

# Adolescent Childbearing in Different DHS Regions and Countries: Total Prevalence and Prevalence by Wealth Quintiles

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## ABSTRACT

Adolescent childbearing has become a major issue in many countries worldwide. Beyond their association with significant risk factors affecting young women and their infants, early marriage and teenage pregnancy constitute an attempt to human rights with disastrous consequences on adolescent girls at all levels. Although adolescent pregnancy is more prevalent in developing countries, it is also challenging decision makers in high-income countries. In all countries, independently of their economic status, the poorest adolescents are more susceptible to teenage pregnancy than the richest girls. In this paper, data from demographic health surveys (DHS) in 26 countries across the six DHS regions are analyzed according to the effect of wealth quintiles. Computation of the concentration index (CI) and the Dissimilarity index (DI) allows a clear comparison between all the countries considered, showing that the prevalence of adolescent childbearing varies between countries from 1.6% in Maldives to 34.3% in the Dominican Republic, and within countries, with the ratio poorest quintile/richest quintile reaching nearly 22 in Jordan.

**Keywords:** Adolescent; Childbearing; Wealth Quintile; Regions; Index; Concentration; Dissimilarity

## Introduction

According to data released by UNICEF [1], nearly 650 million girls and women are married in childhood. One third of the global number of child pregnancies is registered in India, while ten other countries (Egypt, Iran, Mexico, Ethiopia, Pakistan, Brazil, Nigeria, Indonesia, China, and Bangladesh) contribute to a further third and the remaining third is attributable to more than 190 countries across the world. The global prevalence of child marriage decreased from 23% to 19% during the last decade. However, the current trend indicates that, eliminating child marriage by 2030 as indicated by the Sustainable Development target will not be reached. Adolescent pregnancy which is defined as the pregnancy in women aged 10–19, contributes largely to maternal and child deaths and morbidities, especially in low- and middle-income countries (LMICs) which are home to some 21 million adolescent brides each year and resulting in about 12 mil-

lion births [2,3]. Teenage pregnancy and motherhood are associated with a multitude of risk factors affecting at the same time mothers and their infants [4]. Teenage girls, especially those aged 10–15 years, are highly vulnerable to the consequences of pregnancy, delivery, and motherhood [2,5]. Adolescent childbearing is still a major problem challenging decision maker all around the world.

Sanhueza, et al. [6] considered the evolution tendency in teenage pregnancy over generations and in adolescent fertility. For teenage pregnancy, they analyzed data from surveys carried out in 21 countries during the period 2010-2020 and found that childbearing along generations decreased in 13 of them, increased in Colombia and Mexico, and stayed constant in Bolivia and Honduras. The authors concluded that “the results indicate a reduction in adolescent fertility rates in LAC countries that was not necessarily accompanied by a decrease in early childbearing overall. Large inequalities both between

countries and within countries were observed, with no clear reduction over time". Yaya, et al. [7] published a paper titled: "Prevalence of child marriage and its impact on fertility outcomes in 34 sub-Saharan African countries". Using recent demographic health surveys covering 6215 young women in the age category 20–24 years, they found that "the overall prevalence of women who experience child marriage was 54.0% while results showed large disparities across sub-Saharan African countries ranging from 16.5 to 81.7%. Furthermore, women who experience child marriage were 8.00 times as likely to have  $\geq 3$  number of children ever born (lifetime fertility), compared to women married at  $\geq 18$  years".

Although the prevalence of adolescent pregnancy is higher in developing countries, the phenomenon is also challenging decision makers in developed countries. England devoted £280 million over ten years to implement the "England's Teenage Pregnancy Strategy". This strategy was considered as a cost-effective action and proposed as a model to be followed for reducing pregnancies in different countries of the world. However, Baxter, et al. [4] evaluated the England strategy using a comparison with Scotland, Wales, European and English-speaking high-income countries and concluded that "Although teenage pregnancies and births in England felt following implementation of the Teenage Pregnancy Strategy, comparisons with other countries suggest the strategy had little, if any, effect on pregnancy rates. This raises doubts about whether the strategy should be used as a model for future public health interventions in countries aiming to reduce teenage pregnancy.

