two major functions of birth registration: one legal and the other statistical. Nonetheless, not only do birth registration serve the two mentioned functions, but they are also useful for other purposes such as obtaining inheritance benefits health, social protection, and educational planning for the children among others. Unless a person is registered, they argue, she or he does not exist in the eyes of the State. Registration therefore is the only means to establish and protect identities, citizenship and property rights (Sharp 2005). Often, in the absence of registration, a child cannot easily access their national registration card or passport, may find challenges in applying for a visit or stay in a foreign country and opening of the bank account.

Birth registration is simply defined as the continuous, permanent and universal recording within the civil registry of the occurrence and characteristics of birth, in accordance with the national legal requirements (United Nations, 2014). Simply put, it is the permanent and official record of a child's existence (UNICEF, 2002). Moreover, it is the first and fundamental right in itself, recognized by article 24, paragraph 2 of the International Covenant on Civil and Political Rights (ICCPR); article 7 of the Convention on the Rights of the Child (CRC) and the Sustainable Development Goal (SDG) target 16.9 of "providing legal identity for all, including birth registration by 2030" (UN, 2015). Besides, the fulfilment of the right to be registered at birth is closely linked to the realization of many other socioeconomic rights, such as the right to health and the right to education, which are at particular risk if birth registration is not systematically carried out (UN, 2014; Sharp 2005 and Todres 2003). Worryingly, though this is the first right of a child, it remains unfulfilled for majority of Africa's children as seen above (UNICEF, 2007).

Besides the aforementioned, studies further reveal that, geographic disparities, growing economic inequities between and within countries add up to one more barrier that hinders children's chances of being registered at birth (UNICEF, 2007).

In Zambia, birth registration is a legal requirement. This is supported by CAP 51 of the laws of Zambia which requires that all births and deaths should be registered, without distinction of origin or descent; and to provide for matters incidental there to (Constitution of the Republic of Zambia, Amendment, No 2, 2016).

Currently, birth registration and certification is coordinated by the Department of National Registration, Passports and Citizenship (DNRPC) in the Ministry of Home Affairs and Immigration. According to the United Nations, the registration of a child's birth enables that child to obtain a birth certificate (UN, 2001). A birth certificate is the most visible evidence of a government's legal recognition of the existence of a child as a member of society. There are several reasons pertinent to report or record a birth: an unrecorded birth is non-existent or the individual in question not known to exist. This assertion infringes on a myriad of rights and disadvantages such a person now and in the future. Moreover, poor registration practices lead to human rights abuses such as child labour, sexual slavery and child soldiering. In adulthood, unregistered adults may encounter additional obstacles, including difficulty obtaining employment or a passport, as well as difficulty marrying, voting, opening a bank account, or establishing property rights (Seidman et al, 2013). Besides, if a child is not registered at birth and has no birth record, he or she will not have a birth certificate (UNICEF, 2002).

Moreover, birth is also one of the vital statistics that is collected besides death and marriages in Zambia; and if well collected may help in the computation of various demographic measurements.

Besides the aforementioned, civil registration has been problematic in many African countries. Several aspects have contributed to this development. UNICEF (2002) lists several factors hindering the development and registration of births in Africa; they include but not limited to:

i. Awareness and demand: In many countries, the main reason for non-registration is a general lack of awareness among parents and guardians of the need for and importance of birth registration and certificates for their child's future, or, similarly, among family members on the importance of death registration

ii. Political will: Lack of high-level political commitment to strengthen the civil registration systems in many countries

iii. Financial resources: Lack of adequate funding to strengthen systems either from national budgets or through international development agencies

iv. Accessibility: Weak registration infrastructure and inadequate reach of the system that makes the opportunity cost of registration too high for the people

v. Distance to registration centres: long distance to registration centres tend to hinder residents to have births registered most especially amongst those in rural areas

vi. Roles and responsibilities: Lack of clarity about roles and responsibilities among the actors and agencies involved in the registration processes

vii. Human resources: Qualitative and quantitative shortages in human resources. This applies both to civil registration staff (including their access to and ability to use modern technology) and (training of) personnel in other government agencies e.g. health workers

viii. Social factors: just like many other African countries child naming for most of the children is done days after child birth due to various norms and beliefs which makes it difficult for birth registration as the child's name is a major variable need for a birth to be registered.

