

Urbanisation and Reproductive Health in Informal Settlements: A Rapid Review of Evidence from Sub-Saharan Africa

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Abstract

Sub-Saharan Africa (SSA) is increasingly urbanising. This rapid urbanisation has implications for social, economic, and health systems. We conducted a rapid review of existing literature to understand the dual impacts of urbanisation on reproductive health, focusing on populations in informal settlements within urban areas of SSA. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews (PRISMA-ScR) were adopted for this review. Documents were retrieved from the following electronic databases and search engines: Scopus, Web of Science, PubMed, Google Scholar, JSTOR, Wiley Online Library and SpringerLink. The titles and abstracts of the publications were independently screened via Rayyan review management software. A total of 21 studies met the inclusion criteria. Key findings reveal that while urbanisation enhances access to maternal healthcare services and contraceptive use, it exacerbates disparities among informal settlement residents due to economic, systemic, and environmental barriers. Emerging themes include maternal and child health inequities, unmet contraceptive needs, and the double burden of communicable and non-communicable diseases. Strategies to mitigate these challenges include infrastructure development, community-based interventions, digital health innovations, and gender-sensitive policies. This review underscores the urgent need for integrated, context-specific approaches to address reproductive health disparities in urban SSA.

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Résumé

L'Afrique subsaharienne (ASS) connaît une urbanisation croissante. Cette urbanisation rapide a des répercussions sur les systèmes sociaux, économiques et de santé. Nous avons mené une analyse rapide de la littérature existante afin de comprendre les doubles impacts de l'urbanisation sur la santé reproductive, en nous concentrant sur les populations vivant dans des quartiers informels au sein des zones urbaines de l'ASS. Les critères PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews) ont été adoptés pour cette revue. Les documents ont été extraits des bases de données électroniques et moteurs de recherche suivants : Scopus, Web of Science, PubMed, Google Scholar, JSTOR, Wiley Online Library et SpringerLink. Les titres et résumés des publications ont été examinés de manière indépendante à l'aide du logiciel de gestion de revues Rayyan. Au total, 21 études répondaient aux critères d'inclusion. Les principaux résultats révèlent que si l'urbanisation améliore l'accès aux services de santé maternelle et l'utilisation de la contraception, elle exacerbe les disparités parmi les résidents des quartiers informels en raison d'obstacles économiques, systémiques et environ-

nementaux. Parmi les thèmes qui se dégagent figurent les inégalités en matière de santé maternelle et infantile, les besoins non satisfaits en matière de contraception et le double fardeau des maladies transmissibles et non transmissibles. Les stratégies visant à atténuer ces défis comprennent le développement des infrastructures, les interventions communautaires, les innovations en matière de santé numérique et les politiques sensibles au genre. Cette revue souligne le besoin urgent d'approches intégrées et adaptées au contexte pour lutter contre les disparités en matière de santé reproductive dans les zones urbaines d'Afrique subsaharienne.

Mots-Clés : Urbanisation, Santé reproductive, Habitats informels, Afrique subsaharienne, Revue rapide, Inégalités en termes de santé

1. Introduction

Urbanisation has accelerated significantly across Sub-Saharan Africa (SSA) in recent decades. This rapid growth in Urbanisation has implications for the social, economic, health and environmental issues in the region (Sakketa, 2023). In the area of health, urbanisation has an impact on reproductive health outcomes on the continent (Agblevor et al., 2023). While the growing urbanisation is seen as a mechanism to foster access to healthcare services, infrastructure, and education (Harpham et al., 2022), this phenomenon also has accompanying challenges of overcrowding, environmental degradation, and socioeconomic inequalities, which can negatively impact reproductive health outcomes (Akwara et al., 2023).

Generally, reproductive health outcomes are often shaped by a complex interplay of factors, including geographic, economic status, social, and cultural norms (Amoadu et al., 2022). Urban areas face a double burden of health challenges-communicable diseases such as cholera and non-communicable health conditions such as diabetes, obesity, and cancers, among others (Adebowale et al., 2023).

The health advantages of urbanisation are well-documented, with evidence consistently showing that urban residents often benefit from improved access to healthcare services, enhanced health infrastructure, and greater availability of medical professionals and specialised treatments. Urban areas typically provide better opportunities for health education, disease prevention, and emergency response systems, contributing to overall improvements in population health outcomes compared to rural settings.

However, this theorisation of the urban health advantages has now come under serious debate as recent reviews, such as those by Duminy et al. (2021) and Tripathi & Maiti (2023), highlight the mixed outcomes of urbanisation on reproductive health across the region. The emergence of slums and informal settlements in these neighbourhoods and products of overcrowding, unsafe living conditions, inadequate housing, and limited access to sanitation and clean water challenged the urban health advantages (Ziorklui et al., 2024). Additionally, the growth in the number of people living in informal settlements poses significant barriers to sustainable urban growth.

In Sub-Saharan Africa, urban development is predominantly informal, with most residents living in unplanned areas (Moreti et al., 2024). Informal settlements are generally characterised by a combination of illegality and informality in land tenure, precarious environmental conditions, and

restricted access to essential services. They are often situated in environmentally risky locations, such as floodplains or near waste sites, which exacerbates residents' vulnerability (UN-Habitat, 2020). Public and private investment in these communities is often limited due to their legal status and perceived risks, constraining infrastructure development and service provision (Satterthwaite et al., 2020). Residents commonly experience multidimensional poverty, including inadequate access to improved water and sanitation, insecure tenure, poor housing quality, and overcrowding (World Bank, 2017). These structural deficiencies increase social stress, marginalisation, and crime rates, posing significant challenges to urban governance and sustainable development (UN-Habitat, 2022).

According to UN-Habitat (2015, p.2), "informal settlements are caused by a range of interrelated factors, including population growth, rural-urban migration, lack of affordable housing for the urban poor, and weak governance." Rapid urbanisation has driven the formation of informal settlements, which are closely linked to urban poverty and often unplanned. Residents are typically low-income individuals employed in the informal sector. The growth of these areas promotes unsustainable urban expansion, heightening environmental and social risks (Ghasempour, 2015).

