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Counting who makes the grade: Updated estimates of the share of over-age for grade learners in sub-Saharan Africa using MICS6 data

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ABSTRACT

Many education systems within sub-Saharan Africa are affected by the problem of over-aged learners. Children who are above the expected age for their grade experience poorer outcomes relative to other learners and it is therefore of interest to policymakers to accurately identify them for the purposes of informing effective remedial interventions. UNICEF's sixth round of Multiple Indicator Cluster Survey's [MICS6] are among the relatively few robust nationally representative data sources that can be used to calculate the share of over-age for grade learners within education systems. This paper identifies variability in the estimation method used to identify the same target over-age population (i.e. learners who are older than the official age for the grade they are currently attending) across MICS6 country reports in 14 countries in sub-Saharan Africa. Nine countries utilise a different method which captures only part of the desired target population. This approach fails to identify at least 50% of learners who are over-age for grade by two years in their primary education system and up to 57% of over-age for grade learners in lower secondary. Results are discussed in terms of their implications for supporting policymakers to plan and implement effective school-based education and health interventions, using Comprehensive Sexuality Education as an example.

1. Introduction

In recent years, organisations such as UNESCO (2022), the US Agency for International Development (Menendez, and Ome, 2022) and the World Bank (Darvas and Namit, 2016) have highlighted the problem of over-age learners in sub-Saharan Africa. Over-age learners are those who are above the expected official age for the grade that they are attending. This phenomenon is usually driven by two factors, the first being late entry into schooling and the second being grade repetition, commonly due to insufficient test marks or another form of educational disruption, like conflict or natural disasters (UNESCO, 2012). Studies have shown that being over-age for grade is associated with poor learner outcomes such as elevated risks of drop-out, completion rates and onwards grade repetition (Glick and Sahn, 2010; Sunny et al., 2017). Moreover, being over-age for grade entails economic costs for learners, in the form of late entry to the labour market and reduced lifetime earnings (Luo, Zhou, Mizunoya, and Amaro, 2020). For countries, economic costs also arise from additional resources spent on educating repeating learners and the lost inputs of overage learners to the national economy (UNESCO, 2012).

Despite the far-reaching consequences of being over-age for grade, studies suggest it remains common in sub-Saharan Africa (e.g., Kyereko, Smith, Hlovor, and Keney, 2022; Van der Berg et al., 2020). In a study of learners in Karonga district of northern Malawi, Sunny et al., (2017) identify that almost a quarter (24%) of learners are at least two years old than their expected age for grade. Liberia stands out as one of the countries in the sub-Saharan Africa region most significantly impacted by the issue of students being over-age for their respective grades because of its recent history of conflict. According to Liberia's 2019 Demographic and Health Survey, approximately 92% of primary school learners and 95% of lower secondary learners are over-age (UNESCO, 2022). The prevalence of overaged students in the country is so substantial that it has led to the observation that the average Liberian first grader is 9 years old, which is three years older than the expected national primary school entry age of six (Darvas and Namit, 2016).

Substantial disparities in the age of learners within grades represent sobering challenges for teachers, who need to adapt their pedagogical approaches based on the ages of children, as well as policymakers and implementers responsible for delivering age-appropriate curriculum and school-based health interventions. Failing to count learners who are

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over-age for their grade hinders the effective implementation of remedial strategies aimed at ensuring they achieve outcomes at parity to their peers. In terms of health outcomes, there is little direct evidence on the effect of age and grade disparities on the health of school-going learners in low- and middle-income countries (Liao et al., 2023). However, in some areas robust data show that where adolescents receive timely age-appropriate health information, this translates into protective health-related knowledge and behaviour. For example, there is good evidence that school-based Comprehensive Sexuality Education decreases sexual risk-taking and promotes contraceptive use (UNESCO et al., 2018). The United Nations Special Rapporteur on Health (Mofokeng et al., 2023) has recently highlighted that countries face significant costs from failing to integrate Comprehensive Sexuality Education [CSE] into timely and age-appropriate school-based education. For instance, pregnancy related conditions are a leading global cause of mortality among girls aged 15–19 and the majority of unintended pregnancies in this age group ending in abortions, which are often unsafe (Mofokeng et al., 2023). In a study on risky sexual behaviour among adolescents in the United States Ma et al. (2021) also find that being older relative to other learners within the same grade positively predicts risky sexual behaviour.

