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REVIEW

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The impact of economic growth and recessions on maternal and child health outcomes in sub-Saharan African countries: a systematic literature review

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Abstract

Background The discourse surrounding the relationship between economic growth and maternal and child health has extended over several years. While some studies highlight the potential positive impact of economic growth on maternal and child health, others challenge the conventional belief that economic growth invariably translates to improved maternal and child health. Recent findings suggest that its role as a sole determinant of mortality outcomes has declined over time. This systematic review aims to consolidate existing literature and offer a comprehensive overview of this relationship in sub-Saharan African countries.

Methods A structured search of Medline, Embase, Web of Science, EconLit, and Global Health was conducted. Inclusion criteria encompassed studies published between 2000 to 2022 that examined national level economic growth and recession in conjunction with health outcomes of mothers and children in sub-Saharan African countries.

Results A total of 1167 studies were initially identified from the database searches, of which 18 met the inclusion criteria for data extraction. The review presents a range of findings. Eleven studies underscore the significant impact of economic growth in reducing child mortality and undernutrition, and maternal mortality rate. Conversely, other studies indicated insignificant or inconsistent associations, emphasizing the importance of various socio-economic factors such as female education, equitable resource distribution, effective governance, and comprehensive maternal and child health coverage and interventions. These factors are considered crucial in maximizing the benefits derived from national economic growth.

Conclusions Future research should explore alternative economic growth indicators such as, inequality-adjusted Human Development Index and Genuine Progress Indicator, to better capture several socio-economic factors. Additionally, expanding the timeframe could provide a more comprehensive understanding of the impact of economic growth and recession on maternal and child health in sub-Saharan Africa.

Keywords Economic growth, Recessions, Maternal and child health, Reproductive health, Sub-Saharan Africa, Systematic review

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Background

The promotion of macroeconomic growth continues to be advocated in low-income countries, driven by the observation that countries with higher per capita incomes tend to exhibit longer life expectancy and lower infant mortality rates while the poorest countries tend to have the poorest health status [1]. The benefits of such economic growth are channelled into investments in the health system, including primary health services and medical advancements aimed to enhance the health and wellbeing of the population, leading to lower mortality rates, and extension of life expectancy. Numerous studies have indeed a strong positive association between economic growth and population health outcomes, within and across countries [2, 3]. In a meta-analysis conducted by O'Hare and colleagues, the relationship between national income and infant and under-five mortality in developing countries was quantified. The findings indicated that with 10% increase in national income, a country with existing infant mortality of 50 per 1000 live births is expected to see this rate reduced to 45 per 1000 live births [4]. Furthermore, in analysis of data from 187 countries, excluding countries that massively export oil or mining products, a study identified a strong relationship between GDP growth and infant mortality, suggesting that higher GDP corresponds to lower infant mortality [5].

The declines in economic growth (i.e., economic downturns or recessions) have also been shown to have a significant impact on the health and overall wellbeing of the most vulnerable population, with women and children in low-middle income countries (LMICs) bearing disproportionately burden of these consequences [5–7]. The global financial recession in 2008, considered as one of the most substantial economic slowdowns since the Great Depression, had adverse effects on the health of women and children. As a result, it is estimated to have caused 28,000–50,000 infant deaths in sub-Saharan Africa and erased progress which has been made toward achieving the Millennium Development Goals (MDGs) [8]. Similar to the 2008 recession, which posed major threats to the health and living conditions among global population through its impact on food, fuel, and finance, the recent COVID-19 pandemic has had profound negative impact on global economies and health systems [6, 9, 10]. During the height of the pandemic, many key sectors were severely affected, leading to job and income losses, cuts in household spending on food and health care utilization [11, 12]. The pandemic's negative impact on the health and well-being of women and children, along with its associated risks, has been extensively documented [13–16].

However, the conventional view that economic growth invariably translates to improved maternal and child health has been challenged. Several studies have revealed range of impacts of economic growth on maternal and child outcomes, including positive associations, mixed effects, and in some cases, or limited or no associations [17–19]. Contrary to the widespread belief that economic growth is the key driver of improved health and wellbeing, several sub-Saharan African countries have experienced relatively strong economic growth yet remain the region with the worst health outcome globally. They continue to grapple with high poverty levels, and disease prevalence [1, 20]. For instance, a 2004 Human Development Report highlighted the disparity between Georgia and Angola, both having similar GDP per capita (US$2,200 PPP). While Georgia exhibited high health levels comparable to those of OECD countries, Angola's health outcome ranked among the world's poorest, placing 166 out of 177 countries [21]. This emphasizes that countries with similar economic growth indicators may experience vastly different health outcomes. Other studies also argue that while economic growth may positively influence health, its role as a determinant of mortality outcomes has diminished in recent years compared to the past, emphasizing the necessity of equitable income distribution and healthcare investments [22, 23]. For instance, Haddad and colleagues explored household survey data from 12 countries and aggregate data from 61 countries and found that while income can play an important role in reducing malnutrition, it is insufficient as a sole factor [24].

Given the ongoing lack of consensus concerning the impact of national-level economic growth and recessions on maternal and child health outcomes, the main objective of this systematic review is to provide a comprehensive synthesis of existing literature. This synthesis provides a current overview of the relationship between economic growth, recessions, and the health of mothers and children in Sub-Saharan African countries. The primary focus is to analyze how economic growth and recessions impact maternal and child health outcomes based on relevant literature (Fig 1).

Methods

The protocol for this review was registered on PROSPERO international register for systematic reviews (registration number CRD42022352086). The review followed the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) reporting guidelines, using the PRISMA flow chart to document the selection process [25]. The PRISMA 2020 checklist is available in appendix A.