While all these aspects explain why birth registration and certification is extremely low in Africa, there have been efforts to improve the registration of births. In Zambia for example, not only is there a legal framework that has been updated, measures are being implemented to improve birth registration and certification. For example, the Centre for Disease Control and Prevention (CDC), United Nations Childrens Fund (UNICEF) , United Nations Population Fund (UNFPA), United Nations High Commissioner for Refugees (UNHCR), United Nations Economic Commission for Africa (UNECA), United States Agency for International Development (USAID), World Health Organisation (WHO), Plan International, World Vision and Global Fund have partnered with the Ministry of Home affairs to set up systems to improve civil registration. There have been general campaigns to improve awareness on birth registration and consequently registration among the citizenry. Apart from using the Ministry of Home Affairs as a front, the government has also been frantic to ensure other wings such as the Ministry of Health (MoH), Ministry of Community Development and Social Services (MCDSS) and Ministry of Education are also involved in such campaigns.

However, birth registration and certification is low. In many cases where births have taken place at health institutions, very few have been reported to Home Affairs for the issuance of birth certificates. For example, the 2010 census reports shows that only about 8.5 percent and 17 percent of individuals in rural and urban areas respectively have had a birth certificate (CSO et al, 2013-14). The Zambia Demographic and Health Survey (ZDHS) reports actual birth registration for children under the age of five who have birth certificates. Data on birth registration became eminent during the 2007 ZDHS. The period 1992 to 2001, the ZDHS never collected data on birth registration or even birth certificates. In 2007, only 14 percent of children under

the age of five were officially registered and out of these, a paltry five percent had birth certificates. Children in rural areas are even more disadvantaged. About 9 percent reported to have been registered in rural areas compared with 28 percent in urban areas. The birth registration situation in 2013-14 ZDHS remained almost unchanged and even declined slightly. This decline may have specific explanation, but suffice to mention that it could have been as a result of 2013-14 ZDHS having a bigger sample with an extended number of indicators. The 2013 ZDHS reveals that, only 11 percent of children under the age of five were reported to have been registered; out of these, a paltry 4 percent reported to have birth certificates.

Although Zambia has legal and administrative structures stipulating official registration of births, according to standard procedures, few births are registered and certified officially. The practice of formally registering births is not widely adhered to; this is in spite of the registration system having been in existence for over 40 years and enforced through the Birth and Death Registration Act CAP 51 of the Laws of Zambia (GRZ, 1973). It is against this background that this study was conceived.

The research questions we sought answers to were: What demographic and socio-economic correlates determine birth registration and certification in Zambia? What are the implications for the Civil Registration System in Zambia, which currently is operating below expectation despite having presence throughout the country? This paper therefore, aimed at answering the forgoing questions.

Conceptual Framework of Birth Registration and Certification

In designing the conceptual framework, a careful and thorough analysis of what may hinder people from registering births

and acquiring birth certificates was conducted. And borrowing from Amo-Adjei and Samuel K. Annim (2015) in their paper titled socioeconomic determinants of birth registration in Ghana, the following aspects were found to be important: the child's sex, their age in months, residence, household head's sex and age, their educational level and employment status. Other determinants included, type of place of residence, province, and wealth index of the household. Other aspects considered include maternal place of delivery and birth order. Correlates in this study were categorised as follows:

Figure 1: Conceptual Framework: Correlates of Birth Registration and Acquisition of Birth Certificates
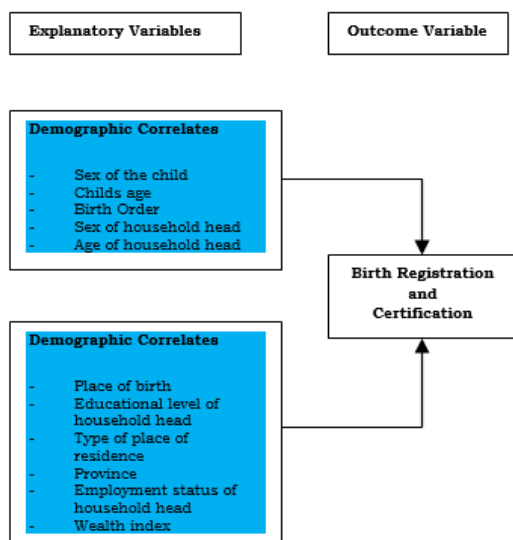
In figure 1, the conception entails expected linkages between demographic and socio-economic correlates and the outcome variable captured either as being registered or having a birth certificate for children under the age of 5 (Giang et al, 2016; UNICEF, 2002 and 2013-14 ZDHS). The framework suggests or proposes that there are existing links between demographic and socio-economic variables on one hand and birth registration or certification on the other. For example, first born children under-five years are more likely to be registered compared with their younger or later siblings. The assumption is that parents

are more excited and more enthusiastic about their first child. Besides the aforementioned, place of residence, educational attainment, employment status and wealth quintile may have vital implications on whether a child gets registered or not or gets a birth certificate or not.