In the United States of America, adolescent birth rates declined significantly during the last decades. However, the US teenage birth rate remains higher compared to other western developed countries. Moreover, teen birth rates are seriously influenced by ethnic inequalities and geographic disparities. Indeed, in 2019, American Indian/Alaska Native had the highest adolescent birth rates (29.2) and Hispanic adolescents (25.3) and non-Hispanic Black adolescents (25.8) had birth rates much higher than their counterpart non-Hispanic White teens (11.4) [8]. This paper is devoted to the crucial issue of adolescent childbearing with a special accent on the differences between and within 26 countries from the six DHS regions according to wealth quintiles. Concentration index and dissimilarity index are used to evaluate the level of variation.

## Data and Method

### Data Used for Analysis

For a consistent analysis, we used the secondary data provided by Demographic Health Surveys (DHS) in different countries spread across the six DHS regions (South & Southeast Asia, sub-Saharan Africa, Latin America & Caribbean, North Africa/West Asia/Europe, Central Asia, and Oceania). The DHS uses the same sampling methods for collecting disaggregated data according to determinants like education, wealth, residence, ethnicity, and geographic disparity in dif-

ferent countries. In this paper, concentrating on the most recent surveys in each DHS region, the analysis is limited to the effect of wealth quintiles on the prevalence of adolescent childbearing in twenty-six countries selected across the six DHS regions.

### Methods Used for a Comparison Between and within Countries

The analysis is based on three parameters: (1) the prevalence of adolescent childbearing provided by the DHS in each country, (2) the Concentration index (CI) and (3) the Dissimilarity index (DI). In the literature, there is a multitude of methods for calculating the value of the concentration index. In this paper, we use a simple formula based on the concentration curve and the discrete values of the cumulative frequencies of the quintiles Q1, Q2, ...Q5 and the corresponding prevalence of childbearing P1, P2, ...P5. Letting Q0 = P0 = 0, the formula is as follows:

$$CI = \sum_{i=0}^{i=4} (Q_i + Q_{i+1})(P_{i+1} - P_i) = (Q_1)(P_1)(Q_2 + Q_1)(P_2 - P_1) \dots (Q_5 + Q_4)(P_5 - P_4) - 1 \quad (1)$$

Where Q1, Q2, ...Q5 are the cumulative frequencies of the quintiles (as subpopulations of the total sample) and P1, P2, ...P5 are the cumulative values corresponding to the prevalence of childbearing in each quintile.

The dissimilarity index (DI) is computed as follows:

$$DI = \frac{1}{2} \sum_{i=1}^5 \left| \frac{q_i}{Q} - \frac{p_i}{P} \right| \quad (2)$$

Where  $\frac{q_i}{Q}$  and  $\frac{p_i}{P}$  represent respectively the frequencies of the subpopulation in quintile  $i$  and the prevalence of adolescent childbearing related to girls belonging to the quintile  $i$ .

The values of CI and DI are between 0 and 1 (or between 0 and 100 when percentages are used instead of fractions). The closer the CI or DI is to 0, the more equitable is the distribution and conversely, the closer the CI or DI is to 1 (or 100%), the more inequitable is the distribution. It is worth noting that the value of CI is  $< 0$  and that CI in absolute value and DI are correlated since the DI corresponds to the maximum vertical deviation between the Lorenz curve and the line of perfect equality.

## Results

### The Prevalence of Adolescent Childbearing

As indicated in Table 1, the prevalence of childbearing varies between the six regions considered and between countries in each region. Indeed, in the South & Southeast Asia region, girls living in Bangladesh (27.7%) are nearly 8 times and 17 times more exposed to adolescent childbearing than their counterpart girls in Cambodia (3.5%) and Maldives (1.6%) respectively. Similarly, in Latin America

and the Caribbean, the prevalence of adolescent childbearing in the Dominican Republic (34.3%) is more than 16 times higher than in Colombia (2.1%). In sub-Saharan Africa, Madagascar (31.1%) has a prevalence of adolescent childbearing nearly 6 times higher than its equivalent in Gambia (5.2%). In North Africa/West Asia/Europe, recent data available indicate that adolescents in Turkey (9.3%) are 1.8 and 2.7 times more likely to be pregnant than in Jordan (5.2%) and Albania (3.5%) respectively.