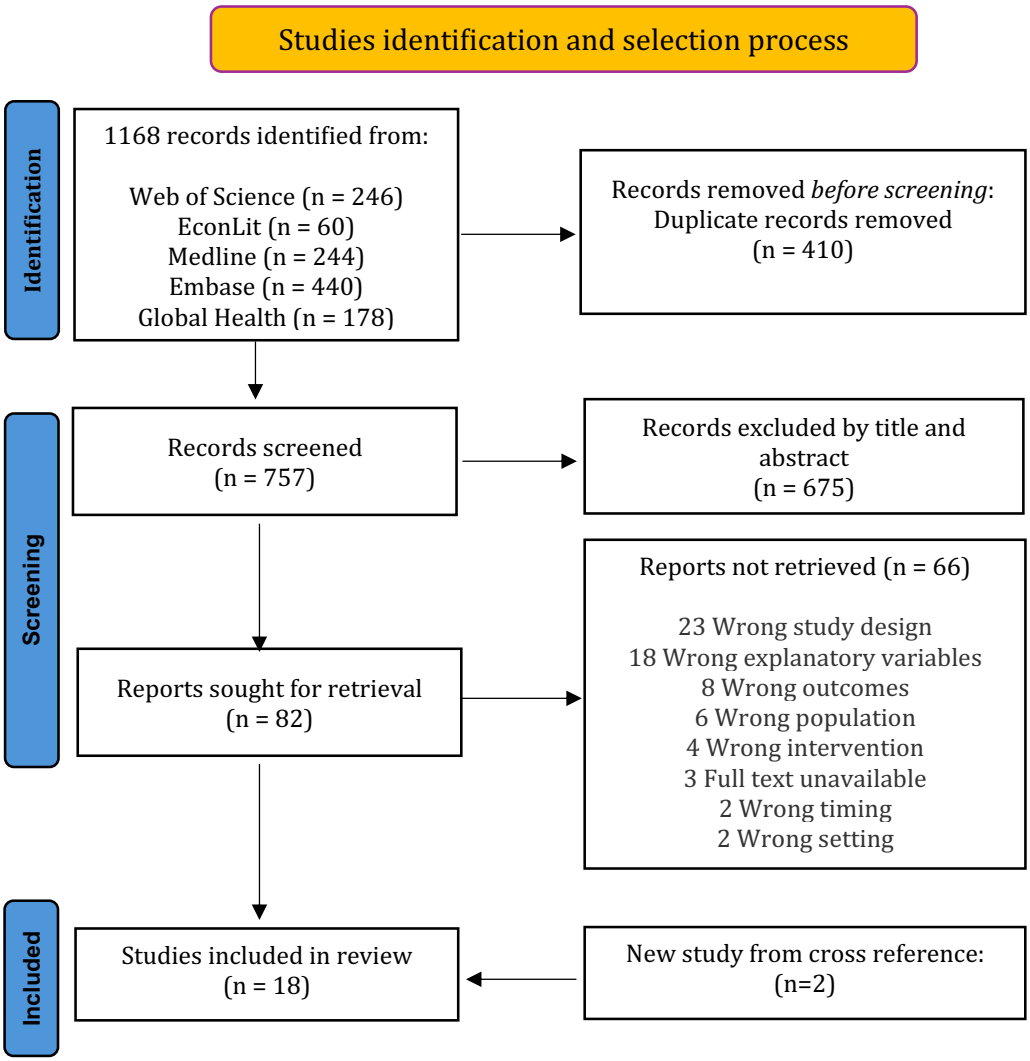

Fig. 1 PRISMA flow diagram

Search strategy and selection criteria

A structured search of relevant publications selected from Medline, Embase, Web of Science, EconLit, and Global Health was conducted in September 2020. In collaboration with a departmental librarian and guided by references from existing literature [1–8, 11, 12], search terms and criteria were developed, followed by an initial search on Medline. Subsequently, the query was adapted to the remaining databases. Combination of search terms used were: "Economic Development" OR "Economic growth" OR "Gross Domestic Product" OR "Gross National Income" OR "Gross National Product" OR "Economic downturn" OR "Economic recession" OR "Economic crisis" AND "Maternal Health" OR "Child Health" OR "maternal mortality" OR "child mortality" OR "infant mortality" OR "child nutrition" AND "Africa South of the Sahara" OR "East Africa" OR "West Africa" OR "Southern Africa" OR "Central Africa" OR "Sub-Saharan Africa" (see Additional file Appendix A for details).

Results were imported into Covidence software, an online tool designed for managing scoping and systematic reviews [26]. This tool facilitates efficient screening of a large volume of articles, allowing multiple reviewers to assess them simultaneously. Additionally, it enables the export of the titles of included articles to Excel for further analysis [26]. Covidence automatically detected and removed duplicates. Afterwards, the first two authors, HY and OO independently assessed the titles and abstracts of remaining studies for inclusion. Studies were deemed eligible if they examined the impact of economic growth or recessions on maternal or child health in sub-Saharan African countries.

Specifically, studies had to meet the following criteria: (i) health outcomes of mothers and children in SSA; (ii) economic growth and recession variables; (iii) peer reviewed studies published in English. Although the sub-region includes several francophone countries, non-English publications were excluded. While these could have provided different perspectives, they were excluded due to language barrier; (iv) publications between January 2000 to August 2022. This timeframe encompasses periods of economic growth, the 2008/9 global economic recession, and the COVID-19 pandemic induced economic downturn. It also encapsulates the era of the Millennium Development Goals (MDGs—2000) and the initiation of the Sustainable Development Goals (SDGs—2015). Both initiatives aimed to reduce maternal and child mortality rates and enhance universal access to reproductive health [27, 28]. By focusing on this timeframe, it offers an opportunity to capture a wider range of literature to comprehend the connections between economic growth, recession, and maternal and child health in sub-Saharan Africa.

The comprehensive review of full articles was conducted by HY and OO, who excluded any study that did not meet the specified criteria. This included those focused on: (i) general population health outcomes; (ii) countries outside of SSA; (iii) household or individual income variables; (iv) studies in other languages before January 2000 and after august 2022; (v) literature review, systematic reviews and meta-analysis. In addition to this, eligible articles were identified through a cross-referencing process and subsequently incorporated into the review.