Methodology

Data

This paper used data generated through the 2013-14 ZDHS by pooling two datasets namely the Kids and Personal Record Datasets. The ZDHS uses a two stage cluster sampling method in which the first stage involved selection of 722 enumeration areas (EAs); where 305 and 417 were urban and rural EAs respectively. The selection was based on a probability proportional to EA size (PPS). The second stage involved a complete listing of households to stage a sampling frame used in the selection of households. On average, 25 households were selected in each cluster where a representative sample of 18,052 households was completed. Excluded from the listing were people living in institutional dwelling units (such as army barracks, hospitals, police camps, boarding schools etc). All children under-five who were either permanent residents or visitors present in the households on the night before the survey were eligible.

Of the 722 selected clusters, 16, 258 households were occupied at the time of data collection and of which 15,920 were successfully interviewed, yielding a household response rate of 98 percent. In households where interviews were conducted successfully, a total of 12,229 children under the age of five formed the analytical sample.

Outcome and Explanatory Variables

Outcome Variables

The 2013-14 ZDHS question on birth registration asked respondents to state whether or not a named child in their care or in the household had a birth certificate (coded 1) and if not, further inquired if the child in question was registered with any civil authority (coded 2) or indeed if the child was neither registered nor had a birth certificate (coded 3) or the respondent did not know (coded 8). In our modelling, responses to this question were reconstructed into three outcome results necessary for our study where (0=neither certificate nor registration; 1=Has Certificate and 2=Registered). This was the case because, if the child is registered without a birth certificate it meant that child was not yet recognised legally as a citizen of Zambia (UNICEF, 2002). The underlying principle to use three responses for the outcome variable was based on the fact that not only is a child's registration cardinal, possessing a birth certificate makes them visible to the government of the day where their rights are recognised and protected and may also enjoy social and economic benefits like any other citizen of Zambia.

Explanatory Variables

Demographic explanatory variables forming the analytical model included, sex of the child (male or female [Reference category]), child's age (≤ 1 year [Reference category] and > 1 year), birth order (1st order [Reference category], 2nd, 3rd and 4th or higher), sex of the head of the household (male [Reference category] or females), age of the household head (less than 25 years [Reference category], 25-34 years, 35-44 years, and 45 or more years).

Socio-economic variables included delivery (home and health facility), household head's educational attainment (none [Reference category], primary, secondary and higher), religion (Catholic, Protestant [Reference category], Muslim and other religions), type of place of residence (urban and rural [reference category]), province (or region) of residence (Central, Copperbelt, Eastern, Luapula, Lusaka, Muchinga, Northern, North-Western, Southern and Western [Reference category]), whether head of household was currently working (yes or no [Reference category]) and lastly, the wealth quintiles grouped in three wealth status categories (poor [Reference category], middle and rich) of the population.

Statistical Analysis

Univariate and bivariate analyses were performed to describe the sample and proportion of children with birth certificates or registered with a civil authority by demographic and socio-economic characteristics. In order to assess associations and identify correlates of birth registration and certification, a multinomial regression model was performed where the response "neither having a birth certificate nor registered" was the reference category. Relative Risk Ratios (RRR) with 99.9%, 99% and 95% confidence intervals were reported. In order to reflect the population of interest and take into account sample variations and effects of the ZDHS complex multistage sampling process, the survey design effect was incorporated in the analysis. This paper used STATA version 12.0 software to analyse the data.

Results

Description of the study population

Table 1 shows that, (51%) of the children were males while (49%) were females. Less than two thirds (57%) of the under-five children were aged between 3 to 4 years. A higher proportion of under-five children in this sample were fourth or higher order birth categories (46%). Majority of children (66%) were delivered at health facilities. Of the of the 12,229 children in this study, 82 percent were residing in male headed households with more than one third of the household heads (38% and 34%) aged between (25 to 34 years and 35 to 44 years) respectively. More than half (56%) of the household heads havd primary education while only (4%) had higher education.

In terms of religious affiliation, majority (83%) of respondents were Protestants while less than one percent (0.4%) were Muslims. At the time of the survey about two thirds (66%) of the children resided in rural areas. By province, results show a higher proportion of children resided in Lusaka and Copperbelt provinces (15% and 14%) respectively. More than half (55.4%) of household heads were working and children from poor or rich households accounted for about (47% and 32%) respectively.