**Table 1:** Adolescent childbearing in 26 countries from the 6 DHS regions.

DHS by regions	Prevalence		Q1		Q2		Q3		Q4		Q5	
	N	%	N1	%	N	%	N	%	N	%	N	%
South& S. East Asia												
Bangladesh 2017-18	4782	27.7	806	36.5	965	30.3	1071	28.3	983	26.7	962	17.7
Cambodia 2021-22	1163	3.5	242	8.5	245	4	230	3.1	239	0.4	207	1.3
India 2019-21	122544	6.8	27513	10	27957	8	25635	6.9	22789	5	18650	2.2
Maldives 2016-17	1099	1.6	194	3.1	191	1.4	209	0.8	286	1.4	219	1.6
Pakistan 2017-18	4326	8.1	836	10.1	972	10.1	993	8.3	741	7.7	784	4.7
Philippines 2022	10208	15.4	1607	24.3	2027	19.4	2119	16.9	2261	12.1	2193	7
Timor- Leste 2016	2985	6.9	443	10.7	504	11	571	6.1	727	5.7	740	3.5
S. Saharan Africa												
Gambia 2019-20	2633	10.6	463	21.7	486	19.2	521	17.3	604	7.8	558	5.7
Liberia 2019-20	1567	30.3	225	42	276	40.1	362	40.3	401	28.6	393	9.5
Madagascar 2019	4185	31.1	699	47.7	806	43.9	806	34.9	898	23.9	976	12.2
Mauritania 2019-21	3700	17.6	639	33.3	680	22	769	15	817	13.9	796	7.7
Rwanda 2019-20	3258	5.2	497	7.7	619	6.5	650	6.4	678	4	814	2.7
Senegal2019	1906	13.8	334	28.7	350	13.7	364	10.5	392	11.4	466	7.9
S. Leone 2019	3427	21.3	434	32.5	537	31.9	682	24.7	898	17.4	876	10.7
L America Caribbean												
Colombia 2015	5063	2.1	1133	2.8	1019	3.3	906	2.5	1000	0.8	1006	1.1
Dominican Rep 2013	424	34.3	73	62.3	95	38.7	79	45.9	65	24	112	10.3
Guatemala 2014-15	5793	20.7	1060	28.4	1231	26.7	1210	21.7	1233	15.2	1059	11.1
Haiti 2016-17	3165	10	516	18.5	610	11.9	630	11.5	718	6.8	692	4
Peru2014	4536	13.7	818	24	901	19	909	13.3	892	9.3	790	7.4

N. Africa/W. Asia/ E												
Albania 2017-18	1684	3.5	372	6.2	324	4.5	324	3.6	339	2.1	324	0.8
Armenia 2015-16	725	3.6	150	6.1	154	4.9	138	3.9	130	2.6	153	0.4
Jordan 2017-18	4704	5.2	975	13	859	6.8	858	3.8	1002	2.1	1016	0.6
Turkey 2018	2981	9.3	531	16.1	607	9	600	9.5	658	8.6	585	4.2
Central Asia												
Kyrgyz 2012	1637	6.3	308	7.3	314	7.6	307	6.9	312	8.5	397	2.3
Tajikistan 2017	1911	6.8	392	4.6	404	5.9	369	8.1	348	9.2	398	6.4
OCEANIA												
Papua N.G 2016-17	2945	12.1	520	15.6	517	11.2	559	15.8	628	13.2	721	6.4

**Variation of Adolescent Childbearing by Wealth Quintiles within Each Country**

Independently of its level (high, medium, low), the prevalence of adolescent childbearing shows huge differences by wealth quintiles in each country. The Concentration index (CI) and the Dissimilarity index (DI) are two well-known tools that allow a comparison between girls belonging to different socioeconomic status measured by the wealth quintiles (Q1: poorest, Q2: second, Q3: third, Q4: fourth and Q5: richest) in terms of childbearing prevalence Figure 1. Figure 2

shows the effect of wealth quintiles on the variation of the prevalence of adolescent childbearing in six countries from six different regions. In the 6 countries considered, the poorest girls are much more exposed to pregnancy than the richest girls. The ratio poorest/richest is between two and four in Bangladesh, Mauritania, Kyrgyz Republic, and Papua New Guinea, six in the Dominican Republic and reaches nearly 22 in Jordan. The high values of the concentration index and the dissimilarity index clearly show the level of inequity induced by economic status Table 2.