Data extraction

HY and OO independently extracted and tabulated the data using a spreadsheet to create a custom extraction form. From each relevant article, data extracted included: title, author, setting (country, region), period of study; study design/source of data (longitudinal, cross-section, time series, Demographic Health Survey, World Bank Data, etc.), objectives of the study, population description, outcome variables (child mortality, child undernutrition, maternal mortality, etc.), explanatory variables (Economic growth, GDP per capita, economic crises, economic downturn, etc.), and the main results in terms of impact on maternal and child health. A summary of key definitions for these economic and health variables is provided in Table 1. To resolve discrepancies during the data extraction process, the two reviewers (HY and OO) engaged in discussion to reassess the study against the criteria, considering factors such as study design, population, intervention, and outcomes. If consensus was not reached through discussion, a third author was consulted to provide an independent assessment and facilitate resolution. In cases of persistent ambiguity, additional information was sought from the full text of the study. This systematic approach ensured consistency and minimized bias in the process.

Study appraisal

The risk of bias of included studies was assessed independently by HY and OO, using the Quality Assessment Tool for Quantitative Studies by the Effective Public Health Practice Project Quality Assessment Tool (EPHPP) [29]. Since only national level economic growth variables were considered, only quantitative studies were included. The

Table 1 Definitions of measures of income and maternal and child health

Gross domestic product (GDP) is the standard measure of the value added created through the production of goods and services in a country during a certain period
GDP growth is the annual average rate of change of the gross domestic product (GDP) at market prices based on constant local currency, for a given national economy, during a specified period of time
GDP per capita is the GDP divided by the midyear population and considered as a measure of the standard of living in a country or the level of economic development
Real GDP per capita is a measurement of the total economic output of a country divided by the number of people and adjusted for inflation. It's used to compare the standard of living between countries and over time
Per capita Gross National Product (GNP) comprises the gross domestic product (GDP), plus net factor income from abroad, which is the income residents receive from abroad for factor services (labour and capital) less similar payments made to non-residents who contributed to the domestic economy
Gross National Income (GNI) is defined as gross domestic product, plus net receipts from abroad of compensation of employees, property income and net taxes less subsidies on production
Economic recession refers to two consecutive quarters of decline in a country's real gross domestic product (GDP)
Economic downturn refers to a significant decline in economic activity spread across the economy, lasting more than a few months
Under 5 mortality rate refers to the probability a newborn would die before reaching exactly 5 years of age. The under-five mortality rate includes neonatal (28 days) and infant (one year) deaths per 1000 live births
Maternal mortality refers to the death of a woman during pregnancy, at delivery, or soon after delivery

tool assesses eight domains: (1) selection bias; (2) study design; (3) confounders; (4) blinding; (5) data collection method; (6) withdrawals/ dropouts; (7) intervention integrity; and (8) analyses. Each domain was allocated one of three possible categories for each of the included studies: 'strong' (no weak ratings), 'moderate' (one weak rating), and 'weak' (two or more weak ratings).

Data analysis and synthesis

The publications included in this study were heterogenous in terms of the measures of economic growth, and maternal and child health outcomes. In addition, due to the diversity in study designs, methodologies, participant characteristics, and study objectives, a narrative synthesis approach was employed to effectively present the findings of this systematic review. The data was organized based on the primary outcomes investigated in the studies, focusing on the presence or absence of a relationship and the specific health outcomes under consideration, which included child mortality, childhood nutrition, and maternal mortality.

Results

In total 1,168 documents were initially obtained for review. Following the removal of duplicate records, the number of studies was 757, out of which 675 were excluded after titles and abstracts were screened. Many of the studies excluded primarily addressed general health outcomes, cost effectiveness of health interventions, and issues relating to poverty and inequality. Out of the 82 full texts screened, 18 studies met the inclusion criteria for the review (two studies from cross reference included). Almost two-thirds of the excluded studies did not report national level economic growth variables.

Study characteristics

Table 2 displays the study characteristics which consist of the author(s), year of publication, study setting, study design/source of data, maternal and child health variables, economic growth and recession variables, and risk of bias. All the studies included in the review employed a quantitative research approach. Half (50%) of the included articles, constituting nine studies, were based on time series data. Longitudinal studies accounted for 22% of the total, while cross-sectional studies made up 28%. These studies were published between 2004 and 2022 and covered diverse geographical regions, including aggregate data from the sub-Saharan Africa region (10), as well as from specific countries such as Ghana (1), Nigeria (4), Ethiopia (1), South Africa (1), and Rwanda (1). Of the studies included, sixteen focused on child health variables, with twelve of them concentrating on different aspects of child mortality, including neonatal, infant, and under-5 mortality. Three studies explored child nutrition outcomes, encompassing undernutrition, stunting, underweight, wasting, and chronic malnutrition, while one study delved into addressing child morbidity, specifically essential and emergency surgical care to children. Two studies had specific focus on maternal health, specifically the maternal mortality rate. The studies centered on a range of variables, which included economic growth (3 studies), GDP per capita (6 studies), real per capita GDP (2 studies), GDP growth rate (3 studies), per capita gross national product (1 study), gross national income (1 study), economic downturn (1 study), and economic recession (1 study). These studies made use of secondary data sources, such as the World Development Indicators (WDI), Demographic and Health Surveys (DHS), and government data, to analyze the relationships between these various concepts.

Table 3 shows six studies [30, 31, 34, 39, 42, 45] that investigated the impact of economic growth, measured by GDP growth and GDP per capita, on child mortality. The results indicated that economic growth had significant negative correlation with child health, in that when economic growth increased, infant and under-5 mortality declined. For instance, a time series study conducted in Ghana showed that a 10% increase in real per capita income was associated with a 4.34% to 5.25% decline in childhood mortality [39]. Similarly, an annual time series study in South Africa indicated that both in the short-term and long-term, economic growth led to a decrease in infant and under 5 mortalities [45].