From the foregoing, urbanisation has emerged as one of the most transformative forces shaping health and wellbeing in sub-Saharan Africa, profoundly influencing reproductive health outcomes among populations living in rapidly expanding informal settlements. As cities grow, they present both opportunities-such as improved access to healthcare and education-and challenges, including overcrowding, inadequate sanitation, and limited access to quality reproductive health services. This article critically examines the complex and often paradoxical effects of urbanisation on reproductive health outcomes within informal urban contexts, drawing on a rapid review of empirical evidence from sub-Saharan Africa to illuminate the health disparities that persist amid urban growth. This review seeks to answer the following questions: What are the key reproductive health outcomes faced by informal settlement populations in urban areas in Sub-Saharan Africa? How do urbanisation-related factors influence these outcomes? What strategies can be employed to mitigate the adverse effects of urbanisation on reproductive health?

2. Methods

2.1. Search Strategies

This rapid review steps involved identifying the research questions; identifying relevant studies; selecting relevant studies; charting and synthesising data; and collating, summarising, and reporting relevant studies. The preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) was used (Batten & Brackett, 2021), as shown in Fig. 1. The review guidelines ensure transparency and rigour in article selection. The following electronic databases and search engines were searched for relevant documents between March

2024 and December 2024: Scopus, Web of Science, PubMed, Google Scholar, JSTOR, Wiley Online Library and SpringerLink. These databases were chosen to capture a broad range of high-quality peer-reviewed studies on urbanisation and reproductive health outcomes in Sub-Saharan Africa.

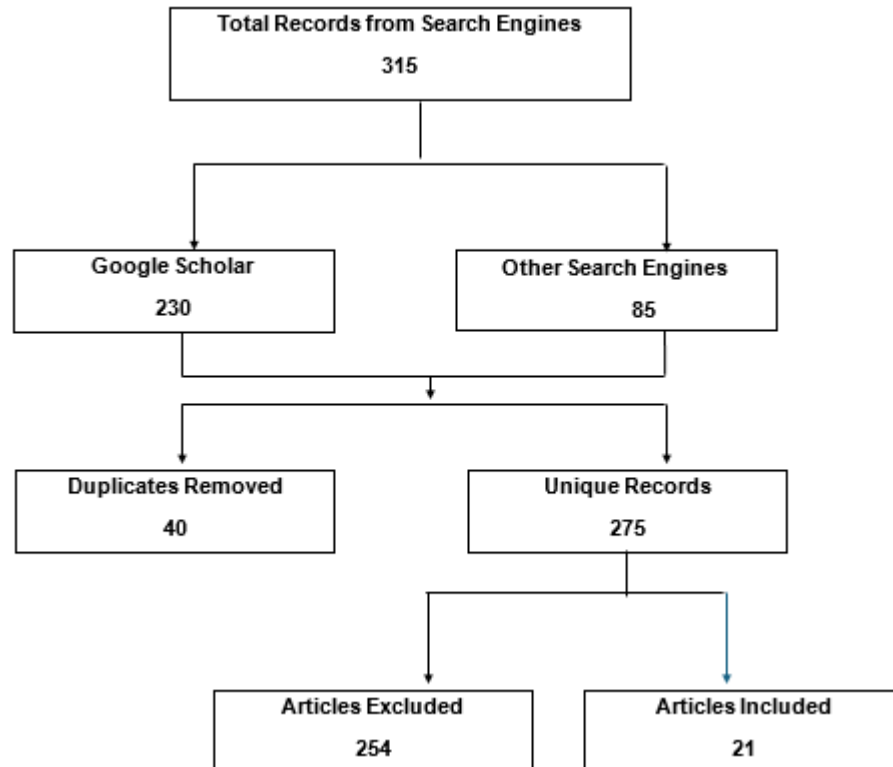


Figure 1. Flow chart of the paper selection process (Source: search results (2024))

The key concepts used in the search included combinations of terms such as "urbanisation," "reproductive health outcomes," "Sub-Saharan Africa," "fertility," and "family planning." Boolean operators (AND, OR) were employed to refine the searches. Articles were included if they clearly addressed reproductive health outcomes in urban contexts within Sub-Saharan Africa. Filters for language were English, and the document type used was peer-reviewed articles. These techniques were applied to ensure relevance and quality.

Despite the inclusive search strategy, the initial database searches yielded a limited number of relevant articles. To address this, additional searches were conducted using Google Scholar, employing similar search terms. This supplemental search identified additional studies that were not captured in the original database queries.

Studies published between 2015 and 2024 were included. We limited studies to those published between 2015 and 2024 to ensure that the evidence base is both contemporary and policy-relevant. The year 2015 marks an important international policy milestone (the adoption of the Sustainable Development Goals), after which national and donor priorities, programmatic re-

sponses, and research agendas on urban health and reproductive health in sub-Saharan Africa shifted substantially. Restricting the search to studies published from 2015 onward, therefore captures research produced in the post-SDG era when urbanisation, health system reforms, and urban reproductive health programming were reoriented toward the SDG targets. We also included the most recent decade of evidence to reflect current patterns of service availability, urban living conditions in informal settlements, and recent interventions that influence reproductive health outcomes. Additionally, this timeframe was chosen to capture recent and relevant studies on urbanisation and reproductive health outcomes in Sub-Saharan Africa.

The studies were identified and screened using the following eligibility criteria: studies published in English; peer-reviewed journal articles, focus on the relationship between urbanisation and reproductive health outcomes, address urban contexts within Sub-Saharan Africa, present empirical evidence, theoretical insights, or policy recommendations. Non-academic sources such as blogs, opinion pieces, and articles from mass or social media were excluded. Also, studies that did not specifically examine reproductive health outcomes in urban settings or were unrelated to Sub-Saharan Africa were excluded (as shown in Table 1). Seven articles were excluded for the following reasons: 1) three articles did not focus on urbanisation or reproductive health outcomes, 2) two articles were incomplete preprints, and 3) two articles were literature reviews.