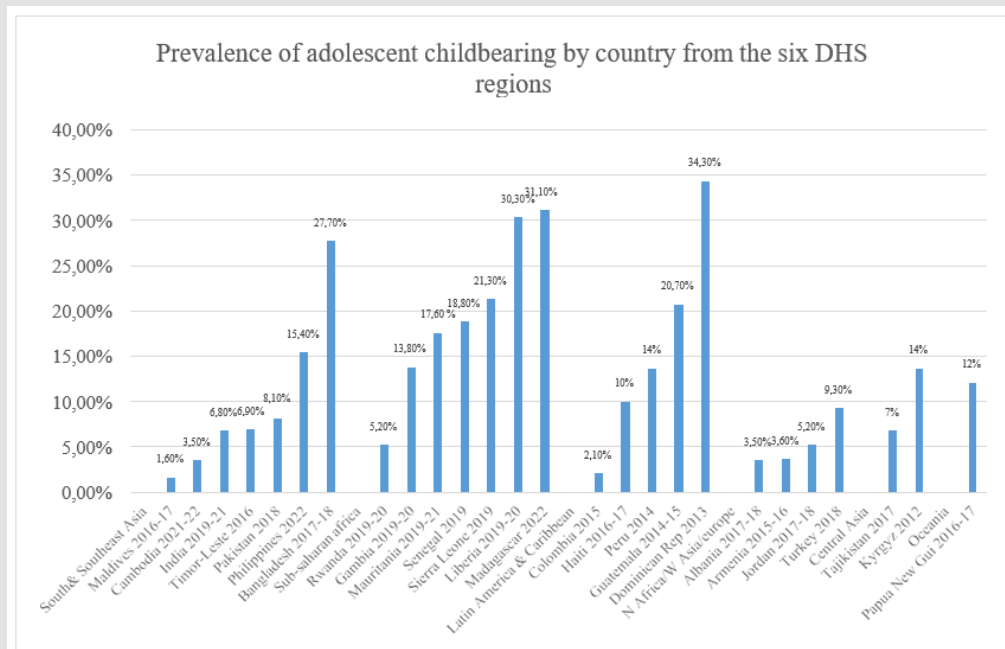


Figure 1: The prevalence of adolescent childbearing varies significantly between and within regions.

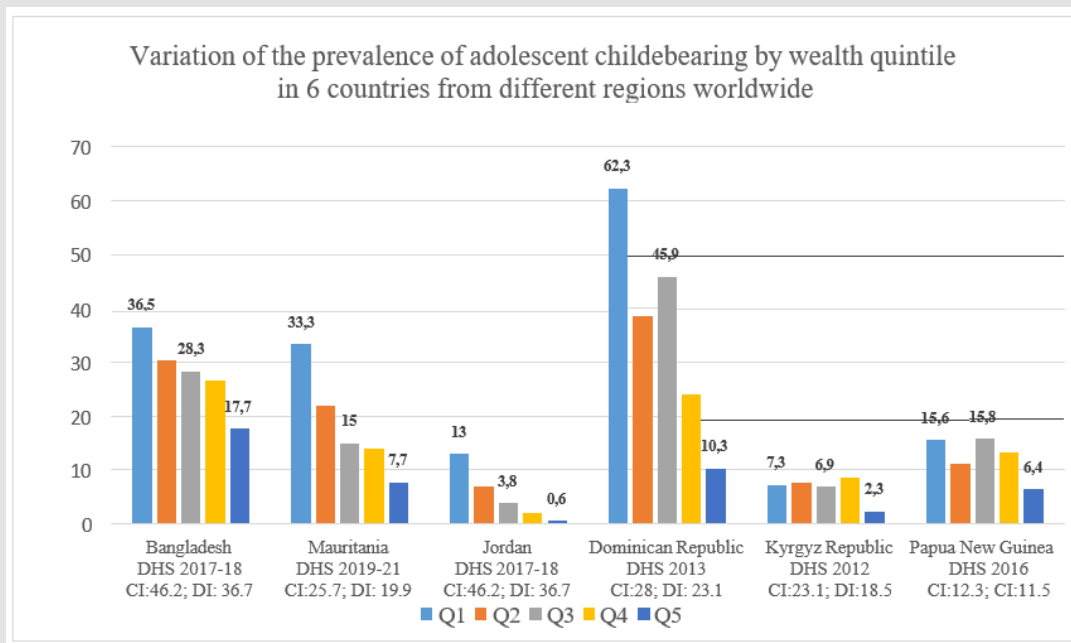


Figure 2: Variation of the prevalence by wealth quintiles in countries from the 6 DHS regions.

Table 2: Adolescent childbearing in 26 countries from the 6 DHS regions.

