CRITICAL PUBLIC HEALTH CHALLENGES IN EASTERN AFRICA

Editors

Assoc. Prof. Dr. Nimetcan Mehmet ORHUN

Prof. Dr. Salih MOLLAHALİLOĞLU

yaz

yayınları

CRITICAL PUBLIC HEALTH CHALLENGES IN EASTERN AFRICA

Editors

Assoc. Prof. Dr. Nimetcan Mehmet ORHUN

Prof. Dr. Salih MOLLAHALİLOĞLU

yaz yayınları

2026

yaz
yayınları

Critical Public Health Challenges in Eastern Africa

Editor: Assoc. Prof. Dr. Nimetcan Mehmet ORHUN

ORCID: 0000-0002-7854-7044

Editor: Prof. Dr. Salih MOLLAHALİLOĞLU

ORCID: 0000-0001-7384-4106

E_ISBN 978-625-8996-25-8

Mart 2026 – Afyonkarahisar

Dizgi/Mizanpaj: YAZ Yayınları

Kapak Tasarım: YAZ Yayınları

YAZ Yayınları. Yayıncı Sertifika No: 73086

M.İhtisas OSB Mah. 4A Cad. No:3/3
İscehisar/AFYONKARAHİSAR

www.yazyayinlari.com

yazyayinlari@gmail.com

CONTENTS

EDUCATION AS A PATH TO HEALTH: THE ROLE OF WOMEN'S EDUCATION IN MATERNAL HEALTH ACCESS ACROSS AFRICA

Nejla ABDRAHIM YASSIN[1]

Dilek ÖZTAŞ[2]

Salih MOLLAHALILOĞLU[3]

1. INTRODUCTION

1.1. Defining the Link between Education and Health

Education as a path to health plays a crucial role in maternal outcomes, especially in Africa. Women with secondary education experience up to a 63 percent reduction in maternal mortality compared to those with no formal education (UNESCO, 2017). Drawing on the World Health Organization's Social Determinants of Health framework (Benach et al., 2010) and Sen's capability approach (Terjesen, 2004), this chapter highlights the importance of education as both an empowerment tool and a structural determinant that enables women's active engagement within the health system.

[1] Postgraduate Student, Health Policy and Global Health Department, Public Health Institute, Ankara Yildirim Beyazit University. ORCID: 0009-0006-3138-4168.

[2] Prof. Dr. Public Health Department, Faculty of Medicine, Ankara Yildirim Beyazit University, ORCID: 0000-0002-8687-7238.

[3] Prof. Dr, Public Health Department, Faculty of Medicine, Ankara Yildirim Beyazit University, ORCID: 0000-0001-7384-4106.

1.2. Importance of Women's Education in Maternal Health

Education can be measured and compared by its impact on women's action, ability in making decision and proper and utilize services etc.it can be seen in the increase of mothers achieving in antenatal care (4 to 7 antenatal care visits) rising from 49.3% in 2006 to 49.98% in 2011 to 58.61% in 2017-2018)(Duodu et al., 2022) Education takes a role in women's decision-making varying from attending higher and primary education, to make decisions alone, with secondary school attainment making them twice as likely to make their own decisions (Osamor & Grady, 2017)

1.3. Scope of the Chapter

Focusing on Ghana (community health innovation), Morocco (midwifery reforms), Uganda (post-conflict rebuilding), and South Africa (policy champions), this analysis compares education's "pathway potency" across health system contexts, identifies policy transfer opportunities (e.g., Ghana's community health worker model for Uganda), and exposes hidden barriers (e.g., South Africa's education-equity paradox). "The comparative lens reveals multiple viable paths to health each paved by education but shaped by local realities."

2. CONCEPTUAL FRAMEWORK

2.1. Social Determinants of Health

Analysing education by integrating with World Health Organization's social determinants of health framework (world Health Organization, 2025) that education is the foundational driver of maternal health outcomes by indicating that

- Education operates as both a structural determinant (shaping access to resources) and an intermediary factor (influencing health behaviours),
- Health disparities emerge primarily from social inequities (e.g., education gaps), rather than from clinical factors alone, and
- Maternal health interventions must address the education–health linkage to achieve sustainable improvements.

2.2. Pathways from Education to Maternal Health

Building on Shepherd's (2017) dual-pathway model, four primary mechanisms are identified through which education impacts maternal health (National Academies of Sciences, Engineering, & Medicine, 2016).

2.2.1. Direct Pathways

Knowledge and Awareness

Education → recognition of danger signs

Education → understanding of service entitlements (e.g., South Africa's free maternal care policies).