Table 1: Percent distribution of the sample by demographic and socio-economic characteristics

Variable	%	n
Sex of child		
Male	50.6	6,189
Female	49.4	6,040
Total	100	12,229
Child age		
≤ 1 year	22.0	2,693
> 1 year	78.0	9,535
Birth Order		
1st	20.3	2,483
2nd	17.7	2,170
3rd	15.6	1,908
4 or more	46.3	5,668
Place of delivery		
Home	32.5	3,974
Health Facility	67.5	8,255
Sex of household head		
Male	81.5	9,963
Female	18.5	2,266
Age of household head		
less than 25 years	5.5	677
25 -34 years	37.5	4,581
35 -44 years	33.7	4,116
45 or more years	23.3	2,855
Educational attainment of household heads		
No education	11.1	1,359
Primary	56.3	6,876
Secondary	29	3,543
Higher	3.6	439
Religion		
Catholic	16.4	1,999
Protestant	82.6	10,070
Muslim	0.4	46
Other	0.7	83
Type of place of residence		
Urban	33.7	4,117
Rural	66.3	8,112
Province		
Central	9.8	1,202
Copperbelt	12.8	1,571
Eastern	12.8	1,566
Luapula	8.8	1,079
Lusaka	14.5	1,773
Muchinga	6.2	759
Northern	9.7	1,192
North western	5.1	624
Southern	13.6	1,668
Western	6.5	795
Currently working		
No	44.6	5,437
Yes	55.4	6,750
Wealth Index		
Poor	47.4	5,796
Middle	20.5	2,510
Rich	32.1	3,923
Total	**100**	**12,229**

Coverage of Birth Registration

In terms of coverage of birth registration, results in Figure 2 show that overall, only (4%) of children aged under five years old at the time of the survey had or reported to have birth certificates; (7%) were registered with civil any authority while majority or the rest (89%) did not have a birth certificate nor were they registered with any civil authority.
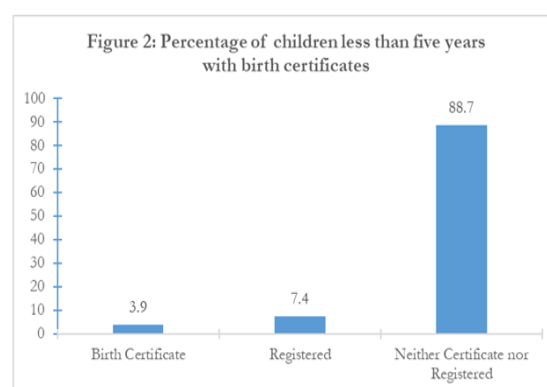
Children with birth certificates

Bivariate results in table 2 show that second order births had twice as high the proportion of having a birth certificate compared to fourth order or more births (6% versus 3%). With regard to those registered only, first order births had a higher proportion compared with fourth order births (9% versus 6%). Children delivered at health facilities had higher proportions of having a birth certificate and being registered (5% and 9%) compared with those delivered at home (1% and 4%). Similarly, children in urban areas had higher proportions of having a birth certificate or being registered with any civil authority (9% and 11%) compared with those in rural areas (2%

and 5 %). Children in households where the head was not working had higher proportions of having a birth certificate and being registered with the civil authority (5% and 9%) compared with those in household where heads were working (3% and 6%). Having a birth certificate and being registered with a civil authority increased with increasing household wealth. Children in rich households had higher proportions of having a birth certificate and being registered with a civil authority (9% and 12%) compared with those in poor households (1% and 4%) respectively.

Births registered and/or have a birth certificate

Birth Certificate or Registered

In table 3, results for multinomial regression show associations between children under the age of five (<5 years) and having a birth certificate by demographic and socio-economic features are presented. The relative risk for a child having a birth certificate relative to neither having a birth certificate nor being registered was (40%) higher for children aged more than one year compared with those aged one year or less. The relative risk of a child having a birth certificate relative to neither having nor being registered was (40%) higher for 2nd order births compared with fourth order births.

The relative risk of a child having a birth certificate relative to neither having it nor being registered was (120%) higher for children delivered at health facilities compared with those delivered at home. Similarly, the relative risk of a child having a birth certificate relative to neither having nor being registered was (230%) higher for children whose household heads had higher education

compared with those with no education at all. Besides, table 3 also shows that, the relative risk of a child having a birth certificate relative to neither having it nor being registered, was (350%) higher for children in Muslim households compared with those in Protestant households. In addition, the relative risk for a child having a birth certificate relative to neither having it nor being registered, was (240%) higher for children on the Copperbelt province (most developed province in Zambia) than those in Western province (least developed and poorest). On the contrary, children in Luapula and Muchinga provinces had a lower relative risk of having birth certificates compared with those from Western province (70% and 90%).

Comparisons by wealth associations show that, the relative risk of a child having a birth certificate relative to neither having it nor being registered, was (140%) higher for children in households whose wealth index was rich compared with those in poor households.