Region/Country & DHS date	-CI	DI	Prevalence
<b>South &amp; South East Asia</b>			
Bangladesh DHS 2017-18	11.50%	7.90%	27.70%
Cambodia DHS 2021-22	41.50%	31.90%	3.50%
India DHS 2019-21	20.80%	15.20%	6.80%
Maldives DHS 2016-17	12.50%	16.00%	1.60%
Pakistan DHS 2018	12.30%	9.10%	8.10%
Philippines DHS 2022	21.20%	16.40%	15.40%
Timor-Leste 2DHS 016	22.40%	18.40%	6.90%
<b>Sub Saharan Africa</b>			
Gambia DHS 2019-20	25.30%	22.40%	13.80%
Liberia DHS 2019-20	21.60%	17.70%	30.30%
Madagascar DHS 2022	24.00%	19.00%	31.10%
Mauritania DHS 2019-21	25.70%	19.90%	17.60%
Rwanda DHS 2019-20	19.60%	16.80%	5.20%
Senegal DHS 2019	24.00%	18.90%	13.80%
Sierra Leone 2019	21.70%	17.60%	21.30%
<b>Latin America &amp; Caribbean</b>			
Colombia DHS 2015	22.10%	21.80%	2.10%
Dominican Republic DHS 2013	28.00%	23.10%	34.30%

Guatemala DHS 2014-15	17.50%	14.10%	20.70%
Haiti DHS 2016-17	26.20%	20.40%	10.00%
Peru DHS 2014	23.10%	18.50%	13.70%
<b>North Africa/West Asia/Europe</b>			
Albania DHS 2017-18	30.50%	22.90%	3.50%
Armenia DHS 2015-16	31.00%	23.70%	3.60%
Jordan DHS 2017-18	46.20%	36.70%	5.20%
Turkey DHS 2018	19.60%	13.30%	9.30%
<b>Central Asia</b>			
Kyrgyz DHS 2012	13.70%	15.40%	6.30%
Tajikistan DHS 2017	8.00%	10.40%	6.80%
<b>Oceania</b>			
Papua New Guinea DHS 2016-17	12.30%	11.50%	12.10%

### Discussion

Teenage pregnancy is a problem challenging policy maker in many countries across all regions of the world. Although, the number of selected countries (26) is not too large and the accent was done only on the effect of wealth quintiles, the results are very interesting since they allow a comparison between different regions and different countries based on similar disaggregated data. Moreover, the results provided by this study agree with those published by many authors who dealt separately with one country and/or one region [9-14]. In sub-Saharan Africa, our results are obtained from more recent

data (2019-2021) than those published by Wado, et al. [14], Kassa, et al. [12] and Yakubu and Salisu [13]. Moreover, our study is based on the use of CI and DI which are statistical tools more relevant for comparison than using only gaps and ratios.

Wado, et al. [14] analyzed data from demographic health surveys in Kenya (DHS 2014), Malawi (DHS 2015-16), Tanzania (DHS 2015-16), Uganda (DHS 2016) and Zambia (DHS 2014). They found a prevalence varying from 18% in Kenya to 29% in Malawi and Zambia. Using a regression analysis, they indicated that “educational attainment, age at first sex, household wealth, family structure and exposure to media were significantly associated with adolescent pregnancy in at least one of the five countries after adjusting for socio demographic factors”. The systematic review by Kassa, et al. [12] covered 52 studies undertaken between 2002 and 2017. The authors found an average of teenage pregnancy approaching 19% (18.8%) with large differences between the sub-regions of Africa (9.2% in Northern Africa vs 21.5% in East Africa). They concluded that: “This review also found different socio-demographic factors associated with adolescent pregnancy. Adolescents from rural residence, ever married, not educated, no mother’s education, no father’s education, and lack of parent to child communication on SRH issues were more likely to start childbearing”.

In the review published by Yakubu and Salisu [13] on “Determinants of adolescent pregnancy in sub-Saharan Africa”, the 24 studies selected were conducted between 2001 and 2015. They summarized their findings as follows: “The study identified Sociocultural, environmental and Economic factors (Peer influence, unwanted sexual advances from adult males, coercive sexual relations, unequal gender power relations, poverty, religion, early marriage, lack of parental counseling and guidance, parental neglect, absence of affordable or free education, lack of comprehensive sexuality education, non-use of contraceptives, male’s responsibility to buy condoms, early sexual debut and inappropriate forms of recreation). Individual factors (excessive use of alcohol, substance abuse, educational status, low self-esteem, and inability to resist sexual temptation, curiosity, and cell phone usage). Health service-related factors (cost of contraceptives, Inadequate and unskilled health workers, long waiting time and lack of privacy at clinics, lack of comprehensive sexuality education, misconceptions about contraceptives, and non-friendly adolescent reproductive services,) as influencing adolescent pregnancies in Sub-Saharan Africa”.