Table 1. Summarises the stages of the coding process (*Source: Authors' construct (2025)*)

Stage	Description	Outcome
Open Coding	Initial coding of data to generate descriptive codes and explore the material without bias.	List of descriptive codes.
Axial Coding	Analysing relationships between codes and grouping them into broader categories or themes.	Broader categories or themes were identified.
Selective Coding	Refining and integrating themes to identify a core category or central phenomenon.	Comprehensive understanding and key themes.

2.2. Data extraction and synthesis

Three independent reviewers (BT, MA, and DAA) completed the title and abstract screening, full-text review, and data extraction with consensus meetings with the research team to address any disagreements. The search results were imported into the Mendeley reference manager application. Following the removal of duplicate documents, study titles and abstracts were screened for eligibility via the Rayyan web application software. The full texts of all potentially relevant studies were obtained and screened to confirm their eligibility.

2.3. Content Analysis

We conducted content analysis of the articles included based on our research questions. The coding and analysis process followed Creswell's framework (Kutscher & Parey, 2024), which involves three key stages:

1. **Open Coding:** The initial phase of coding involved examining the articles to generate descriptive codes that categorised the data. This stage enabled an in-depth exploration of the material without imposing preconceived ideas or frameworks.
2. **Axial Coding:** In the second phase, relationships and connections between the codes from the open coding stage were analysed. Codes were organised into broader categories or themes, facilitating the identification of patterns and connections within the data.
3. **Selective Coding:** The final phase involved refining and integrating the themes identified in the axial coding stage to develop a comprehensive understanding of the data. A core category or central phenomenon was identified to encapsulate the key findings.

Table 2. Coding Process for Content Analysis

Stage	Coding process	Themes
1	Open Coding	<i>Maternal Health</i>
		<i>Child Health</i>
		<i>Contraceptive Use</i>
		<i>Economic Disparities</i>
		<i>Systemic Barriers</i>
		<i>Cultural Norms</i>
		<i>Environmental Conditions</i>
2	Axial Coding	<i>Reproductive Health Outcomes</i>
		<i>Urbanisation-Related Factors</i>
		<i>Emerging Challenges</i>
3	Selective Coding	<i>Health Inequities in Urban Settings</i>
		<i>Systemic and Cultural Barriers</i>
		<i>Strategies for Equitable Health Outcomes</i>

Throughout the process, codes were assigned to data without referencing pre-existing frameworks during the open coding stage. After coding the first 15 articles, the codes were reviewed and grouped by similarity, and redundant codes were eliminated during the axial coding stage. This preliminary list of codes was used to analyse subsequent articles, and new codes were added as they emerged. Specific quotes were highlighted to support the assigned codes (Table 2: Summarises the coding process for content analysis).

In the selective coding stage, similar codes were consolidated into final categories, and exemplary quotes illustrating each category were identified. Multiple iterations of the coding process were undertaken to ensure consistency and reliability in classification (As shown in Table 2 above).

4. Results analysis

A total of 85 outcomes were retrieved from database searches, and 230 outcomes were obtained through Google Scholar. After removing duplicate articles across databases and Google Scholar, 275 unique records remained for screening. Upon reviewing the titles, abstracts, and

publication sources of these records, 52 full-text articles were selected for further evaluation of their eligibility. Overall, 21 articles were included for synthesis. These articles represent diverse perspectives and evidence on the impact of urbanisation on reproductive health outcomes in Sub-Saharan Africa (A flow chart of the paper selection process for the rapid review is provided in Figure 1).

4.1. Reproductive Health Challenges among Informal Urban Populations in Sub-Saharan Africa

Content analysis results show a dual dynamic in reproductive health outcomes associated with urbanisation. First, urban settings, regardless of informal or formal settings, compared to the rural counterparts, are associated with having geographic access to improved maternal health facilities, skilled birth attendants, and emergency obstetric care. Access to these facilities contributes to reductions in maternal and neonatal mortality rates, particularly in areas where healthcare services are adequately resourced and accessible (Banke-Thomas et al., 2024). Urban hospitals often offer more comprehensive services, such as caesarean sections and neonatal intensive care, compared to rural health facilities, which may lack the infrastructure or personnel to manage complications (Harpham et al., 2022).

However, informal settlements initiated as a result of urbanisation introduce significant challenges that undermine these benefits. Informal settlements are largely overcrowded, tend to have poor sanitation, and limited access to clean water. These ills exacerbate risks of pregnancy-related complications and infections for informal settlers who have proximity to these social amenities (Dumbuya et al., 2024). These trends are observed in some parts of sub-Saharan African countries, including Ghana, Nigeria, Kenya, Uganda, and Ethiopia, among others (Alaazi et al., 2021; Issa, 2021; Patterson et al., 2022; Damte et al., 2023). The cause of these health-related challenges is due to the economic constraints that limit access to prenatal care and other essential services among urban residents in informal settlements (Akpabio et al., 2021). Axial coding identified maternal and child health, contraceptive use, and emerging reproductive health challenges as critical themes shaped by urbanisation.

4.1.1. Maternal and Child Health-related outcomes

The findings showed that disparities exist in terms of maternal health outcomes among different socioeconomic groups in urban settings. Wealthier urban non-informal settlement populations in SSA benefit from advanced healthcare facilities in the urban centre, whereas women in informal settlements often experience poor maternal health due to systemic socioeconomic inequities (Dumbuya et al., 2024; Jemiluyi, 2021). Studies by Dumbuya et al. (2024) and Jemiluyi (2021) found that informal settlements in urban areas often record adverse birth outcomes like preterm labour and low birth weight as a result of air pollution and improper sanitation.

Regarding the urban health advantage hypothesis, our findings showed a mixed outcome for child health. Besnier et al. (2021) confirmed the hypothesis, highlighting that urban children generally benefit from higher immunisation rates and reduced mortality compared to their rural counterparts. In contrast to this, Dumbuya et al. (2024) found that children in informal settlements in urban areas remain highly vulnerable to preventable diseases such as diarrheal infections and respiratory conditions due to poor living conditions and limited healthcare access. Ad-

ditionally, malnutrition, despite the greater availability of food markets in urban areas, persists in these communities, reflecting challenges in affordability and access to nutritious food (Weaver et al., 2023). These conditions bring about persistent increases in neonatal and perinatal mortality, low birth weight and preterm delivery, and infant mortality among these settlements in many settings.