Table 4 outlines five studies [36, 38, 40, 42, 44] that found insignificant and inconsistent relationship between economic growth and child health variables. A time series study conducted in Nigeria revealed that economic growth, as measured by GDP growth rate, had an insignificant effect on all the measures of child health outcomes considered in the study, including infant, neonatal and under-5 mortality rates) [38]. A longitudinal study conducted in sub-Saharan Africa between 1970 and 1997 also found no association between economic growth and declines in child mortality [40]. Another study in sub-Saharan Africa, which utilized balanced longitudinal data, provided limited evidence to support the notion that higher GDP per capita had a positive impact on infant and under-five mortality [42]. In a repeated cross-sectional study across sub-Saharan Africa, it was observed that changes in country-level per capita GDP (pcGDP) was not consistently associated with a reduction in under-5 mortality across different model specifications [36]. For instance, the ecological time series models demonstrated that a unit increase in pcGDP was associated with an 11.6 decrease in under-5 mortality per 1000 live births (95% CI 29.1, 5.9), while the composite index

Table 2 Study characteristics

Author(s)	Year	Study setting	Study design/source of data	Maternal and Child Health variables	Economic growth and recession variable	Risk of bias
Akhmat et. al.[30]	1975–2011	Major world regions including Sub-Saharan Africa	Time series / IISP (2013) and World Bank (2010a)	Infant mortality	GDP per capita	Strong
Akinlo & Sulola [31]	2000–2008	Sub-Saharan Africa	Time series	Under-five mortality rates Infant mortality	GDP per capita	Strong
Biadgilign et. al.[32]	2000–2010	Ethiopia	Pooled cross-sectional data / DHS and World Bank data	Childhood (0–59 months) undernutrition (wasting, stunting)	Real per capita income	Strong
Cardona et. al. [33]	1990–2020	Sub-Saharan Africa	Time series, WDI Database and the UN World Populations Prospects	Under-5 mortality	Economic downturn (GDP per capita)	Strong
Chireshe & Ocran [34]	1995–2014	Sub-Saharan Africa	Longitudinal / WDI (2017)	Child health / under 5 mortality	GDP per capita	Strong
Cornia et. al. [35]	1995–2007	Sub-Saharan Africa	Time series data	Under-5 mortality	Economic recession	Strong
Corsi & Subramanian [36]	1990–2009	Sub-Saharan Africa	Repeated cross-sectional data / DHS	Under five mortality	Per capita gross domestic product (pcGDP)	Strong
Harttgen et. al. [37]	1991–2009	Sub-Saharan Africa	Cross sectional data / DHS	Child (under 5) undernutrition (Stunting, underweight, and wasting)	GDP per capita	Strong
Jemiluyi [38]	1970–2018	Nigeria	Time series data analysis / WDI database (2019)	Infant, neonatal and under-5 mortality	Gross Domestic Product (GDP) growth rate	Strong
Kofi Boachie et. al. [39]	1980–2014	Ghana	Time series / WDI database, World Bank and Government of Ghana publications	Infant mortality rate (IMR), under-five mortality rate (UMR)	Real per capita income (RGDPC) (US$ 2005)	Strong
Mogford [40]	1970–1997	Sub-Saharan Africa	Longitudinal analysis	Under 5 mortality	Per Capita Gross National Product	Strong
Namahoro & Mugabushaka [41]	2009—2018	Rwanda	Time series / Central Hospital of the University of Kigali and WHO Data	Maternal mortality	Gross National Income (GNI)	Strong
Nyamuranga & Shin [42]	2000–2013	Sub-Saharan Africa, SADC region, developing countries	Balanced longitudinal data	Child mortality / Infant and under-five	real GDP per capita	Strong
Ogujiuba & Omoju [43]	2000–2010	Nigeria	Central Intelligence Agency (CIA) World Factbook (2011)	Infant mortality	Economic Growth measured by GDP growth rate	Strong
Okoye et. al. [44]	2013	Nigeria	Pediatric Personnel, Infrastructure, Procedures, Equipment and Supplies (PediPIPES) survey	Pediatric surgical capacity / Children	GDP per capita	Strong
Salahuddin et. al. [45]	1985–2016	South Africa	Annual time series data	Infant and Child Under 5 mortality	GDP per capita	Strong
Sede & Izilien [46]	1980–2011	Nigeria	Time series data	Maternal mortality rate	GDP growth rate	Strong
Yaya et al. [47]	1987–2016	Sub-Saharan Africa	Cross- sectional data / DHS	Childhood stunting (stunting and chronic childhood malnutrition)	GDP per capita and GDP growth per capita	Strong

of maternal, newborn, and child health (MNCH) interventions, calculated as a weighted average of the coverage of eight MNCH interventions, was linked to a more substantial reduction in under-5 mortality (31.9 deaths per 1000 live births; 95% CI −48.6, −15.3). Additionally, a study conducted in Nigeria, which focused on addressing child morbidity, failed to identify any evidence indicating that better economic indicators enhanced the capacity to deliver essential and emergency surgical care to children [44].

Table 5 presents two studies [33, 35] which examined the impact of economic recession or downturn on child health outcomes, revealed varying findings (as shown in Table 5). One research examined the economic repercussions of the COVID-19 pandemic in sub-Saharan Africa, by employing time series analysis to estimate the indirect economic effects [33]. This analysis assessed the impact of various economic downturn scenarios on under-5 mortality and found that a 15% reduction in GDP resulted in a significant increase in the total number of under-5 lives lost, surpassing 470,000 [33]. Additionally, a study based on time series data from sub-Saharan Africa found no statistically significant impact of the 2008–2009 economic recession on child mortality [35].

Table 6 shows three studies [32, 37, 47] that examined the impact of economic growth on child nutrition. A cross-sectional study conducted in sub-Saharan Africa showed that a 10 percent increase in GDP per capita is associated with 1.5–1.7 percent decrease in the likelihood of being stunted, 2.8–3.0 percent in the likelihood of being underweight, and 3.5–4.0 percent in the likelihood of being wasted [37]. Another cross-sectional study conducted in sub-Saharan Africa found that an increase in GDP per capita decreased the prevalence of stunting, but no significant association was observed between GDP growth rate and child nutritional status [47]. Furthermore, a pooled cross-sectional study conducted in Ethiopia indicated that economic growth had a significant effect in reducing child undernutrition issues [32].