Counting overaged learners within national education systems is therefore important, but complicated by the fact that there exist relatively few robust country-level data sources from which to produce estimates. UNICEF's Multiple Indicator Cluster Surveys [MICS] comprise one such corpus of data and are among the largest global household survey programmes focused on children and women (Khan and Hancioglu, 2019). MICS are cross-sectional and implement multistage probability designs to produce representative samples of households at the national and subnational levels (Khan and Hancioglu, 2019). As in previous rounds, the most recent sixth round for which data are available allows for estimation of the share of over age for grade learners for collected indicators. MICS findings are shared in publicly available country reports produced by country national statistical departments, often in collaboration with other national government departments, as well as UNICEF and other agencies. Country reports and datafiles are available to download from UNICEF's MICS website.[1]

2. The present study

In this paper, we present data which identifies variability in estimation methods used to identify over-age for grade learners across the cohort of published MICS6 country reports from sub-Saharan Africa. We show that in the affected countries, an estimation method has been used that does not identify many, and in some cases the majority, of over-age for grade learners correctly according to the definition of over-age for grade presented within MICS6 reports (i.e. learners who are older than the official age for the grade they are currently attending).[2] In other words, in the affected reports, the definition given of over-age for grade does not precisely correspond to the estimation method used. The estimation method captures only part of the target population referred to by the definition. We can succinctly describe the problem by referring to the standardised example of when a learner is counted as over-age for grade, which is provided in most MICS6 country reports:

> "For example, an 8-year-old child (at the beginning of the school year) is expected to be in grade 3…as per the official age-for-grade. If this child is currently in year 1, he/she will be classified over-age by 2 years."[3]

In fact, as we will show, affected countries fail to identify learners of this type as over-age for grade. We describe the different estimation methods in more detail in the method section. In the first portion of our findings, we then compare original, published data to our revised estimates for each affected MICS6 sub-Saharan Africa country. Next, we briefly highlight possible implications of correctly identifying all over-age for grade learners for school-based education and health interventions, by presenting a short case study discussing the implementation of Comprehensive Sexuality Education [CSE] in schools in Ghana, in context of the original and our updated estimates.

3. Method

3.1. Data source

Data used in this research is derived from the sixth round of Multiple Indicator Cluster Surveys [MICS6] conducted by UNICEF. SPSS datafiles for the target countries were obtained from UNICEF's MICS6 database and were reanalysed. Published MICS6 reports were also accessed through this database. For each target country, original, published estimates in MICS6 reports were replicated, and where the estimation method diverged from the recommended calculation approach (see below), updated estimates were produced.

3.2. Measures and analytical approach

Over-age data were reanalysed from all MICS6 sub-Saharan African countries that had both a publicly available country report and associated dataset available at the time of writing, comprising 14 in total. Through the reanalysis, two distinct methods of calculating over-age for grade statistics in these reports were identified, referred to in this paper as *over-age for grade* and *over-age for school level* respectively.

Over-age for grade refers to the internationally accepted method of calculating over-age for grade for the purposes of informing progress toward Sustainable Development Goal 4 and which is adopted in MICS6 reports. Table 1 provides this definition.

The approach used in this paper for generating updated estimates (where needed) of *over-age for grade* learners follows this definition as well as UNICEF's own manual for education statistics and publicly available statistical code (UNICEF, 2020). Conversely, in the *over-age for school level* estimation method, learners are counted as over-age only when they are beyond the expected age of a child in the last grade of that school level, and not when they are over-age for each individual grade. Fig. 1 illustrates the difference between the estimation methods, using Sierra Leone, where children enter primary school at age six, and study for six grades as an example.

As illustrated by Fig. 1, the recommended method of estimating over-age for grade [green line] tracks the intended age of the child for each grade [blue line]. Here, learners are identified as over-age for grade if they are 2 years or older than the age they are expected to be in for each individual grade. Conversely, the over-age by school level estimation method [red line] will only identify learners who are at least 2 years beyond the intended age of children at the last grade of their school level (e.g. primary, secondary), no matter what grade they are in. Children that are over-age for individual grades but not for primary or lower secondary school overall will not be identified through this approach.