4.1.2. *Contraceptive use*

We observed that the prevalence of contraceptive use is high in some urban areas, driven by improved availability of family planning services and public health campaigns (Amodu et al., 2022). However, Lukyamuzi et al. (2021) identify the issue of disparity in the distribution of contraceptives and sexual and reproductive health education among the urban populations where informal settlements are disproportionately affected. The axial coding revealed significant unmet needs for contraception among residents of informal settlements (Akwara et al., 2023 & Lukyamuzi et al., 2021). Cultural stigma and misinformation regarding contraceptive methods further hinder usage and increase contraceptive discontinuation, especially in urban informal settlement areas. These challenges have implications for sexually transmitted infections (including HIV prevalence and incidence) among these populations. Overall, the quality of family planning services was significantly lower in informal settlements, negatively affecting client satisfaction and modern contraceptive uptake.

4.1.3. *Gender and rights-related outcomes*

Many women living in informal settlement face intimate partner violence, and they often have low reproductive decision-making autonomy due to socioeconomic and financial challenges. This is also exacerbated by a lack of access to reproductive health information and services in these settings. Damte et al. (2023), Akpabio et al. (2021), and Weaver et al. (2023) provide clear evidence that women in informal settlements experience compounded risks (health, environmental, and economic) due to systemic gender bias. Harpham et al. (2022) also explore gendered access to family-planning services and identify rights-related barriers (policy, social norms, access inequities) across Sub-Saharan Africa. These studies underscore the call for human-rights-based approaches in reproductive health in the African urban context, as noted by Dumbuya et al. (2024) and Mutua et al. (2021).

4.1.4. *Fertility-related outcomes*

In many settings, the growing urbanisation has a significant impact on the Total Fertility Rate (TFR) declined in these areas. In the SSA region, however, the case is different as many urban areas now face a significant increase in adolescent pregnancy rates, unintended or mistimed pregnancies and unsafe abortions. Amodu et al.'s (2022) study illustrated how adolescents face heightened stigma and misinformation about reproductive health services, leading to unmet contraceptive needs and increased risks of early or unintended pregnancies.

4.1.5. *Other health-related outcomes*

Urbanisation also introduces new reproductive health challenges linked to changing lifestyles and environmental conditions. The rising prevalence of non-communicable and other conditions, such as gestational diabetes, infertility, and hypertension during pregnancy, is a growing con-

cern in both formal and informal urban settings. These conditions, associated with dietary shifts, reduced physical activity, and increased stress in urban environments, represent a double burden alongside persistent communicable diseases like Sexually Transmitted Infections (STIs).

Furthermore, urban informal residents often lack the financial resources to seek timely care for these emerging challenges, exacerbating health inequities. Evidence from Akwara et al. (2023) emphasises the need for integrated approaches that address both communicable and non-communicable disease burdens in urban reproductive health programs.

4.2. Urbanisation-Related Factors Influencing Reproductive Health Outcomes

Our analysis revealed multiple interconnected factors, including economic disparities, systemic barriers, cultural norms, and environmental conditions, that collectively influence reproductive health outcomes in urban settings. These factors interact in diverse ways to exacerbate disparities, particularly for marginalised populations in informal settlements and peri-urban areas.

4.2.1. Economic Disparities

Generally, economic inequalities emerged as a dominant theme shaping access to reproductive healthcare. It was found that informal workers and residents of informal settlements often lack the financial means to afford essential health services despite close geographic proximity to essential social services. Akpabio et al. (2021) highlight economic marginalisation of women in South-South Nigeria, linking poverty and lack of sanitary infrastructure to broader socio-economic exclusion. Many residents of informal settlements rely on low-paying, unstable jobs without health insurance. The high costs associated with antenatal care, skilled birth attendance, and emergency obstetric services prevent many women from seeking timely healthcare (Weaver et al., 2023). Even in a country such as Ghana, where the government has an insurance programme and other free maternal policies, there are still indirect costs, such as out-of-pocket expenditure, associated with accessing public hospitals (Adawudu et al., 2024). In SSA countries with no government-led insurance packages, Akwara et al. (2023) also note that direct costs, such as service fees, and indirect costs, such as transportation, often force economically disadvantaged informal settlement women to prioritise basic needs over healthcare. Amodu et al. (2022) highlight that financial hardship often leads to delays in antenatal care or complete avoidance of healthcare services, increasing the risk of adverse maternal and child health outcomes. Most studies identify poverty and income gaps as key determinants of poor health, reproductive outcomes, and service access in informal settlements, reinforcing the need for pro-poor urban infrastructure planning and financing models

4.2.2. Systemic Barriers

The analysis showed that reproductive health services in informal settlements face systemic challenges such as overcrowded clinics, long wait times, and resource limitations. Many urban healthcare facilities are overwhelmed by the growing demand from rapidly expanding populations, leading to diminished quality of care for economically disadvantaged groups. Akpabio et al. (2021) highlight state neglect, service exclusion, and institutional failure to provide WASH in slums, framing these as structural/systemic problems for women. Additionally, there are signif-

icant gaps in healthcare infrastructure in urban slums and peri-urban areas. Inadequate healthcare coverage, understaffing, and limited medical supplies hinder effective service delivery, disproportionately affecting vulnerable populations. Despite being geographically closer to healthcare facilities, many residents of urban informal settlements are unable to access the care they need due to systemic inefficiencies. Adawudu et al. (2024) also highlight systemic inequalities in resource distribution and implementation in maternal health policies, showing gaps affecting access. Duminy et al. (2021) underscore how governance, supply-environment fragmentation, and institutional complexity limit urban family-planning delivery. Adawudu et al. (2024), Duminy et al. (2021), Harpham et al. (2022), Dumbuya et al. (2024) and Sakketa (2023) explicitly link poor health/infrastructure outcomes in informal settlements to governance failures, fragmented supply environments, financing shortfalls, and policy implementation gaps.