With regard to child registration with any local authority, the relative risk of a child being registered relative to neither having a certificate nor being registered was (40%) higher for children delivered at a health facility compared with those delivered at home. On the education front, results indicate that the relative risk of a child being registered relative to neither having a birth certificate nor being registered, was (120%) higher for children whose household heads had higher education compared with those with no education.

Table 2: Percentage of children under five who were registered or had birth certificates according to demographic and socio-economic characteristics

Variable	Neither Registered nor Has Certificate		Has Certificate		Registered Only		p-value
	%	CI	%	CI	%	CI	
Sex of child							
Male	88.4	[86.8,89.8]	4.1	[3.4,5.0]	7.5	[6.3,8.8]	0.496
Female	89.0	[87.5,90.4]	3.7	[3.0,4.5]	7.3	[6.2,8.5]	
Child age							
≤ 1 year	89.8	[87.7,91.6]	3.2	[2.4,4.3]	6.9	[5.5,8.8]	0.157
> 1 year	88.4	[88.4,89.6]	4.1	[3.4,4.9]	7.5	[6.5,8.6]	
Birth Order							
1st	86.4	[84.1,88.3]	4.4	[3.4,5.6]	9.3	[7.7,11.1]	
2nd	85.6	[83.2,87.7]	5.7	[4.5,7.3]	8.7	[7.1,10.5]	**0.000**
3rd	88.6	[86.4,90.5]	4.8	[3.6,6.3]	6.6	[5.3,8.3]	
4 or more	91.0	[89.5,92.2]	2.8	[2.1,3.6]	6.3	[5.2,7.6]	
Place of delivery							
Home	94.7	[93.2,95.9]	1.0	[0.7,1.6]	4.3	[3.2,5.7]	**0.000**
Health Facility	85.8	[84.1,87.4]	5.3	[4.4,6.4]	8.9	[7.6,10.2]	
Sex of household head							
Male	88.7	[87.2,89.9]	4.1	[3.4,4.9]	7.3	[6.3,8.4]	0.489
Female	88.9	[86.3,91.0]	3.3	[2.4,4.6]	7.8	[6.0,10.1]	
Age of household head							
less than 25 years	90.9	[87.2,93.6]	2.0	[1.0,3.7]	7.1	[4.7,10.6]	
25 -34 years	88.6	[86.8,90.3]	3.9	[3.0,5.1]	7.5	[6.1,9.1]	0.665
35 -44 years	88.7	[86.9,90.4]	4.0	[3.2,5.2]	7.2	[6.0,8.6]	
45 or more years	88.2	[86.1,90.1]	4.3	[3.2,5.7]	7.5	[6.0,9.3]	
Educational attainment of household heads							
No education	92.6	[90.4,94.3]	1.5	[0.8,2.6]	5.9	[4.3,8.1]	
Primary	91.9	[90.5,93.2]	2.2	[1.6,2.9]	5.9	[4.8,7.2]	
Secondary	84.0	[81.5,86.1]	6.6	[5.3,8.2]	9.4	[7.9,11.2]	**0.000**
Higher	64.3	[55.3,72.4]	17.2	[12.3,23.6]	18.4	[12.9,25.7]	
Religion							
Catholic	87.3	[84.7,89.6]	4.3	[3.1,6.0]	8.3	[6.4,10.8]	
Protestant	89.0	[87.6,90.3]	3.7	[3.1,4.5]	7.2	[6.2,8.4]	
Muslim	58.4	[32.1,80.7]	34.3	[12.6,65.3]	7.3	[1.0,39.1]	**0.000**
Other	98.2	[88.0,99.8]	0.0		1.8	[0.2,12.0]	
Type of place of residence							
Urban	79.8	[76.5,82.7]	8.8	[7.1,10.8]	11.4	[9.3,13.9]	**0.000**
Rural	93.2	[91.9,94.3]	1.5	[1.1,2.0]	5.3	[4.3,6.5]	
Province							
Central	95.1	[92.5,96.8]	2.2	[1.3,3.5]	2.8	[1.6,4.8]	
Copperbelt	76.7	[71.3,81.3]	13.2	[9.8,17.6]	10.1	[7.5,13.5]	
Eastern	86.9	[83.3,89.8]	3.2	[1.7,5.8]	9.9	[7.3,13.4]	
Luapula	94.3	[91.7,96.1]	0.5	[0.3,1.0]	5.2	[3.4,7.8]	
Lusaka	79.1	[72.9,84.2]	6.8	[4.5,10.0]	14.1	[10.2,19.2]	**0.000**
Muchinga	96.7	[93.8,98.2]	0.2	[0.1,0.5]	3.1	[1.6,6.0]	
Northern	97.5	[95.6,98.6]	0.8	[0.4,1.6]	1.7	[0.9,3.1]	
North western	94.4	[91.1,96.5]	3.2	[1.7,5.9]	2.4	[1.4,4.2]	
Southern	87.4	[82.5,91.0]	1.6	[1.0,2.6]	11.0	[7.7,15.7]	
Western	97.8	[96.4,98.6]	1.6	[0.9,2.7]	0.6	[0.3,1.4]	
Currently working							
No	86.4	[84.4,88.2]	4.6	[3.6,5.8]	9.0	[7.6,10.7]	**0.000**
Yes	90.6	[89.1,91.9]	3.4	[2.7,4.2]	6.0	[5.1,7.2]	
Wealth Index							
Poor	94.8	[93.7,95.8]	1.1	[0.7,1.7]	4.1	[3.2,5.1]	
Middle	90.2	[87.9,92.2]	1.9	[1.3,2.7]	7.9	[6.1,10.2]	**0.000**
Rich	78.7	[75.5,81.6]	9.4	[7.6,11.4]	11.9	[10.0,14.3]	
Total	**88.7**	**[87.3,89.9]**	**3.9**	**[3.3,4.7]**	**7.4**	**[6.4,8.5]**	**100**