This paper does not discuss any variability in estimation methods of over-age for grade for MICS6 surveys conducted outside of sub-Saharan Africa. There are three reasons for this focus. First, of the MICS6 countries with publicly available over-age for grade estimates and datasets, the majority are in the sub-Saharan Africa region. Second, countries in this region tend to show higher overall proportions of overaged learners relative to other regions where MICS6 surveys have been conducted (e.g., Eastern Europe), meaning the potential impact of under-identification of overaged learners is higher. Third, exploratory analysis of MICS6 surveys from other regions suggested that the majority follow the recommended approach to identifying learners who are over-

[1] https://mics.unicef.org/

[2] This definition is normally given in the Attendance sub-section of the "Learn" chapter as a description of Table LN.2.5 'Age for grade'.

[3] See for example Ghana's MICS6 report p. 228.

Table 1
Definition of over-age for grade.

Definition
SDG 4.1.5: Percentage of pupils in each level of education (primary and lower secondary general education) who are at least 2 years above the intended age for their grade.
Description
The intended age for a given grade is the age at which pupils would enter the grade if they had started school at the official primary entrance age, had studied full-time and had progressed without repeating or skipping a grade.
Calculation
The sum of enrolments across all grades in the given level of education which are 2 or more years older than the intended age for the given grade is expressed as a percentage of the total enrolment in the given level of education.

Note. UNESCO Institute of Statistics (2021)

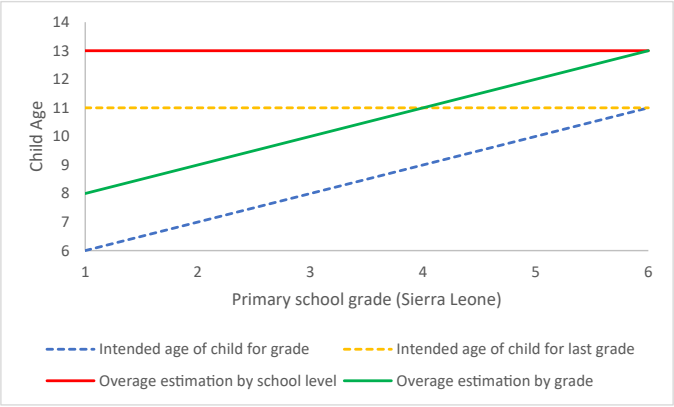

Fig. 1. Comparison of over-age for grade and over-age for school level estimation methods.

age for grade.

The second part of the findings section discusses the implications of the revised over-age for grade estimates for education and health-related interventions using the provision of Comprehensive Sexuality Education [CSE] in Ghana as a brief case study. CSE is a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality that aims to equip learners with knowledge, skills, attitudes, and values that empower them to realize their health, well-being and dignity and act upon their rights throughout their lives (UNESCO et al., 2018). The implementation of CSE is still limited across many African countries, with low levels of political will, underpinned by conservative cultural attitudes to sexuality, hindering attempts at roll-out (Wangamati, 2020). Conversely, in Ghana CSE enjoys support from policymakers and in 2019 the Ministry of Education launched a set of national guidelines to support the teaching of CSE as a core subject within schools (Government of Ghana, 2019). As the Ghana MICS6 data was collected in 2017 and published in 2018, it is relatively contemporaneous with Ghana's implementation of CSE in schools and thus provides a useful practical example through which to discuss the importance of accurate over-age for grade estimates.

4. Findings

MICS6 over-age for grade data from 14 sub-Saharan African countries were analysed and classified according to estimation method used. Table 2 lists these countries, the estimation method used and the survey characteristics.

Of the 14 country data sources analysed, 5 used the over-age for grade estimation method. Conversely, the remaining 9 countries used the over-age for school level estimation method. Of these nine, one MICS6 country report (the Democratic Republic of Congo) uses the over-age for school level method and provides over-age for grade estimates in a supplementary table. However, this table only provide estimates for the population of over-age for grade learners disaggregated by other characteristics (e.g., province) and not the aggregate proportion of learners in total who are over-age for grade by 1 and 2 years (see

Table 2
Sub-Saharan African MICS6 countries and estimation type used.