Autonomy and Decision-Making

Education → empowers women to challenge harmful norms

Education → buildup the use of reproductive agency (e.g., contraceptive use, birth spacing).

2.2.2. Indirect Pathways

Economic Capacity (Budget Constraint Relaxation)

Education leads to higher employment rates and improved earnings ultimately propelling long-term economic growth and societal development

Health Behaviour (Efficiency Improvement)

Education → Optimizes service utilization.

Figure 1. Overview of Maternal Health in the Selected Countries

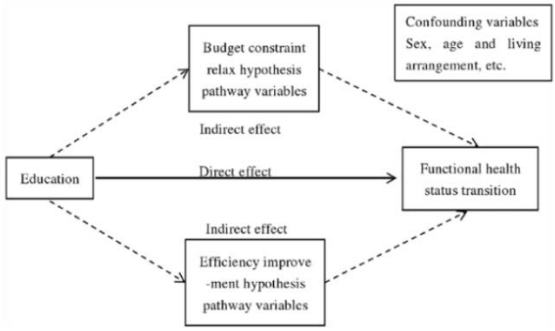


Table 1. Key Terms Glossary

Term	Definition	Source
MMR	Maternal Mortality Ratio: deaths per 100,000 live births	WHO,2023
ANC	Antenatal Care: Medical care during pregnancy	UNICEF, 2022
EmOC	Emergency Obstetric Care: 8 life-saving services for pregnancy complications	UNFPA, 2021
GEM	Girl Education Movement: Uganda's school-based health program	UBOS, 2023
STEM	Science, Technology, Engineering, Math education fields	UNESCO, 2023
Last-Mile Delivery	Final stage of health supply chain to remote communities	World Bank, 2024

3. EDUCATION AND MATERNAL HEALTH ACCESS BY COUNTRIES

3.1. Ghana

Ghana, lowering its average from 943 in 2000 to 234 in 2023, has made substantial progress on its Maternal mortality ratio. At the same time, its secondary school completion rate is high compared to other sub-Sarhan African countries: as of 2019, 74.2% and 75.3% of students girls and boys respectively, completed their lower secondary education,which measures the extent of children completing their last lower secondary education regardless of age (World Bank, n.d.).

3.2. Morocco

According to national estimates, Morocco has made a remarkable progress in the of maternal mortality rate from 752 in 2000 to 70 in 2023. (‘Morocco | World Bank Gender Data Portal’, n.d.) Community-based initiatives such as "Dar Al Oumouma"which also means "House of Maternity" is a facility that supports pregnant women and provides safe place in the maternity period. Between January 2023 and December 2024, Dar Al Oumouma has reached around 285,000 women and children. With important variation between rural and urban areas (World Bank, n.d.a)

3.3. Uganda

In Uganda, Kampala, the average of 298 deaths per 100,000 live births, reflects the health system’s pressure (*UGANDA BUREAU OF STATISTICS 2022 a)* having major challenges like blood shortages that in turn affects the functioning of health facilities especially in the delivery service , making it more critical in the rural areas Girls Education Movement Clubs (GEM clubs) GEM is a nationwide initiative that mobilizes children both in and out of school, to promote girls’ education and

address the multiple gender specific constraints that limit educational access. GEM enables adolescents to directly take active role in shaping school environment that are gender-responsive and reflecting their own identified needs and priorities. The school-based club is simple, cost-effective and highly adaptable making it suitable for replication contexts where there are significant barriers to education, particularly for adolescent girls (UNESCO, 2025.) take an active role in shaping school environments that are gender-responsive, inclusive, and safe, reflecting their own identified needs and priorities.

3.4. South Africa

Over the past decades South Africa has recorded a significant decline in maternal mortality rates , declining from 208 in 2000 to 118 in 2023 placing South Africa below the regional average for Maternal mortality ('South Africa | World Bank Gender Data Portal', n.d.) with this improvement ,Mom Connect has emerged as a flagship initiative of South Africa's National Department of Health designed to strengthen maternal and child health through mobile technology. Using free SMS and WhatsApp messaging, the program delivers pregnant women and new mothers with free, stage-appropriate health information. 96% of the mothers reported attending at least 4 ANC visits (compared to 76% in 2016 District Health System (DHS)), with an average attendance of 7.3 ANC ('MomConnect – National Department of Health', n.d.)