4.2.3. Cultural Norms

Cultural and gender dynamics emerged as significant barriers to reproductive healthcare access, particularly for women. Cultural norms and gender dynamics between formal and informal settlements tend to differ due to their economic condition and migration. Internalised misogyny that rises from poverty can often limit women's autonomy in making healthcare decisions, especially regarding family planning and contraceptive use (Amoadu et al., 2022). These norms are reinforced by misinformation and stigma surrounding contraception, with many women deterred by fears of side effects or societal judgment (Akwara et al., 2023). Adolescent girls and migrant populations are particularly vulnerable to these cultural restrictions. Amoadu et al. (2022) illustrate how adolescents face heightened stigma and misinformation about reproductive health services, leading to unmet contraceptive needs and increased risks of early or unintended pregnancies. In many cases, cultural norms intersect with systemic barriers, such as the lack of youth-friendly healthcare services, to exacerbate these challenges. Women in informal settlements often face a "triple burden" of financial hardship, cultural barriers, and inadequate infrastructure, leaving them particularly vulnerable to poor reproductive health outcomes (Amoadu et al., 2022).

4.2.4. Environmental Conditions

Environmental risks, including pollution, poor sanitation, and overcrowding, were recurrently coded as critical barriers to reproductive health. Informal settlements often lack basic amenities, exposing residents to health risks that can complicate pregnancy and childbirth. Dumbuya et al. (2024) identify poor waste management and unsafe water as major contributors to infections and diseases, such as diarrheal illnesses and respiratory conditions, which disproportionately affect pregnant women and young children. Overcrowding in urban slums increases the likelihood of infectious disease transmission, further endangering maternal and child health. Jemiluyi (2021) highlights how air pollution exacerbates pregnancy complications such as preterm labour and low birth weight, creating additional challenges for women in these settings.

4.3. Strategies to Mitigate Adverse Effects of Urbanisation

Five overarching categories of strategies to mitigate the adverse effects of urbanisation on reproductive health outcomes were identified. These included infrastructure development,

community-based interventions, and technological innovations. These strategies aimed to address systemic, economic, and cultural barriers and to ensure equitable healthcare access for all urban populations.

4.3.1. *Infrastructure Development*

Targeted investments in healthcare infrastructure in underserved informal settlement areas emerged as a critical strategy (Tripathi & Maiti, 2023; Patterson et al., 2022; Jemiluyi, 2021). Informal settlements, where overcrowding and limited resources exacerbate health risks, require well-equipped clinics and skilled healthcare providers to address reproductive health disparities (Patterson et al., 2022). Akpabio et al. (2021) and Duminy et al. (2021) emphasise that expanding the availability of healthcare facilities, particularly those providing reproductive health services, is essential for bridging access gaps. Improvements in healthcare infrastructure should also include the integration of emergency obstetric care and family planning services, which are often lacking in informal settlements. Urban planning efforts that incorporate health considerations, such as sanitation systems, clean water provision, and air pollution controls, are vital for addressing environmental health risks. Dumbuya et al. (2024) note that improving living conditions in informal settlements can significantly reduce the burden of preventable diseases, such as infections and complications during pregnancy.

4.3.2. *Community-Based Interventions*

Community engagement emerged as a powerful tool for addressing cultural barriers and building trust in reproductive healthcare services (Amoadu et al. 2022; Weaver et al. 2023). It is anticipated that the involvement of community members in the design, implementation, and evaluation of healthcare programs would ensure that local concerns and cultural norms are acknowledged and respected. This participatory approach fosters a sense of ownership and reduces resistance to new interventions. Additionally, using trusted local leaders or organisations as intermediaries can help bridge the gap between healthcare providers and communities, ensuring that services are delivered in culturally sensitive ways. Community engagement also provides a platform for open dialogue, education, and the dispelling of myths surrounding reproductive health, ultimately enhancing trust and promoting the adoption of essential healthcare services. Health education campaigns tailored to local urban contexts can dispel misinformation, reduce stigma, and promote awareness of contraceptive options and prenatal care. For example, Amoadu et al. (2022) highlight the effectiveness of culturally sensitive educational programs in empowering women and adolescents to make informed reproductive health decisions. Community health workers can serve as intermediaries between healthcare providers and underserved populations, facilitating access to services and fostering trust. Akpabio et al. (2021) stress the importance of involving local leaders and stakeholders in community-based initiatives to ensure cultural relevance and sustainability. Such interventions not only address cultural norms but also create opportunities for marginalised groups, such as women in informal settlements, to advocate for their healthcare needs.

4.3.3. *Technological Innovations*

Digital health solutions, including telemedicine and mobile health applications, offer promising approaches to overcoming systemic barriers in urban healthcare delivery. Harpham et al. (2022)

highlight how the problem of unmet need for contraception in urban areas can be solved using digital health / mHealth solutions (SMS/voice counselling, mobile appointment booking, teleconsultation) to expand family-planning information and services to informal settlement populations. Also, Telemedicine platforms allow patients to consult healthcare providers remotely, reducing the need for transportation and minimising the impact of overcrowding. These platforms are particularly effective in informal settlements, where physical access to healthcare facilities is often limited. Mobile health applications can enhance reproductive health outcomes by providing reminders for antenatal care visits, disseminating educational materials, and facilitating remote monitoring of high-risk pregnancies. For instance, digital tools have been shown to improve adherence to family planning methods and empower users with real-time health information. For service delivery and behaviour change, Weaver et al. (2023) support the deployment of digital maternal-health platforms, telemedicine, and community health worker apps that help bridge service gaps in hard-to-reach or insecure urban settlements. These innovations are not only cost-effective but also scalable, making them suitable for resource-limited urban contexts.