Country	Overage for grade estimation type	Year of survey	Year of publication
Chad	Over-age for grade	2019	2020
Central Africa Republic	Over-age for grade	2018–2019	2021
Democratic Republic of Congo	Over-age for school level	2017–2018	2019
Ghana	Over-age for school level	2017–2018	2018
Guinea-Bissau	Over-age for school level	2018–2019	2020
Lesotho	Over-age for school level	2018	2019
Madagascar	Over-age for school level	2018	2019
Malawi	Over-age for grade	2019–2020	2021
Nigeria	Over-age for grade	2021	2022
Sao Tome & Principle	Over-age for grade	2019	2020
Sierra Leone	Over-age for school level	2017	2018
The Gambia	Over-age for school level	2018	2019
Togo	Over-age for school level	2017	2018
Zimbabwe	Over-age for school level	2019	2019

National Institute of Statistics, 2019, p. 246). Hence, we include it in our reanalysis.

Next, the original published over-age estimates for these 9 affected countries are compared with new over-age for grade estimates generated by a re-analysis using the recommended method. Like all published MICS6 reports, these estimates are disaggregated by school level (primary, lower secondary) and the specific over-age status of the child (under-age, at official age, over-age by 1 year, over-age by 2 years) and are weighted using the household sample weight. Table 3 provides these

Table 3
Published over-age estimates compared to authors re-analysis.

Country	Estimate	Primary				Lower secondary			
		Underage	At official age	Overage by 1 year	Overage by 2 years	Underage	At official age	Overage by 1 year	Overage by 2 years
DRC (N_P =20608; N_{LS} = 4059)	Published	8.8%	71%	7.8%	12.4%	9.5%	34.5%	17.9%	38.1%
	Reanalysed	**22.7%**	**24%**	**20.5%**	**32.8%**	**14.8%**	**18.7%**	**19.9%**	**46.6%**
Ghana (N_P = 12045; N_{LS} = 4604)	Published	0.7%	72.9%	10.4%	16%	2.6%	44.2%	18.7%	34.5%
	Reanalysed	**8.3%**	**24.2%**	**25.4%**	**42.1%**	**6%**	**17%**	**22.3%**	**54.7%**
Guinea-Bissau (N_P =10181; N_{LS} = 1807)	Published	3.5%	57.2%	9%	30.3%	1%	18.2%	11.6%	69.2%
	Reanalysed	**5.4%**	**12.2%**	**15.2%**	**67.2%**	**2%**	**4.8%**	**10.4%**	**82.8%**
Lesotho (N_P =6030; N_{LS} = 2000)	Published	6.7%	81.3%	6.1%	5.8%	8.8%	53.5%	13.9%	23.8%
	Reanalysed	**28.2%**	**37.8%**	**18.5%**	**15.6%**	**16.3%**	**25.1%**	**19.7%**	**39%**
Madagascar (N_P =13041–13046[i]; N_{LS} = 3619)	Published	12.4%	62.3%	10.1%	15.1%	6.7%	58.6%	14.7%	20%
	Reanalysed	**23.8%**	**21.2%**	**18.7%**	**36.3%**	**19.3%**	**20%**	**20.7%**	**40%**
Sierra Leone (N_P =15203; N_{LS} = 3843)	Published	15.3%	66.6%	7.3%	10.8%	7.4%	44.1%	13.2%	35.3%
	Reanalysed	**31.2%**	**22.1%**	**17.6%**	**29.1%**	**14.8%**	**16.4%**	**18.4%**	**50.5%**
The Gambia (N_P =10403; N_{LS} = 2950)	Published	13.4%	73.1%	6.4%	7.2%	10.2%	54.5%	13.2%	22.2%
	Reanalysed	**30.5%**	**27.9%**	**18.9%**	**22.7%**	**20.7%**	**25.9%**	**20.1%**	**33.3%**
Togo (N_P =7563; N_{LS} = 2929)	Published	12%	71.4%	6.8%	9.9%	10.5%	55.2%	11%	23.4%
	Reanalysed	**36.5%**	**22.8%**	**17%**	**23.6%**	**23%**	**17.4%**	**18.1%**	**41.5%**
Zimbabwe (N_P =8894; N_{LS} = 2917)	Published	2.9%	89.4%	5.1%	2.7%	5.2%	79.0%	9.0%	6.8%
	Reanalysed	**17.3%**	**47.3%**	**23.2%**	**12.2%**	**19.1%**	**40.6%**	**24.2%**	**16.1%**