Table 7 shows two studies [41, 46] that examined the impact of economic growth rate on maternal mortality. A study conducted in Rwanda forecast three years of maternal mortalities based on the influence of gross national income (GNI) in Rwanda and found that although maternal mortality were not statistically different in several years, there was a significant correlation between maternal mortality and GNI [41]. Another study conducted in Nigeria evaluated the impact of economic growth on maternal health and found that a one-unit increase in GDP growth results in a mere 0.008-unit reduction in maternal mortality, indicating a very weak impact [46].

Table 8 presents the results of the Quality Assessment Tool for Quantitative Studies for all included studies. Selection bias, which evaluates at the representativeness of the target population, was rated strong for all studies, as they utilized secondary and large datasets. The appropriateness of the study design was rated strong across all studies. However, confounders, blinding, withdrawals and drop-outs, and intervention integrity were not applicable, as none of the included studies were randomized contolled trials, clinical trials, cohort, or interrupted time series.

Discussion

In summary, the principal findings of this study indicate that out of the 18 studies analyzed, eleven suggested that economic growth and recessions indeed had an impact on maternal and child health outcomes. Specifically, an increase in economic growth was associated with improved child health outcomes such as reduction in child mortality and childhood undernutrition, while economic downturn was found to increase child mortality. However, the seven remaining studies revealed inconsistent or insignificant relationships between economic growth and maternal and child health outcomes, such as child morbidity and maternal mortality rate.

When it comes to the question of whether economic growth can influence maternal and child health outcomes, the answer is not straightforward. To begin with, evidence suggests that economic growth may lead to increased resource allocation towards public healthcare infrastructure, workforce capacity, and social safety nets. These investments can strengthen social and healthcare systems, improving access to nutrition, clean water, sanitation, and better housing [36]. However, the positive impact of economic growth on maternal and child health is shaped by various socio-economic factors at the national, community, household, and individual levels [37]. For instance, enhancements in Maternal, Neonatal, and Child Health (MNCH) coverage and interventions such as antenatal care, vaccination, family planning, and improved sanitation have been strongly associated with reductions in child mortality and play a critical role in lowering the under-5 mortality rate [36]. Female education is essential for improving maternal and child health, as educated women often have better access to economic opportunities, leading to better living conditions for their households [34, 36, 37]. Furthermore, education empowers women to make informed decisions regarding reproductive and child healthcare, including family planning, pregnancy-related care, and nutrition [46]. However, the inequitable allocation of resources, as well as issues such as inequality, corruption, and deficiencies in governance structure, can negatively impact maternal and child health [34, 42, 45]. Unless these determinants

Table 3 Positive impact of economic growth on child mortality

Author(s)	Main findings	Study setting
Akhmat et. al.[30]	Economic growth has significant and negative impact on infant mortality	Major world regions including Sub-Saharan Africa
Akinlo & Sulola [31]	GDP per capita is negative and significant at the 1% level in both pooled ordinary least squares (OLS) and fixed-effects models—for under-five mortality and infant mortality variables	Sub-Saharan Africa
Chireshe & Ocran [34]	Real GDP per capita is significantly and negatively related to under 5 mortality	Sub-Saharan Africa
Kofi Boachie et. al. [39]	Real per capita income is significant at 1%. A 10% increase in real per capita income causes 4.34% to 5.25% decline in childhood mortality	Ghana
Ogujiuba & Omoju [43]	Economic growth exhibits a significant negative long run relationship with infant mortality	Nigeria
Salahuddin et. al.[45]	GDP per capita has negative significant effects on indicators of child health outcomes (infant and under 5 mortality) in both the short run and the long run	South Africa

are addressed and purposefully incorporated into health policies and goals, simply increasing healthcare expenditure may not improve health disparities among the most vulnerable [23, 46].

The literature highlights that different measures of economic growth and maternal and child indicators yield different relationships and impacts. For instance, one study observed that GDP per capita and GDP growth per capita, had differing associations with childhood nutrition. While an increase in GDP per capita was linked to a decrease in the prevalence of stunting, GDP growth rate showed no significant connection with child nutritional status [47]. One possible explanation for this divergence was that the benefits of economic growth tend to be skewed, favoring households in the highest quintile, thus enhancing the well-being of children in these households, while failing to prevent stunting among children in the lowest quintile.

Furthermore, two studies conducted in Nigeria arrived at different conclusions when examining the impact of economic growth on child health [38, 43]. It's important to note that one of these studies, like a few others in this review, was not specifically designed to investigate the impact of economic growth on maternal and child health [38]. Instead the primary objective was to explore the long-run relationships between the degree of urbanization and various child health outcomes, while incorporating GDP growth rate and level of education in its analysis. The study found no significant effect of economic growth on any of the child health outcomes measures [38]. The authors noted that while they identified positive impact of urbanization on child health, the relationship between urbanization, level of education and child health may have influenced the results. In contrast, the second study investigated the long-term relationship between economic growth and various socio-economic indicators such as poverty, life expectancy, infant mortality, and unemployment rates in Nigeria [43]. The findings revealed that while economic growth displayed a significant negative long-term correlation with infant mortality, it did not effectively reduce poverty or unemployment. This finding suggests that while economic growth may be a necessary, it is not sufficient on its own to consistently reduce infant mortality, alleviate poverty, or advance overall human development [43].

These distinct findings, though divergent, point to the importance of focusing on and prioritizing socio-economic determinants that have the potential to enhance maternal and child health in sub-Saharan African countries. They emphasize that these determinants may hold greater significance in promoting positive maternal and child health outcomes than only aiming for higher average income levels in a country marked by high income inequality.