3.5. Trends in women educations

Comparative Analysis

Table 2. Education-Health Nexus

Indicator	Ghana	Morocco	Uganda	South Africa
Female STEM%	38%	52%	29%	49%
Education Spend	4.2% GDP	5.7% GDP	2.3% GDP	6.1% GDP

Sources: *World Bank EdStats (2024), UNESCO STEM Report (2023)*

Policy Implementation

Table 3. Timeline of Key Policy Interventions (2015–2022)

Year	Country	Country
2015	Uganda	Mandatory sexuality education introduced in schools.
2017	Ghana	Free Senior High School (Free SHS) policy launched.
2020	Morocco	Training of 500 rural midwives to strengthen maternal care.
2022	South Africa	Expansion of National Health Insurance (NHI) coverage.

Table 4. Health System Challenges Affecting Maternal Health Access

Barrier	Ghana	Morocco	Uganda	South Africa
Staff shortages (% of facilities affected	42%	31%	67%	22%
Cultural barriers (severity score)	6.2	4.1	8.7	3.5

Data were extracted from:

Data source	Inclusion Criteria
National Demographic and Health Surveys (DHS 2018–2023)	Country-level maternal health indicators
World Bank Development Indicator	Health system and education variables
Peer-reviewed studies (2015-2024)	>90% institutional delivery sample coverage

Note. Cultural barriers are measured on a scale from 0 (none) to 10 (severe).
Source: WHO, Health Systems Review (2023).

4. THE ROLE OF WOMEN'S EDUCATION IN MATERNAL HEALTH ACCESS

4.1. Health-Seeking Behaviour

According to the World Bank (2020), women with secondary or higher education are nearly three times more likely to receive antenatal care from a skilled provider than women with no education(Kassaw, Debie, & Geberu, 2020) the findings highlight the need to strengthen women's empowerment by increasing access education - particularly for girls in rural area especially for rural girls . Education helps women's ability to recognize pregnancy-related complications which makes more knowledgeable about warning signs such as bleeding, severe headaches, or reduced fatal movement, making them to seek skilled care. At the same time making them to have the confidence in communication and the ability to question medical interventions (Gesese, Mersha, & Balcha, 2023)

4.2. Utilization of Antenatal, Delivery, and Postnatal Services

Extensive evidence points to a close link between women's educational attainment and maternal and child health outcomes, including the use of antenatal and postnatal services, early initiation of antenatal care, and access to skilled birth attendance. Higher levels of education are associated with greater engagement with qualified care providers, more timely and frequent antenatal visits, increased likelihood of facility-based delivery, and a higher probability of being assisted by a skilled professional at birth (Dimbuene et al., 2018).Evidence from policy implementation (2003–2007) further demonstrates that improved access to skilled antenatal care , delivery, and postnatal care that women with at least secondary education were 48% more likely to access and utilize skilled mater(Ganle, Parker, Fitzpatrick, & Otupiri, 2014)South Africa's high literacy rates

are associated with widespread antenatal care initiation with, some disparities as completing the four ANC(National Department of Health, 2023)

Table 5. Education-Service Gradient across Countries

Service Type	No Education	Primary	Secondary+	Disparity Ratio
≥4 ANC Visits,	45% (Ghana)	62%	85%	1.9×
Facility Delivery	60% (Morocco rural)	78%	96%	1.6×
Postnatal Check-ups	29% (Uganda	51%	73%	2.5×

Data Sources: UNESCO (2023), World Bank (2025), UNICEF (2021)

4.3. Decision-Making Autonomy and Economic Empowerment

Despite global commitments to gender equality, significant gaps remain in women's autonomy over healthcare decisions. Having decision- power and the ability to use service reduces both child and maternal morbidity and mortality. Women's health autonomy is shaped by interacting factors at individual, household, community, and societal levels, with their influence varying across countries and institutional contexts (Idris et al., 2023)

Women , when they are wealthier ,urban, highly educated, have decision making autonomy which helps them to have higher tendency to health facility delivery compared to the 78% of the Ghanaian women in the reproductive age who are not autonomous when it comes to decision-making on their healthcare (Ameyaw, Tanle, Kissah-Korsah, & Amo-Adjei, 2016The GHDS reports, that there is a "positive relationship between professional antenatal care coverage and wealth quintile, with women in the highest wealth quintile more likely to receive care from a health professional than those in the lowest wealth

quintile, although the difference is small (99 and 93 percent, respectively)" (Arthur, 2012)