Note. N_P = N of primary school learners; N_{LS} = N of lower secondary learners. For each country, published MICS6 over-age estimates are shown in normal text. Bolded text represents updated estimates based on the authors reanalysis using the recommended over-age for grade calculation method. Entry age and duration of primary and lower secondary is defined in accordance to country national classifications. [i] Madagascar's reanalysed primary estimates exclude five cases that had responses of 'don't know' for grade.

estimates.

As shown by Table 3, countries that utilise the over-age for school level estimation approach fail to identify at least 50% of the population of primary school learners who count as over-age for grade for the purposes of monitoring SDG 4 (i.e. who are at least 2 years above the intended age for their grade) in all cases. For most countries, more than 60% of over-age for grade learners are missed through the over-age for school level estimation approach. The largest gap is in Zimbabwe, where 77% of the population of over-age for grade primary school learners are missed. For lower secondary, differences in learners identified through the published and revised over-age estimates are smaller across the cohort but still sizeable. The smallest gap is in Guinea-Bissau where approximately 16% of over-age attenders are missed through use of the over-age for school level estimation approach. Conversely, the largest gap is in Zimbabwe, where 57% of over-age for grade learners are missed through the over-age for school level estimation approach.

A brief case study for Ghana demonstrates how the use of the school-level estimation method alongside the definition of over-age for grade in MICS6 country report (learners who are older than the intended age for their specific grade) s masks information that is useful to inform the rollout of its national Comprehensive Sexuality Education programme and stimulate further research and investigation. In 2019, Ghana published new national curriculum and guidelines for CSE that set out in what class and age learners are taught each element of CSE (Government of Ghana, 2019), as informed by international standards (UNESCO et al., 2018). Following the new national CSE guidelines, learners should be taught about sexually transmitted infections, including HIV, and how to protect themselves from age 14, which corresponds to the official age of entry for the third grade of lower secondary (Government of Ghana, 2019). Receiving this information is crucial to help reduce the likelihood that adolescents will engage in risky sexual behaviour and consequently experience poor health outcomes, such as HIV infection (UNESCO, 2015). However, Ghana's published over-age estimates mask how many 14-year-olds this curriculum would fail to reach when taught from the third grade.

Table 4 compares published over-age estimates with our revised estimates for all lower secondary attending children in Ghana, disaggregated by grade.

Table 4
Published over-age for grade estimates compared to authors re-analysis for all lower secondary attending children in Ghana, disaggregated by grade.

Lower secondary grade	Estimates	Underage	At official age	Overage by 1 year	Overage by 2 years
Grade 1 (*N*=1646)	Published	5.9%	62.0%	14.9%	17.2%
	Reanalysed	**5.9%**	**17.2%**	**23.5%**	**53.3%**
Grade 2 (*N* = 1539)	Published	1.1%	43.8%	21.6%	33.6%
	Reanalysed	**5.5%**	**16.3%**	**23.0%**	**55.1%**
Grade 3 (*N* = 1420)	Published	0.3%	23.9%	20.1%	55.7%
	Reanalysed	**6.8%**	**17.4%**	**20.1%**	**55.7%**

As Ghanaian learners are supposed to enter lower secondary grade 1 at the age of 12, the published over-age for grade estimates suggest that the majority of learners (62%) starting grade 1 are the intended age of 12 years and only 17.2% of learners in lower secondary grade 1 are aged 14 or over (i.e. over-age by 2 years), rising to 55.2% of learners in grade 2 (i.e. either over-age by 1 year or over-age by 2 years). Yet, our updated over-age estimates clearly show this is not the case. They identify that over half of learners beginning lower secondary grade 1 are aged 14 or over (53.3%) rising to 78.1% of learners in grade 2. The discrepancy happens because the published analysis counts all learners of lower secondary schooling age (i.e. 12–14 years) as of official age for grade, no matter what grade they are actually in. However, this information is not clearly communicated to the reader since the published analysis purports to capture learners who are older than the intended age for each individual grade (see for example Ghana Statistical Service, 2018, p. 228).