A notable observation from the reviewed studies was the predominant focus on child health outcomes, with 16 out of 18 studies primarily concentrating on child mortality, as opposed to maternal health outcomes, which were represented by only two studies. Nevertheless, it is essential to recognize that relying solely on infant mortality rates, for example, might provide an incomplete picture of a country's overall health trajectory. This is because it is possible that a country's infant mortality rate may decrease while morbidity rates among children or the entire population are on the rise, potentially masking health challenges [48]. Estimates show that non-communicable diseases (NCDs) such as cancer, hypertension, and diabetes are anticipated to become the primary causes of morbidity and mortality in sub-Saharan Africa post-2050 [49]. Given the changing disease patterns in the region, it is imperative for governments to refashion their health policies and invest in surgical care as it has the potential to address surgically treatable diseases, including NCDs [49]. Conducting additional studies on the impacts of national economic growth on NCDs and surgical capacities could facilitate governments

Table 4 Insignificant/Inconsistent impact of economic growth on child health

Author(s)	Main findings	Study setting
Corsi & Subramanian [36]	Changes in country-level per capita GDP (pcGDP) are not consistently associated with a reduction in U5MR	Sub-Saharan Africa
Jemiluyi [38]	Economic growth had an insignificant effect on all measures of child health outcomes	Nigeria
Mogford [40]	National levels of income are not significantly related to levels of child mortality	Sub-Saharan Africa
Nyamuranga & Shin [42]	Little evidence to support the positive impact of higher GDP per capita on infant and under-five mortality	Sub-Saharan Africa
Okoye et. al.[44]	No evidence that better economic indicators increase the ability to deliver essential and emergency surgical care to children	Nigeria

Table 5 Impact of economic recession on child health

Author(s)	Main findings	Study setting
Cardona et. al. [33]	15% downturn increased the total number of under-5 lives lost up to over 470,000	129 LMICs including SSA countries
Cornia et. al.[35]	No statistically significant impact of economic recession on child mortality	Sub-Saharan Africa

in understanding this relationship better and making informed resource allocation decisions to enhance the well-being of the most vulnerable populations.

The quality of the data analyzed also poses another limitation for this study. The data analyzed in the included studies spanned from 8 to 48 years, primarily sources from national level surveys and World Bank data, which are also reliant on statistical data provided by member countries [50]. While data collection and quality may have improved in recent years, earlier data from numerous sub-Saharan African countries may have suffered from issues related to reliability and validity. Consequently, the interpretation of longitudinal data may pose risks, further compounded by pooled cross-country analyses due to variations in the definitions of variables and differences in data quality. Given the diversity of studies in terms of data sources, economic growth measures, and data years, it was not feasible to employ quantitative meta-analytic methods to discern statistical patterns. Moreover, due to the variance in findings and the varying directions of relationships between these concepts, generalizing the findings is not feasible.

Specific to this study, there are some few limitations to consider. Firstly, the chosen timeframe and language criteria of the included literature might have resulted in the exclusion of relevant studies that could have provided diverse contributions into the discussion of the relationship between the concepts of economic growth, recessions, and maternal and child health. Furthermore, while literature emphasizes the importance of other socio-economic variables in improving maternal and child health outcomes, this study focused solely on economic growth variables. As a result, studies that assessed the impact of household or individual level income on health outcomes were excluded. Nonetheless, by systematically compiling relevant literature, this study aims to provide insights and lessons for countries in SSA regarding the diverse multilevel factors that could promote and/or act as a catalyst

Table 7 Impact of GDP growth rate on maternal mortality

First author	Main findings	Study setting
Namahoro & Mugabushaka [41]	GNI had positive impact in maternal mortality reduction (-0.610, P value 0.012 < 0.05)	Rwanda
Sede & Izilien [46]	GDP growth rate had a meager and insignificant impact of 0.008 on maternal mortality rate	Nigeria

Table 6 Impact of GDP per capita on childhood nutrition

Author(s)	Main findings	Study setting
Biadgilign et. al.[32]	Economic growth reduces child undernutrition problems	Ethiopia
Harttgen et. al.[37]	A 10 percent increase in GDP per capita is associated 1.5–1.7 percent lower odds of being stunted, 2.8–3.0 percent lower odds of being underweight, and 3.5–4.0 percent lower odds of being wasted	Sub-Saharan Africa
Yaya et. al.[47]	Increase in GDP per capita decreases the prevalence of stunting, but there is no significant association between GDP growth per capita and child nutritional status	Sub-Saharan Africa

Table 8 Risk of bias

Author(s)	A. Selection bias	B. Study design	C. Confounders	D. Blinding	E. Data collection methods	F. Withdrawals and drop-outs	G. Intervention integrity	H. Analyses	Global ratings
Akhmat et. al.[30]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Akinlo & Sulola [31]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Biadgilign et. al.[32]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Cardona et. al. [33]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Chireshe & Ocran [34]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Cornia et. al.[35]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Corsi & Subramanian [36]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Harttgen et. al.[37]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Jemiluyi [38]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Kofi Boachie et. al. [39]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Mogford [40]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Namahoro & Mugabushaka [41]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Nyamuranga & Shin [42]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Ogujiuba & Omoju [43]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Okoye et. al.[44]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Salahuddin et. al.,[45]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Sede & Izilien [46]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong
Yaya et al. [47]	Strong	Strong	Not applicable	Not applicable	Strong	Not applicable	Not applicable	Strong	Strong

for a positive impact of economic growth on maternal and child health in SSA region.

Policy and research implications

The study's outcome revealed a range of findings regarding the impact of economic growth and recessions on maternal and child health. These findings suggest that while the impact of economic growth on maternal and child health is significant and context specific, it is crucial for countries to address various multi-level socioeconomic factors that could aid in understanding the unique health needs, allocating appropriate resources, and formulating policies and interventions to improve maternal and child health. This approach acknowledges the contextual disparities, as policies effective in one setting may not necessarily work in another. It allows for maximizing the benefits from economic growth while mitigating potential adverse effects. Failure to address these factors could limit the impact of economic growth on maternal and child health.