Results by region or by province show that the relative risk of a child being registered relative to neither having a birth certificate nor being registered was higher in predominantly urbanised provinces compared with rural provinces. Besides, the relative risk of a child having a birth certificate relative to neither having a birth certificate nor being registered was (80%) lower for children whose household heads were working at the time of the survey compared with those not working. In the same way, results further show that children from higher wealth quintile households were more likely to be registered or have a birth certificate compared with those from poorer households. Table 3 shows that the relative risk of a child being registered relative to neither having a birth certificate nor being registered, was (50%) and (60%) higher for children from middle and rich households compared with those from poor households.

Discussion

Our study reveals that, overall, birth registration among children under the age of five is exceptionally low (11%) with only (4%) of those registered having a birth certificate conforming to what the 2013-14 ZDHS found (CSO, 2014). Similarly, the low birth registration as found by both the ZDHS and our study is comparable to other countries as well. For example, Somalia had lower birth registration (3%), but much lower than that of South Africa and Vietnam (35% and 93%) (UNICEF, 2014; and Giang et al, 2016). Moreover, results in the bivariate analysis reveal that, all correlates (except for sex of the child; and sex and age of household head) significantly predict the outcome measured by the three categories of birth registration – neither registered nor has birth certificate, registered only and has certificate. This also seems to be in agreement with other similar studies where it was found that, there are various reasons as to why a child might not be registered at birth (Coppa et al, 2014).

Most of these unregistered children and without birth certificates are delivered at home (UNICEF, 2002), come from households whose heads have low education and not formerly working (UNICEF, 2002), minority religious affiliations (Coppa et al, 2014), live in rural areas (Coppa et al, 2014, UNICEF, 2002) ruralprovinces, and poor households (Giang et al, 2016; and Coppa et al, 2013). From the above narration, we can deduce that, birth registration and certification should be a priority for the government especially for the marginalised people in society and should be implemented in tandem with other already running services such as those under health and education (Cappa et al, 2014; UNICEF, 2013).

In the same way, multinomial regression results suggest that older children (> 1 year) are more likely to have a birth certificate (RRR, 1.4) compared with younger ones (≤ 1 year). This was also found by Giang et al, in 2016. It may be true that parents or couples are keener to register first children compared with second or third children in line.. A UNICEF report (2012) highlights also that children are more likely to get registered as they grow older than when younger. In the Zambian, our results seem to suggest this line of thought to and registration is also more prominent at older ages.

Results in this paper also show that children born at a health facility are highly likely to be certified (RRR, 2.2) or registered (RRR, 1.4) comparatively. This finding is true both in practice and literature. In practice, women delivering at health facilities are directly or indirectly exposed to registration and birth certification information from health staff. For example, once women give birth in health facilities, they receive a birth record (birth notice) which they (can) then present at the civil registration office to have a birth registered. In literature, evidence on socio-economic determinants of birth registration in Ghana, found that

place of delivery predicts birth registration or certification (Amo-adjei et al, 2015).