To further illustrate the population missed through the over-age by school-level approach and the potential implications for CSE provision,

we identified all fourteen-year-olds within Ghana's MICS6 dataset who were attending school ($N = 1607$). Of these 98% were attending primary or lower secondary school. Table 5 provides the grade distribution for all fourteen-year-olds currently at primary or lower secondary level in Ghana, disaggregated by sex, residence (urban, rural) and wealth quintile.

Using Ghana's MICS6 dataset to examine the distribution of all 14-year-olds in Ghanaian primary or lower secondary schools by grade reveals that only a minority (16.4%) are in the intended grade for their age, the third grade of lower secondary. Just over a third in total (36.6%) are attending different grades of primary school. Both the over-age for school level and the over-age for grade estimation approaches would identify these cases as overaged because primary school attenders aged 14 are at least 2 years beyond the official age for children starting the last grade of Ghanaian primary school (11 years). However, this analysis also reveals that almost half (46.9%) of primary or lower secondary school going fourteen-year-olds attend lower secondary and are over-aged by at least one year. Of this percentage, roughly half (23.3%) attend grade 1 of lower secondary and therefore are over-age for grade by two years. This 46.9%, representing almost half of the population of all primary or lower secondary going fourteen-year-olds in Ghana, are all missed by the over-age for school level estimation approach. Only the over-age for grade estimation approach would identify these cases as over-age for grade, by the correct number of years (i.e. over-age by 1 year, over-age by 2 years) and thus provide a much better summary for policymakers and implementers seeking to understand the over-age problem in Ghanaian schools for certain purposes such as, we suggest, CSE curriculum rollout.

With respect to CSE, the updated over-age for grade estimates in Table 4 show clearly that although Ghanian learners should be taught about sexually transmitted infections, including HIV in lower secondary grade 3 at age 14, many learners are overaged and reach this age in earlier grades, potentially increasing the likelihood that they will engage in risky sexual behaviour. Looking at the descriptive disaggregates in Table 5 there are more male than females 14-year-olds in Ghanaian primary schools and a greater proportion of these individuals tend to live in rural areas and are poorer. For overaged 14-year-olds in Ghanaian lower secondary schools, patterns are more mixed, with a greater share of fourteen-year-old females present in grade 1, relative to boys and a higher proportion of 14-year-old urban dwellers who are overaged in lower secondary grade 2 compared to rural. This is interesting in light of the fact it is these cases that are missed through the use of school-level estimation approach in the Ghana country statistical report; however, we ultimately we do not seek to provide comprehensive evidence on this issue in this paper. Rather, we use this example to highlight how the use of the school-level estimation method in the affected reports without clear signposting to readers masks issues (e.g., the true estimated prevalence of overage for grade learners in Ghanaian lower secondary schools according to the country report definition) that may well have policy relevance (e.g., CSE curriculum rollout).

5. Discussion

The findings of this paper show variability in estimation methods used to identify and report the share of overaged learners in the cohort of MICS6 surveys that focus on sub-Saharan Africa. This is despite the fact that the calculation of over-age for grade in these reports purports to capture the same target over-age population (i.e. learners who are older than the intended age for the individual grade they are currently attending; SDG 4 definition). Within the affected countries that report over-age for grade learners via the school-level methodology (i.e. learners older than the intended entry age to the last grade of the education level they attend), at least 50% of the population of primary school learners who are considered over-age for grade according to the SDG 4 definition are in fact not identified in each country, and between approximately a fifth (16%) to over half of learners (57%) attending lower secondary school. Failing to accurately count learners who are over-age for their grade via a consistent methodology has several important consequences. First, in the case of the MICS, it hampers ability to make use of internationally-comparable data if the analysis methodology is not comparable. Second, it hinders the ability of policymakers and implementers to design remedial strategies aimed at ensuring equitable education outcomes. Third, it also impacts the ability of other stakeholders like researchers to understand the evidence-base around the over-age problem. Statistics from robust nationally representative data sources tend to remain in use for several years. As a case in point, Luo et al., (2020) use census data collected between 2006 and 2012 to examine education indicators. The findings of our analysis are therefore of broad interest to education researchers, particularly those working within the countries affected by the variable estimates.