4.3.4. *Public-Private Partnerships*

Strengthening public-private partnerships emerged as another key strategy for improving reproductive healthcare access in urban areas. Collaborations between governments, private healthcare providers, and non-governmental organisations (NGOs) can mobilise resources, expand service coverage, and enhance the quality of care. Duminy et al. (2021) discuss how family planning should be inserted within the complex array of urban actors, such as the public and private-for-profit providers and governance mechanisms, for an enhanced urban family planning delivery. Private providers can complement public healthcare systems by extending their reach to underserved populations, while subsidies from governments or NGOs can make these services affordable for low-income groups. In furtherance, Akpabio et al. (2021) highlight the limited state capacity and how responsibility shifts to private/domestic actors in reproductive health delivery. cross-sectoral governance in reproductive health challenges exist, and the need to work across public, private and non-profit sectors to extend contraception access in informal settlements is imperative (Harpham et al., 2022). -These articles demonstrate how such partnerships will successfully enhance reproductive health delivery by integrating private healthcare services into public health programs. Additionally, public-private collaborations can facilitate the adoption of innovative healthcare technologies, such as telemedicine, by pooling resources and expertise.

4.3.5. *Gender-Sensitive Policies*

Policies that promote gender equity are essential for empowering women to make autonomous reproductive health decisions. Programs aimed at increasing female education, economic empowerment, and access to healthcare services can challenge patriarchal norms and reduce cultural barriers. Palaniyandi (2021) underscores the importance of engaging men as partners in reproductive health initiatives to foster shared decision-making and dismantle traditional power imbalances within households. Duminy et al. (2021) recommend local adaptations and governance reforms that are essentially gender-sensitive policy measures to improve family planning access in urban poor areas. Adawudu et al. (2024) also propose policy measures to improve

access to reproductive health services for disadvantaged groups, targeting underserved populations. While national in scope, they explicitly address policy equity, which is relevant to gender-sensitive policy.

5. Discussion

The impact of urbanisation on reproductive health outcomes among informal settlement residents is well reported in the included studies. This is important for adopting strategies to promote reproductive and sexual health. Urbanisation fosters improved maternal and child health outcomes in some contexts through better access to skilled birth attendants, emergency obstetric care, and advanced medical facilities. However, these benefits are unevenly distributed, with economically disadvantaged groups and residents of informal settlements disproportionately bearing the brunt of systemic and environmental challenges (Akwara et al., 2023).

The duality of urbanisation's effects underscores the persistence of inequities in reproductive health outcomes. Improved healthcare infrastructure in urban areas has contributed to reduced maternal and child mortality rates among wealthier and geographically advantaged populations. Yet, the same urban environments are associated with heightened vulnerabilities for marginalised groups. Studies by Jemiluyi (2021) and Dumbuya et al. (2024) highlight how environmental risks such as air pollution, overcrowding, and inadequate sanitation disproportionately affect maternal and child health in informal settlements. These findings resonate with Harpham et al. (2022), who emphasise the paradox of urban advantages being overshadowed by structural inequalities in resource distribution.

Informal workers and residents of slums often face prohibitive healthcare costs and systemic barriers such as overcrowded clinics and under-resourced facilities (Weaver et al., 2023). These barriers are compounded by patriarchal norms, cultural restrictions, and misinformation, which further limit women's autonomy in accessing healthcare services (Amoadu et al., 2022). While economic constraints directly influence healthcare utilisation, systemic inefficiencies in urban healthcare delivery perpetuate inequities, as noted by Lukyamuzi et al. (2021). The cumulative effects of these factors align with Akwara et al. (2023), who argue that urbanisation often exacerbates health disparities despite overall improvements in service availability. The interplay of economic, cultural, and systemic barriers calls for integrated interventions that address these challenges comprehensively.

It emerged that informal settlements in urban areas still record adverse birth outcomes like preterm labour and low birth weight as a result of air pollution and improper sanitation (Dumbuya et al. 2024; Jemiluyi 2021). These conditions bring about persistent increases in neonatal and perinatal mortality, low birth weight and preterm delivery, and infant mortality among these settlements in many settings. Additionally, urbanisation has introduced new reproductive and other health challenges, including both communicable and non-communicable diseases, infertility, gestational diabetes, and hypertension. Issues of contraceptive use discontinuation, increase sexually transmitted infections (including HIV prevalence and incidence), intimate partner violence and low reproductive decision-making autonomy, increase in adolescent pregnancy rates, unintended or mistimed pregnancies, and unsafe abortions among the populations in urban in-

formal settlement areas are well documented in this review. Our analysis challenged the urban health advantage hypothesis, which suggests that urban populations tend to have better health outcomes (Besnier et al. 2021). In contrast, Dumbuya et al. (2024) illuminated the discussion further by formulating the urban vulnerability hypothesis, where population in informal settlements in urban areas remain highly vulnerable to preventable diseases such as diarrheal infections and respiratory conditions due to poor living conditions and limited healthcare access. This contradiction serves as a footnote for policy-makers in the SSA region, where its urban consequences are dire.

Generally, the findings in this review highlight several important implications for improving reproductive health outcomes. The studies reviewed in this paper have suggested multi-pronged approaches that combine infrastructure development, community-based interventions, technological innovations, and gender-sensitive policies to address reproductive health challenges in the urban informal settings.

The paper observed that many women and adolescent girls face significant barriers in accessing health interventions like sexual and reproductive health services. These barriers range from social and cultural norms and limited decision-making autonomy to resource constraints, including financial and transportation resources. It is envisaged that interventions that address these structural barriers and targeted support for vulnerable groups, including adolescent girls and women in low-resource settings, can significantly increase sexual and reproductive health services uptake and improve health outcomes. Expanding healthcare infrastructure in underserved areas, including informal settlements, is critical for reducing disparities, while integrating reproductive health initiatives with broader urban development efforts, such as sanitation and pollution control, can mitigate environmental health risks, as suggested by Dumbuya et al. (2024). These findings align with Sakketa (2023), who stresses the need for urban planning that prioritises health equity.

Additionally, the review highlights that community-based interventions play a key role in improving reproductive health outcomes. Community engagement is vital for addressing cultural and systemic barriers, particularly in patriarchal settings. Amoadu et al. (2022) emphasise the importance of health education campaigns tailored to local contexts, while Weaver et al. (2023) highlight the role of community health workers in bridging gaps between healthcare systems and marginalised populations.