Similarly, in Latin America and the Caribbean (LAC), overall, the five DHS considered in our study (2013-2016/17) are more recent than the seven studies analyzed by Caffè, et al. [11] and the values of CI and DI obtained in our study are statistically more illustrative of the inequalities existing within countries. Considering the fact that teenage fertility rates have decreased slowly in LAC during the past three decades and remained among the highest in the world, a technical consultation meeting was held in 2016 by Pan American Health Organization/World Health Organization (PAHO/WHO), United Na-

tions Population Fund (UNFPA), and United Nations Children’s Fund (UNICEF). The main goal of this meeting was to determine efficient strategies expected to reduce adolescent pregnancy and to accelerate progress [15]. Caffè, et al. [11] considered teenage fertility data disaggregated by wealth, education, and ethnicity. While stressing the high levels of inequities existing within countries, they also indicated that poor girls and those with primary or no education were four times more exposed to childbearing than rich girls or those with secondary or higher education.

In South and Southeast Asia, we analyzed the seven most recent demographic health surveys conducted between 2016 and 2022 while the review by Poudel, et al. [3] selected 15 studies conducted between 2002 and 2021 in South Asia. They concluded that “The findings suggest that the most common factors associated with adolescent pregnancy in South Asia include low education attainment, poor economic status and rural residence, belonging to ethnic minorities and those having a Muslim religious background.” In North Africa/West Asia/Europe, we selected the four more recent demographic health surveys in Albania (2016-17), (Armenia (2015-16), Jordan (2017-2018) and Turkey (2018) and the results obtained can be partially compared with those of Boutayeb [10] who dealt with “Social determinants of health and adolescent childbearing in WHO Eastern Mediterranean countries”, using demographic health surveys, UNICEF-MICS and PAFAM surveys. In particular, the prevalence of teenage childbearing varied between 0.4% in Tunisia to 15.1% in Sudan while in our study, it varied between 3.5% in Albania and 9.3% in Turkey. Concerning the variation of the prevalence of adolescent childbearing in the case of wealth quintiles, our study found values varying from 13.3% in Turkey to 36.7% in Jordan while the corresponding values given by Boutayeb [10] are between 8.2% in Yemen and 47.2% in Tunisia. Finally, to cover the six DHS regions, our study also included two studies from central Asia (Kyrgyz and Tajikistan) and one study from Oceania (Papua New Guinea).

As indicated earlier, the present study focused on wealth quintiles to show that, in all countries and regions, poor girls are more likely to be engaged in an early marriage and hence to initiate teenage pregnancy. Child marriage appears as both a cause and consequence of poverty and consequently child marriage and adolescent childbearing perpetuate cycles of poverty across generations. By the way, the global partnership to end child marriage (GPECM) stresses that “Without ending child marriage, we won’t achieve eight of the 16 Sustainable Development Goals (SDGs)” [16]. Obviously, education level, milieu of residence, ethnicity and territorial disparities are also associated with adolescent childbearing as indicated in a multitude of studies [3,7, 9-14,17].

## Conclusion

In all countries and across all regions of the world, disadvantaged girls in general, and particularly in terms of economic status, are more exposed than advantaged girls to child marriage and teenage preg-

nancy. Consequently, it is important to emphasize that policy makers must adopt effective strategies to limit child marriage and teenage pregnancy in the short and medium term, while persevering to end this phenomenon in the long term. For this, targeting disadvantaged girls who are illiterate or with little education, living in poor families and remote areas, is the best cost-effective strategy.

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## Conflict of Interest

The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Author Contribution

A.B is the single author who gathered data, computed the CI and DI indices, wrote the paper and proofread the manuscript before submission.

## Ethics Approval and Consent to Participate

Not applicable.

## Consent for publication

Not applicable.

## Availability of Data

The data sets used and/or analyzed during the current study are available from

<https://dhsprogram.com/Countries/Country-List.cfm>.

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