Table 3: Adjusted Relative Risk Ratios (ARRR): Association between demographic and socio-economic factors and Child Registration (Registered and/or having a birth certificate

Variables	Has Certificate		Registered Only	
	RRR	95% CI	RRR	95% CI
Sex of child				
Female	1.000		1.000	
Male	1.1	0.9 - 1.4	1.0	0.9 - 1.2
Childs Age				
≤ 1 year	1.000		1.000	
> 1 year	1.4*	1.0 - 1.9	1.2	1.0 - 1.4
Birth Order				
1st	1.000		1.000	
2nd	1.4**	1.1 - 1.9	1.0	0.8 - 1.3
3rd	1.3	0.9 - 2.0	0.8	0.6 - 1.1
4th	1.3	0.8 - 2.0	1.0	0.8 - 1.3
place of delivery				
Home	1.000		1.000	
Health Facility	2.2***	1.4 - 3.3	1.4*	1.1 – 1.9
Educational Level				
None	1		1	
Primary	1.1	0.6 – 2.0	0.8	0.6 - 1.2
Secondary	1.8	0.9 - 3.3	1.0	0.7 - 1.4
Higher	3.3**	1.6 - 7.0	2.2**	1.2 - 4.0
Religion				
Protestant	1.000		1.000	
Catholics	1.2	0.8 - 1.6	1.2	0.9 - 1.6
Muslim	4.5*	1.3 – 16.2	0.6	0.1 – 4.4
Other	0.0***	0.0 - 0.0	0.3	0.0 - 2.3
Sex of household head				
Male	1.000		1.000	
Female	0.9	0.6 - 1.3	1.1	0.9 - 1.5
Age of household head				
Less than 25 years	1		1	
25 -34 years	1.3	0.6 - 2.7	1.0	0.6 - 1.5
35 -44 years	1.2	0.5 - 2.7	0.9	0.6 - 1.5
45 or more years	1.2	0.6 - 2.6	0.9	0.6 - 1.5
Place of residence				
Province				
Western	1.000		1.000	
Central	1.2	0.6 - 2.6	3.8**	1.4 - 10.1
Copperbelt	3.4***	1.7 - 6.8	10.8***	4.4 - 26.3
Eastern	2.3	1.0 - 5.2	15.3***	6.3 - 36.8
Luapula	0.3*	0.2 - 0.8	8.0***	3.2 - 19.9
Lusaka	1.5	0.7 - 3.1	13.9***	5.5 - 34.8
Muchinga	0.1***	0.1 - 0.4	4.7**	1.6 - 13.6
Northern	0.6	0.2 - 1.3	2.8*	1.0 - 7.7
North Western	1.7	0.7 - 3.8	3.4*	1.3 - 8.9
Southern	0.8	0.4 - 1.6	16.2***	6.6 - 39.8
Head Currently Working				
No	1.000		1.000	
Yes	0.9	0.7 - 1.3	0.8*	0.6 - 1.0
Wealth Index				
Poor	1.000		1.000	
Middle	1.1	0.6 - 1.8	1.5*	1.1 - 2.2
Rich	2.4**	1.3 - 4.2	1.6*	1.1 - 2.4

On the contrary, children born outside health facilities are less likely to be registered and worse still have birth certificates; the assumption for such has been alluded to what many people consider a very cumbersome process. For example, people in villages require a much more involving process to register their births; first they need to go through their village headmen, then local councils and commissioners of oaths, before they get to the Boma to make known the birth

to a civic authority. Due to these processes, few parents complete the process and hence low registration.

A fundamental finding in this paper is the departure from a common hypothesis where the sex of the household head is viewed to predict birth registration or certification (UNICEF, 2002). Our findings suggest otherwise. . It is a common understanding that children born in households where the head is a female are less likely to be registered compared with those born in households where males are heads. Notwithstanding this aspect, results in this paper however further suggests that residence and whether or not parents are working are fundamental blocks which would predispose the chance of children getting registered or obtaining a certificate. Further, children born in urban areas are more likely to be registered and acquire birth certificates compared with rural areas (Coppa et al, 2014). This finding is true in literature as well. One of the many reasons why children in rural areas are less likely to get registered or worse still have a birth certificate is because most births occur at home and as long as parents feel their new born child is "healthy" and "safe", they have no compelling reason to register them or even get a certificate for them.

In a report on Inequities and Trends in birth registration, UNICEF (2013) found that a significant barrier to birth registration is distance to the nearest registration facility; where accessibility compounded and influenced by location and terrain, existing infrastructure and availability of transportation hinders the process significantly. Which means that greater distances to registration centres impose un-necessary financial and opportunity costs for families and such would ordinarily hinder registration.

Studies have found that wealth does influence a lot of aspects including, as demonstrated in this study, birth registration and certification. Related to wealth is whether or not parents work. It is a known fact and also highlighted in this paper that children born to working parents (mother or father) are more likely to be registered or get a birth certificate compared with those born from parents who do not work. In this paper, as observed already, results suggest that children born to parents whose wealth quintile is "rich" or "middle" were highly likely to be registered (RRR, 2.7) and have a certificate (RRR, 4.0). This is true by any standard whether in developed or not so developed regions of the world. In most regions, birth registration rates tend to be highest among the richest 20 per cent (quintile) of the population. In West and Central Africa, for example, 71 per cent of children in the richest quintile are registered, compared with only 27 per cent in the poorest quintile. In the Middle East and North Africa, 94 per cent of children in the richest quintile are registered compared to 76 per cent in the poorest quintile (UNICEF 2013).