There are other alternative measures of economic growth such as inequality-adjusted Human Development Index (IHDI) which measures achievements in health, education and living standards while considering

inequality [51]. Another indicator, which has been proposed as either substitute or supplement to GDP as a measure of economic welfare is the Genuine Progress Indicator (GPI). The GPI initially measures GDP and then account for positive non-monetary factors such as volunteer work and household work (mostly borne by women) while subtracting negative factors such as pollution, resource depletion and crime and adjust for inequality [52]. These measures are quite complex in their computation; for instance, GPI comprises seven major aggregations derived from 26 underlying indicators. Additionally, these measures might not be universally available across countries, leading to limited use by many researchers. Nevertheless, due to their incorporation of significant socio-economic factors, they could yield different impacts on maternal and child health.

Further research could benefit from employing broader economic growth measures and a more extensive timeframe to gain a comprehensive understanding of the effects of economic growth and recession on maternal and child health in SSA.

Conclusion

The debate regarding the relationship between economic growth, recessions and maternal and child health has spanned several years. This systematic review examined the literature exploring the relationships between economic growth and health, with a primary focus on child mortality as the outcome variable. The studies included in this review employed various measures of economic growth, leading to diverse findings. While some studies suggest that economic growth plays a significant role in promoting maternal and child health outcomes, others failed to establish consistent or significant relationships. Considering these diverse findings, the overarching consensus emphasizes the significance of other crucial multi-level socio-economic factors, such as female education, the utilization of maternal, neonatal, and child health (MNCH) coverage and interventions (including antenatal care, vaccination, and family planning), as well as the reduction of inequalities and the improvement of governance structures. It is therefore evident that economic growth should not be viewed in isolation as the sole determinant of good health. Instead, it is best understood as a fundamental element that maximises its full potential when complemented by other essential socio-economic and health determinants operating at various levels.

Supplementary Information

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Additional file 1.

Additional file 2.

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Author contributions
HY developed the topic with input from SY and contributed to designing the SLR. HY and OO conducted the data search, review, and extraction, with SY consulted to resolve any disagreements between the reviewers. HY drafted the manuscript, and OO and SY provided reviews. All authors reviewed and approved the final version of the manuscript.

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References

1. Ogunleye EK. Health and economic growth in Sub-Saharan Africa. African Economic Research Consortium; 2014.
2. O'Hare B, Makuta I, Chiwaula L, Bar-Zeev N. Income and child mortality in developing countries: a systematic review and meta-analysis. J R Soc Med. 2013;106(10):408–14.
3. Cole WM. Wealth and health revisited: economic growth and wellbeing in developing countries, 1970 to 2015. Soc Sci Res. 2019;1(77):45–67.
4. Kolbl O. The relationship between economic development and infant mortality. Rainbowbuilders Org. 2018;11:1.
5. Baird S, Friedman J, Schady N. Aggregate income shocks and infant mortality in the developing world. Rev Econ Stat. 2011;93(3):847–56.
6. Stavropoulou M, Jones N. Off the Balance Sheet. The Impact of the Economic Crisis on Girls and Young Women. A Review of the Evidence.
7. Maruthappu M, Watson RA, Watkins J, Zeltner T, Raine R, Atun R. Effects of economic downturns on child mortality: a global economic analysis, 1981–2010. BMJ Glob Health. 2017;2(2): e000157.