Again, the review highlights that the application of technological innovations, including telemedicine and mobile health applications, offers scalable solutions for improving healthcare access in resource-constrained urban settings. These tools not only reduce systemic barriers, such as transportation challenges and overcrowded clinics, but also empower users with health information and reminders for essential care.

Finally, the review highlights that gender-sensitive policies that promote women's education and economic empowerment can challenge patriarchal norms and reduce cultural barriers to healthcare. Hence, Amoadu et al. (2022) highlight the importance of engaging men in reproductive health initiatives to foster equitable decision-making and dismantle traditional power imbal-

ances, as well as addressing both systemic and cultural barriers to achieve equitable health outcomes in urban contexts.

5. Conclusion

Urbanisation in Sub-Saharan Africa presents a complex interplay of opportunities and challenges for reproductive health outcomes. While urban settings offer improved access to healthcare facilities, skilled professionals, and family planning services, these advantages are often offset by socioeconomic disparities, systemic barriers, and cultural norms that disproportionately affect marginalised populations. Women in informal settlements and economically disadvantaged groups remain particularly vulnerable, facing compounded challenges of financial hardship, overcrowded facilities, and limited healthcare autonomy.

The findings underscore the urgent need for targeted interventions that address these inequities. Scaling up healthcare infrastructure in underserved areas, providing subsidies for essential reproductive health services, and integrating health considerations into urban planning are critical steps toward mitigating the adverse effects of urbanisation. Additionally, community-based health education, gender-sensitive policies, and digital health innovations offer promising pathways to overcome systemic and cultural barriers.

Efforts to improve reproductive health outcomes in urban areas must be guided by a commitment to equity and inclusivity. Stakeholders, including governments, private sectors, and communities, must collaborate to ensure that the benefits of urbanisation extend to all populations, particularly those most at risk. It is recommended that research and policy must focus on developing sustainable, context-specific strategies to harness the potential of urbanisation while addressing its inherent challenges.

5.1. Strengths of the study

The major strength of this article lies in its comprehensive synthesis of recent empirical studies (2015–2024) on the effects of urbanisation on reproductive health outcomes in informal settlements across Sub-Saharan Africa. The review captures contemporary policy-relevant evidence that reflects current urban dynamics, health system reforms, and demographic shifts. This scope enhances the relevance, timeliness, and applicability of the findings to ongoing global and regional development agendas, including the Sustainable Development Goals (SDG 3 and SDG 11). Also, the study demonstrates strong methodological robustness through its use of the PRISMA-ScR framework and Creswell's three-stage content analysis (open, axial, and selective coding). This systematic and transparent approach ensures credibility and reproducibility in identifying, screening, and synthesising the evidence. The article's integration of findings into practical and policy-relevant strategies, including infrastructure development, community-based interventions, technological innovations, and gender-sensitive policies, demonstrates its strong translational value. We moved beyond descriptive analysis to propose evidence-informed, context-specific interventions and provided a clear roadmap for policymakers, urban planners, and public health practitioners.

Ethics approval and consent to participate

This study conducted secondary analyses via a scoping review. All the studies included in this analysis provided ethics approval and consent to participate. All studies were conducted under relevant guidelines and regulations by obtaining ethical approval from the relevant Institutional Review Boards in the respective countries. All participants provided written informed consent.

Abbreviations

- **HIV:** Human Immunodeficiency Virus
- **PRISMA-ScR:** Preferred reporting items for systematic reviews and meta-analysis extension for scoping reviews
- **SDG:** Sustainable Development Goals
- **SSA:** Sub-Saharan African
- **WHO:** World Health Organisation

Author contributions

- **BT, DAA, and MA** conceptualised the paper. **BT** and **MA** searched for and downloaded the articles. **BT, DAA, and MA** reviewed and completed the title and abstract screening, full-text review and data extraction.
- All three authors (**BT, DAA, and MA**) interpreted the data, whereas **BT** and **MA** drafted the paper.
- All three authors (**BT, DAA, and MA**) read and approved the paper for submission.

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Use of generative AI

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Conflicts of interest

The authors declare no competing interests.

Data Availability Statement

Data used in this study were obtained from previously published literature and analysed during the course of the study.

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Appendixes

Table 3. List of Studies included

No.	Author(s)	Year	Title of Paper	Region	Methods Used	Key Findings
1	Damte, E., Manteaw, B. O., & Wrigley-Asante, C.	2023	Urbanisation, climate change and health vulnerabilities in slum communities in Ghana	Ghana	Concurrent triangulation mixed method approach	Correlation between climate change impacts and health conditions in slum communities; increased prevalence of diseases such as malaria, diarrhoea, and novel diseases.
2	Akpabio, E. M., Wilson, N. A. U., Essien, K. A., Ansa, I. E., & Odum, P. N.	2021	Slums, women and sanitary living in South-South Nigeria	South-South Nigeria	Narratives, interviews, and literature review	Women face disproportionate risks and burdens due to poor WaSH services; neglect of slums limits essential service provision.
3	Alaazi, D. A., Menon, D., & Stafinski, T.	2021	Health, quality of life, and well-being of older slum dwellers in sub-Saharan Africa: a scoping review	Sub-Saharan Africa	Scoping review of 3,388 records; reviewed 25 selected studies	Variety of health issues for older slum dwellers; gaps include regional research bias and limited focus on built environment impacts.
4	Issa, E. H.	2021	Life in a slum neighbourhood of Addis Ababa, Ethiopia: morphological facts and their dysfunctions	Addis Ababa, Ethiopia	Qualitative case study, semi-structured interviews, and thematic analysis	Highlighted morphological features of slums; dysfunctions include health risks, economic costs, and gendered impacts.
5	Adawudu, E. A., Aidam, K., Oduro, E., Miezah, D., & Vorderstrasse, A.	2024	The Effects of Ghana's Free Maternal and Child Healthcare Policy on Maternal and Infant Healthcare: A Scoping Review	Ghana	Scoping review of 175 studies, PRISMA-ScR guidelines	Increased utilisation of antenatal, delivery, and postnatal services; systemic issues like inequalities and resource distribution persist.
6	Patterson, A. Q., Culbreth, R. E., Kasiye, R., Kebede, S., Bitarabebo, J., & Swahn, M. H.	2022	Self-rated physical health, health-risk behaviours, and disparities: A cross-sectional study of youth in the slums of Kampala, Uganda	Kampala, Uganda	Cross-sectional study, logistic regression analysis	Poor self-rated health is associated with psychosocial and demographic factors; high prevalence of health-risk behaviours among youth.