While the birth and registration act has been in existence for so many years (1973), it is only in 2007, 2010 and 2014 that questions on birth registration were assimilated to show the population estimates on birth registration. These efforts came far too late however important. Generally, Zambia's civil registration system has been quite inconsistent and underdeveloped. However, in recent times, the situation has been improving due mainly to the government heightening efforts and also cooperating partners working to ensure children get their birth certificates. Partners such as the CDC and UNICEF, have embarked on a more sustainable and reliable process of not only birth registration and certification, but also recording other vital statistics.

Birth registration is a human right issue enshrined in the UN charter for child rights. Basically, not registering or certifying births is practically gross

violation of children's rights. A child who is not registered or who has no birth certificate may not be legible for legal protection and other socio-economic benefits that depend on registration for execution. The African Conference of Ministers in Charge of Civil Registration observed that unless a person is registered, she or he does not exist in the eyes of the State. Registration therefore is the only means to establish and protect identities, citizenship and property rights. Often, in the absence of registration, a person cannot easily access services and entitlements, a result of which is a clear violation of their human and civil rights.

Conclusion and Policy Implications

The 2014 ZDHS results and detailed analytical results brought about by this paper have provided an opportunity to understand not only the dire need for registration and certification but more also, if this process was to take course, how and in what domains it will function effectively. Among correlates which may require further and more grounding include; the education of parents, especially mothers. While education is a very important predictor for the registration of children with civil authorities, the 2014 ZDHS did not interrogate respondents on whether they had knowledge of registration, a significant weakness for such a good opportunity which would be beneficial to the understanding of birth registration and certification in general. While specific correlates apply generally and are true across ground and regions, it is important to take stock of the influences of each of them on birth registration and certification in a factored approach to see how the independently may affect registration and certification. This therefore calls for the need to ensure sustainable avenues of collecting birth data are in place and making sure the citizenry appreciate the importance of this exercise. As pointed out by the UNICEF's technical paper on strengthening birth registration in Africa, opportunities and partnerships (2012), the generation of data from civil registration systems is more sustainable and cost-effective than those drawn from ad-hoc surveys. In addition, various surveys use different methods, definitions and variables that make comparison of assessments problematic. While the Demographic Health Surveys try to remedy this deficiency, the long-term solution is to strengthen civil registration for the sustainability and continued registration and certification of births.

Availability of data and materials

All the data used for writing this research article was gotten from DHS program formally known as measureDHS and can be obtained with permission from them. In addition, the datasets ca be obtained from the corresponding author on reasonable request.

Abbreviations

ARRR: Adjusted Relative Risk Ratios
CRC: Convention on the Rights of a Child
CDC: Centre for Disease Control
CSO: Central Statistical Office
DNRPC: Department of National Registration Passport and Citizenship
EA: Enumeration Area
GRZ: Government of the Republic of Zambia
LDCs: Less Developed Countries
MCDSW: Ministry of Community Development and Social Welfare
MoH: Ministry of Health
PPS: Probability Proportional to Size
SDG: Sustainable Development Goal
UN: United Nations
UNAIDS: United Nations Programme on HIV and AIDS: Acquired Immunodeficiency Syndrome
UNECA: United Nations Economic Commission for Africa
UNICEF: United Nations Children's Fund
UNFPA: United Nations Population Fund
UNHCR: United Nations High Commissioner for Refugees

WHO: World Health Organisation
ZDHS: Zambia Demographic Health Survey

Appendices

None

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Authors Contributions:

BBB conceived, coordinated, interpreted the results and drafted the manuscript; CCM conceived, interpreted the results and drafted the manuscript. MP and BM interpreted and drafted the manuscript. JNM drafted the manuscript. We further wish to state that we all reviewed the manuscript to ensure that the content contained therein was correct before finally submitting it to the journal

Ethical declarations

Although this data included human beings, this data analysis was secondary and permission was granted to us by Zambia Statistical Agency and DHS program for us to use the ZDHS dataset. In addition, no potentially identifying information is part of this dataset

Consent for publications

No images, individual details or videos for clients' data are part of this paper.

Competing Interests

The authors declare that they have no competing interests.

Declaration of interests

Not applicable

Submission declaration and verification

We declare that this paper has not been submitted to any journal besides this one

Use of inclusive language

Not applicable