8. Friedman J, Schady N. How many infants likely died in Africa as a result of the 2008–2009 global financial crisis? Health Econ. 2013;22(5):611–22.
9. Samuels F, Gavrilovic M, Harper C, Nino-Zarazua M. Food, fuel and finance: the impacts of the triple F crisis on women and children-Kano State focus.
10. United Nations Executive Office of the Secretary-General (EOSG). United Nations Comprehensive Response to COVID-19: Saving Lives, Protecting Societies, Recovering Better. UN; 2020.
11. Akseer N, Kandru G, Keats EC, Bhutta ZA. COVID-19 pandemic and mitigation strategies: implications for maternal and child health and nutrition. Am J Clin Nutr. 2020;112(2):251–6.
12. Aranda Z, Binde T, Tashman K, Tadikonda A, Mawindo B, Maweu D, Boley EJ, Mphande I, Dumbuya I, Montaño M, Clisbee M. Disruptions in maternal health service use during the COVID-19 pandemic in 2020: experiences from 37 health facilities in low-income and middle-income countries. BMJ Glob Health. 2022;7(1): e007247.
13. Ahmed T, Rahman AE, Amole TG, Galadanci H, Matjila M, Soma-Pillay P, Gillespie BM, El Arifeen S, Anumba DO. The effect of COVID-19 on maternal newborn and child health (MNCH) services in Bangladesh, Nigeria and South Africa: call for a contextualised pandemic response in LMICs. Int J Equit Health. 2021;20:1–6.
14. Atim MG, Kajogoo VD, Amare D, Said B, Geleta M, Muchie Y, Tesfahunei HA, Assefa DG, Manyazewal T. COVID-19 and health sector development plans in Africa: the impact on maternal and child health outcomes in Uganda. Risk Manag Healthc Policy. 2021;19:4353–60.
15. Philipose A, Aika M. Child Marriage in COVID-19 Contexts: Disruptions, Alternative Approaches and Building Programme Resilience.
16. Esho T, Matanda DJ, Abuya T, Abebe S, Hailu Y, Camara K, Mouhammed B, Kapsandui T, Kamanzi L, Wabwire A, Kagurusi P. The perceived effects of COVID-19 pandemic on female genital mutilation/cutting and child or forced marriages in Kenya, Uganda, Ethiopia and Senegal. BMC Public Health. 2022;22(1):601.
17. Nzayirambaho M, Nsabimana A, Manirakiza V, Rutayisire PC, Njunwa K. Economic attributes and childhood stunting in Rwanda: case study of the City of Kigali. Pan Afr Med J. 2022. https://doi.org/10.11604/pamj.2022.42.157.30650.
18. Lange S, Vollmer S. The effect of economic development on population health: a review of the empirical evidence. Br Med Bull. 2017;121(1):47–60.
19. Heltberg R. Malnutrition, poverty, and economic growth. Health Econ. 2009;18(S1):S77-88.
20. Odusanya IA. The effect of economic growth on income inequality in Sub-Saharan Africa. Econ Horizons/Ekonomski Horizonti. 2023;25(2):103.
21. UNDP. Human development report 2004: Cultural liberty in today's diverse world. UN; 2004.
22. Ensor T, Cooper S, Davidson L, Fitzmaurice A, Graham WJ. The impact of economic recession on maternal and infant mortality: lessons from history. BMC Public Health. 2010;10:1–9.
23. Heaton TB, Crookston B, Pierce H, Amoateng AY. Social inequality and children's health in Africa: a cross sectional study. Int J Equit Health. 2016;15:1–4.
24. Smith LC, Haddad L. How potent is economic growth in reducing undernutrition? What are the pathways of impact? New cross-country evidence. Econ Dev Cult Change. 2002;51(1):55–76.
25. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. bmj. 2021;29:372.
26. Covidence systematic review software, Veritas Health Innovation, Melbourne, Australia. www.covidence.org.
27. World Health Organization. Millennium development goals (mdgs) [Internet]. World Health Organization; 2018 https://www.who.int/news-room/fact-sheets/detail/millennium-development-goals-(mdgs). Accessed 17 Nov 2018.
28. UNDP. Sustainable development goals https://www.undp.org/sustainable-development-goals. Accessed 9 Mar 2021
29. Thomas B, Ciliska D, Dobbins M, Micucci S. Quality assessment tool for quantitative studies dictionary: the Effective Public Health Practice Project (EPHPP). McMaster University. 2008.
30. Akhmat G, Zaman K, Shukui T, Javed Y, Khan SR. Social health indicators and economic growth: evidence from East Asia and Pacific, Middle East and North Africa, South Asia, and Sub-Saharan Africa. Soc Indic Res. 2014;119:663–86.
31. Akinlo AE, Sulola AO. Health care expenditure and infant mortality in sub-Saharan Africa. J Policy Model. 2019;41(1):168–78.
32. Biadgilign S, Shumetie A, Yesigat H. Does economic growth reduce childhood undernutrition in Ethiopia? PLoS ONE. 2016;11(8): e0160050.
33. Cardona M, Millward J, Gemmill A, Jison Yoo K, Bishai DM. Estimated impact of the 2020 economic downturn on under-5 mortality for 129 countries. PLoS ONE. 2022;17(2): e0263245.
34. Chireshe J, Ocran MK. Financial development and health outcomes in sub-Saharan African countries. J Dev Areas. 2020. https://doi.org/10.1353/jda.2020.0030.
35. Cornia GA, Rosignoli S, Tiberti L. Did the 2008–2009 food and financial crises affect child mortality? The case of sub-Saharan Africa. Oxf Dev Stud. 2013;41(4):476–92.
36. Corsi DJ, Subramanian SV. Association between economic growth, coverage of maternal and child health interventions, and under-five mortality: a repeated cross-sectional analysis of 36 sub-Saharan African countries. 2017
37. Harttgen K, Klasen S, Vollmer S. Economic growth and child undernutrition in sub-Saharan Africa. Popul Dev Rev. 2013;39(3):397–412.
38. Jemiluyi OO. Urbanization and child health outcomes in Nigeria.
39. Kofi Boachie M, Ramu K, Põlajeva T. Public health expenditures and health outcomes: new evidence from Ghana. Economies. 2018;6(4):58.
40. Mogford L. Structural determinants of child mortality in sub-Saharan Africa: a cross-national study of economic and social influences from 1970 to 1997. Soc Biol. 2004;51(3–4):94–120.
41. Namahoro JP, Mugabushaka A. Forecasting maternal complications based on the impact of gross national income using various models for Rwanda. J Environ Public Health. 2020;2020(1):7692428.
42. Nyamuranga C, Shin J. Public health expenditure and child mortality in Southern Africa. Int J Soc Econ. 2019;46(9):1137–54.
43. Ogujiuba K, Omoju O. Is growth in Nigeria inclusive? A cointegration analysis. Interdiscip J Econ Bus Law. 2013;2(4):8–29.
44. Okoye MT, Nguyen ET, Kushner AL, Ameh EA, Nwomeh BC. Can economic performance predict pediatric surgical capacity in sub-Saharan Africa? World J Surg. 2016;40(6):1336–43.
45. Salahuddin M, Vink N, Ralph N, Gow J. Effects of economic growth, foreign direct investment and internet use on child health outcomes: empirical evidence from South Africa. Dev Stud Res. 2020;7(1):1–7.
46. Sede IP, Izilien EI. Maternal mortality rate and economic growth in Nigeria: an estimation of Grossman death model. Asian-African J Econ Econ. 2014;14(1):135–47.
47. Yaya S, Uthman OA, Kunnuji M, Navaneetham K, Akinyemi JO, Kananura RM, Adjiwanou V, Adetokunboh O, Bishwajit G. Does economic growth reduce childhood stunting? A multicountry analysis of 89 demographic and health surveys in sub-Saharan Africa. BMJ Glob Health. 2020;5(1): e002042.
48. Spence M, Lewis MA, editors. Health and growth. World Bank Publications; 2009.
49. Wamai RG, Shirley HC. The future of health in sub-Saharan Africa: is there a path to longer and healthier lives for all. African futures Brill. 2022;17:67–98.
50. World Bank Data. About Us https://data.worldbank.org/about#. Accessed 18 Nov 2023
51. Klugman J. Human development report 2010–20th Anniversary edition. The real wealth of nations: Pathways to human development.
52. Talbarth J, Webb J. Genuine progress indicator. Vol. 2022. GGBP Case Study Series, Green Growth in Practice. 2014.

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