7	Dumbuya, S., Chabinga, R., Ferede, M. A., & Sabre, M.	2024	Climate change impacts on maternal health and pregnancy outcomes in Africa.	Africa	Literature review	Climate change exacerbates maternal health risks, including preterm births and maternal hypertension; it highlights policy and research gaps.
8	Duminy, J., Cleland, J., Harpham, T., Montgomery, M. R., Parnell, S., & Speizer, I. S.	2021	Urban family planning in low-and middle-income countries: a critical scoping review	Low- and Middle-Income Countries (Global focus)	Critical review scoping	Highlights challenges and priorities for urban family planning, emphasising the importance of local adaptations to programs.
9	Hamel, C., Michaud, A., Thuku, M., Skidmore, B., Stevens, A., Nussbaumer-Streit, B., & Garritty, C.	2021	Defining rapid reviews: a systematic scoping review and thematic analysis of definitions and defining characteristics of rapid reviews	Sub-Saharan Africa	Systematic review, thematic analysis scoping	Identified key themes for rapid reviews, providing a framework for their use in systematic review communities.
10	Harpham, T., Tetui, M., Smith, R., Okwaro, F., Biney, A., Helzner, J., ... & Ganle, J.	2022	Urban family planning in Sub-Saharan Africa: an illustration of the cross-sectoral challenges of urban health	Sub-Saharan Africa	Policy document analysis, stakeholder interviews	Demonstrates cross-sectoral barriers and connections in urban family planning; emphasises tailored approaches for advocacy.
11	Sakketa, T. G.	2023	Urbanisation and rural development in sub-Saharan Africa: A review of pathways and impacts	Sub-Saharan Africa	Literature review	Highlights positive and negative linkages between urbanisation and rural development, identifying key research gaps.
12	Weaver, E., Richmond, A., & Pegues, K.	2023	The health of women in sub-Saharan African informal settlements: a literature review	Sub-Saharan Africa	Literature review	Discusses health disparities faced by women in informal settlements, with a focus on reproductive health challenges.
13	Tripathi, S., & Maiti, M.	2023	Does urbanisation improve health outcomes: a cross-country level analysis	Sub-Saharan Africa	Panel quantile regression models, Granger causality test, panel cointegration test	Urbanisation improves life expectancy and reduces fertility; mixed effects on infant mortality highlight the importance of urban management.

14	Kutscher, E., & Parey, B.	2024	A scoping review of mixed methods rigour in inclusive education: application of the Rigorous Mixed Methods Framework	Sub-Saharan Africa	Mixed Methods	Results suggest that scholars can deepen their application of mixed methods by thoughtfully integrating qualitative and quantitative approaches to gain insights into the complex and contextualised processes that characterise inclusive education.
15	Jemiluyi. O.O	2021	Urbanisation and child health outcomes in Nigeria	Nigeria	Mixed Methods	The results show that there exist child health advantages of urbanisation, with urbanisation having a reducing impact on the mortality indicators.
16	Mutua, M. K., Mohamed, S. F., Porth, J. M., & Faye, C. M.	2021	Inequities in on-time childhood vaccination: evidence from Sub-Saharan Africa	Sub-Saharan Africa	Mixed Methods	On-time vaccination coverage was low in all subregions and nearly all countries. Inequalities in on-time immunisation by household wealth, place of residence, and education existed in most countries.
17	Palaniyandi, M	2021	New, Emerging, Re-Emerging Tropical Infectious and Non-Communicable Diseases Persistent to the Climate, Landscape, and Environmental Changes on the Grounds of the Urbanisations, Industrialisation, and Globalisation	Sub-Saharan Africa	Mixed Methods	Urban sprawl has a multiplier effect of growth of unplanned and crowded housing, and industrialisation has an impact on the urban landscape with commercial and market development, and roads over large expanses of urban land, while little concern for appropriate urban planning.
18	Sakketa, T. G.	2023	Urbanisation and rural development in sub-Saharan Africa: A review of pathways and impacts	Sub-Saharan Africa	Literature review	The review findings indicate that the impact of urbanisation on rural development in SSA is conditional and heterogeneous.
19	Tricco, A. C.,	2017	Rapid reviews to strengthen health policy and systems: A practical guide.	Sub-Saharan Africa	Rapid review	Governments worldwide increasingly recognise the need for knowledge synthesis to inform health policymaking and health systems decision-making in routine, as well as emergency contexts.
20	Zubair Lukyamuzi, Moses Tetui, Osvaldo Fonseca-	2021	Quality of Care in Family Planning Services: Differences Between	Kira Municipality, Waki-	Cross-sectional survey of all service	Formal settlements in Kira Municipality provide higher-quality family planning services, with more trained staff, a

	Rodríguez, Lynn Atuyambe, Fredrick Edward Makumbi, & Mazen Baroudi		tween Formal and Informal Settlements of Kira Municipality, Uganda	so District, Uganda	delivery points (SDPs) in Kira Municipality	wider range of methods, and better counselling compared to informal settlements. Women in informal areas reported low satisfaction, with most unwilling to return to or recommend their providers. Improving service quality in informal settlements is crucial to increasing modern contraceptive uptake.
21	Banke-Thomas, A., Wong, K. L., Olubodun, T., Macharia, P. M., Sundararajan, N., Shah, Y., ... & Beňová, L.	2024	Geographical accessibility to functional emergency obstetric care facilities in urban Nigeria using closer-to-reality travel time estimates: a population-based spatial analysis	Nigeria	Mixed methods	The poorest populations experience the greatest inequity in access to emergency obstetric care.