5. COUNTRY-SPECIFIANALYSIS

5.1. Ghana - Education and Maternal Health Synergies

5.1.1. Policy Evolution and Health Impacts

Timeline of Key Interventions

Table 6. Health policy reforms

Year	Policy type	Ownership	Challenges
1957	Free health care for all	Public health facilities	Sustainability problem limited public sector
1969	User-free	Public and private facilities	Inequity access to health care
1985	Cash and carry system (CCS)	Public and private facilities	Inequity access, high mortality, fear of visit
1992	Community based Health Insurance Scheme (CBHIS)	Private non-profit	Gepgraphic limitation
2004	National Health Insurance Scheme (NHIS)	Public-Private	Sustainability problem, inadequate funding

Source (Kipo-Sunyehzi et al., 2019a)

Educational system reforms

Ghana has experienced multiple reforms since the colonial stage, including the Accelerated Development Plan of 1951 and Education Act of 1961, followed by restructuring under the National Liberation Council, the 197 New Structure and Content of Education, the reform of 1987, and the comprehensive New Educational Reform of 2007.these shifts have contributed to generational changes in health literacy. The Free Compulsory Universal Basic Education (FCUBE) program, implemented in phases between 1994 and 2008, has contributed to generational

improvements in health literacy. The impact of this reform is reflected in higher utilization of postnatal care services, highlighting the long-term health returns to expand the access to education (Ghana Statistical Service [GSS], Ghana Health Service [GHS], & ICF, 2022). Alongside educational progress, maternal health service use in Ghana has increased steadily. Policy reforms introduced in 2005 and 2008 policies were associated with significant jumps in Health insurance coverage, which increased by 2.3% in 2005 and significantly by 17.5%after the 2008 policy. These improvements were greatest among the poorest, contributing to a decline in socioeconomic inequality in both outcomes. (Dzakpasu et al., 2012)

Field evidence further indicates that the National Health Insurance Scheme (NHIS) has played a positive role in expanding access to health care services, covering for over 60% of exempt groups. Thus, NHIS is successful in terms of enrolling and meeting exempt groups, but additional efforts are required to achieve the core goal of UHC for all citizens and legal residence in Ghana (Kipo-Sunyehzi et al., 2019b)

Table 7. Impacts of FCUBE and Related Reforms on Maternal Health Outcomes

Indicator	Outcome/Change	Source
Primary school enrollment rate	Increased from 62% to 89% (1994–2005)	Ministry of Education (2023)
Adolescent pregnancy rate	19% lower among FCUBE-educated women	GDHS (2022)
Skilled birth attendance (first pregnancy)	2.3× higher for FCUBE-educated women	GHS (2021)
Awareness of obstetric danger signs	40% greater among FCUBE-educated women	GDHS (2022)
Postnatal care utilization	32% higher in FCUBE cohort	GDHS (2022)
Facility-based deliveries (NHIS reform impact)	Increased from 47% to 64% (2007–2012)	MOH (2013)
Annual maternal mortality reduction (2010–2020)	4.2% (vs. 2.1% Sub-Saharan average)	World Bank (2023)
Secondary education and early births (North Ghana)	11% reduction in early births per school year	UNICEF (2023)

5.1.2. Geographic and Structural Inequities

Despite policy reforms between 2003 and 2007, marked inequalities in access to skilled maternal health services persisted across regions and socio-demographic groups. Utilization was higher among urban women that rural women (40%), women in the highest wealth quintile compared to the lowest(53%),residents of the best-performing region(central region) compared to the worst-performing region(upper eat region)(38%), and women with at least secondary education compared to those with no formal education (48%) in the five years preceding the survey.(Ganle, Parker, Fitzpatrick, & Otupiri, 2014)Results indicate that a significant portion of Ghanaian women, particularly in remote regions, live beyond the clinically significant two-hour threshold from facilities with emergency obstetric and neonatal care (EmONC) (Gething et al., 2012) . The region is also characterized by critical health workforce shortages with a ratio of one doctor to the population being ten times lower than the nation's average ('Health workforce', n.d.).

5.1.3.The Critical Role of Gender-Sensitive Education Policies in Ghana

Gender remains a decisive factor in access to education in Ghana. Despite progressive policies guaranteeing free education, dropout rates remain high, particularly among girls. Early school exit limits girls' health literacy, economic opportunities, and decision-making power, which in turn increase their vulnerability to poor maternal health outcomes, including delayed antenatal care, lower use of skilled birth services, and higher maternal risks later in life. (Nordensvard, 2014)

According to (Nordensvard, 2014), the Free Compulsory Universal Basic education (FCUBE)programme did not fully achieve its objectives due to several structural challenges.one major limitation was the decline in educational quality, which

significantly reduced demand for schooling. The number of untrained teachers in basic education increased substantially, while the proportion of qualified teachers in disadvantaged areas fell from 55% on 2003/04 to just 37% by 2007, making quality education increasingly for disadvantaged communities.