Utilisation and reporting of different estimation methodologies to identify overaged learners, particularly when not clearly communicated, may negatively impact the ability of policymakers and implementers to plan and roll-out school-based education and health interventions, as argued in the brief case study presented on Comprehensive Sexuality Education in Ghana. Here, Ghana's published over-age statistics greatly under-estimate the proportion of learners aged 14 and above who are over-age for grade. This is concerning in the context of CSE because it suggests many school-going adolescents reach the age of 14 or older before they are formally taught about STIs and protective behaviour. These subjects are typically covered in grade 3 of lower secondary education, a stage that learners are expected to enter at the age of 14 (Government of Ghana, 2018). Exclusion from CSE may predispose these learners to engage in risky sexual behaviour (UNESCO, 2015). In highlighting as a case study the share of over-age for grade learners in Ghanaian lower secondary schools in context of its new Comprehensive Sexuality Education curriculum, we also intend to underscore the imperative to explore through further research if overaged learners in low- and middle-income countries face health inequalities. The updated estimates we provide in this paper are helpful to supporting future research efforts.

Table 5
Grade distribution of fourteen-year-olds currently attending primary or lower secondary school in Ghana, disaggregated by sex, residence and wealth quintile.

Variable	Primary						Lower secondary		
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 1	Grade 2	Grade 3
Total	0.3%	0.6%	2.4%	5%	11.3%	17%	23.3%	23.6%	16.4%
Sex: Male	0.4%	0.6%	3.7%	5.9%	12.1%	18.4%	21%	25.4%	12.3%
Female	0.2%	0.6%	1.2%	4%	10.5%	15.7%	25.5%	21.8%	20.4%
Residence: Urban	0.1%	0.5%	1%	2.8%	12%	11.2%	21.9%	25.5%	25.1%
Rural	0.5%	0.7%	3.4%	6.5%	10.8%	21.2%	24.4%	22.2%	10.2%
Wealth index quintile: Poorest	0.4%	1.5%	4.3%	12.4%	13.6%	23.3%	22.8%	14.8%	6.9%
Second	0.1%	0.2%	5.8%	5.8%	9.6%	21.6%	25.4%	23.2%	8.4%
Middle	0.9%	0.2%	1%	2.6%	11.6%	15.4%	29%	25.4%	14.1%
Fourth	0%	0.8%	0.2%	1.9%	13.8%	14.5%	20.8%	25%	23%
Richest	0%	0.5%	0%	1.3%	7.4%	8.2%	17%	31.1%	34.6%

Note. Analyses are weighted using the household sample weight.

The findings of this research should not be considered as criticism of MICS6 surveys, data or findings. Rather, we identify an issue within a specific sub-set of MICS6 country reports for the single indicator of over-age for grade. Moreover, it is only because UNICEF publish MICS6 data and country reports in a publicly accessible database that we have been able to identify the issue and produce updated estimates of the share of over-age for grade learners for affected countries. Neither should our findings be considered as inherent criticism of the school-level estimation method. There are circumstances when it may be advisable and indeed preferable to identify overaged learners via the school-level method. For example, this approach provides a clearer estimate of the most extreme cases of overaged learners, which may be more informative for some monitoring purposes relative to the over-age for grade approach. Notwithstanding, our findings are important. Robust nationally representative data sources exploring the situation of children in low-and middle-income countries are few and far between and are relevant to a broad range of stakeholders, including policymakers and researchers. It is essential these data sources are comparable to track progress within and between countries. Our findings shed new light on the magnitude of the over-age problem in sub-Saharan Africa.

CRediT authorship contribution statement

Mark T. Carew: Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Hannah Kuper:** Writing – review & editing. **Shanquan Chen:** Writing – review & editing, Data curation. **Sara Rotenberg:** Writing – review & editing, Data curation.

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