In addition, hidden costs -such as informal fees, uniform and learning materials-undermined the promise of free education, particularly for the poorest households. Although FCUBE aspired to provide nine years of free, compulsory, and high-quality basic education for all school-age children, these financial barriers continued to limit participation. Formal schooling also conflicted with child labour realities, as children in poor households often contribute to family income making, school attendance economically costly. Cognizing these gendered vulnerabilities, the Minister of Education, with support from Ghana Education and service and UNICEF, introduced the Guidelines for the prevention of pregnancy among schoolgirls and facilitation of re-entry into school after childbirth in 2018, aiming to reduce dropout and improve girls 'educational retention.

5.2. Morocco: Women's Education and Maternal Health

5.2.1. Progress in Female Literacy and Its Health Implications

In Morocco, the national illiteracy rate declined from 32.2% to 24.8% in 2014 and 2024 respectively, reflecting sustained progress in educational access and literacy initiatives. The reduction has been particularly seen in rural areas, where illiteracy fell from 47.5% to 38%. urban areas also experienced improvement, with rates decreasing from 22.6% to 17.3%, indicating a national trend toward enhanced literacy outcomes. (Morocco World News, 2024)

Women's literacy has become a priority target of many developing countries since WCEFA, the World Conference on Education for All, ten years after WCEFA, two million Moroccan children remain out of primary school, while reduction in female illiteracy has decreased moderately, as it is still as high as 60 percent at the national level and reaching nearly 80% in rural places. Despite significant effort to reduce female illiteracy in Morocco, it remained limited because of high drop-out rates (Edouihri, 2019)

5.2.2. Influence of Sociocultural Norms on Educated Women's Health-Seeking Behaviour

The socio-economic and demographic characteristic of woman in Morocco points to a society currently under transition. Despite these changes, nearly two-thirds of Moroccan women remains illiterate, and marked gender disparities both in school enrolment ratios and literacy. Cultural norms and economic inequality jointly shape the barriers women face in accessing education. Moreover, the relation of both has contributed to comparatively lower rates of female literacy and school participation across the Middle Eastern and North African (MENA) countries (Ouabou et al., 2025; World Bank, 2004).

- Gender Norms and Social Stigma: continue to limit girls' access to sexual and reproductive health education. misconceptions about adolescents' sexual health needs often result in the stigmatization and social exclusion girls from sexual education. In many communities, some adults, including parents, fear that providing information about sexuality may encourage premarital sexual activity, which is socially unacceptable, thereby reinforcing resistance to comprehensive sexual health education for young girls (Ouahid et al., 2025).
- Gaps in Comprehensive Sexual Health
- Continued Reliance on Traditional Practices

5.2.3. Governmental Maternal Health Initiatives and Education Policies

Morocco has demonstrated strong political commitment through integrated initiatives aimed at strengthening maternal health services and advancing girls' education.Maternal health initiatives: The flagship Dar Al Oumouma ("House of the Midwife") initiative establishes community maternity homes in rural areas to provide free, safe delivery and postnatal care, directly addressing geographic barriers (World Bank, n.d.b).

Morocco also endeavoured to overcome these difficulties and improve its education system based on international recommendations. For example, pursuant to UNESCO's recommendation of "an investment of 6% of gross national product (GNP) in the field of education, the State introduced several non-formal education programmes to provide a second chance for out-of-school children and dropouts. These initiatives reached large number of rural girls, who made up around 50% of participants, contributing significantly to female literacy over the past two decades (Ennaji, 2018)

5.3. Uganda

5.3.1. Challenges with Girl-Child Education

Despite policy efforts, Uganda continues to face significant obstacles. With 34% of women aged 20–24 marrying before 18 had contributed to high adolescent pregnancy rates and dropouts *UGANDA BUREAU OF STATISTICS 2022 b)*

- Policy implementation gap
- continuing Gender based disparities at Critical Education Levels
- Devaluation of Girls' Education
- Sexual Abuse of Girls

- Absence of Child centred School Environments: Schools often reflect broader gender inequalities. Teacher-learner interactions, curricula, and management practices perpetuate stereotypes that socialize girls into submissive roles, limiting participation and achievement.
- Inadequate Life Skills Training: Many girls lack access to consistent life skills education, which could strengthen self-esteem, decision-making, and assertiveness.

5.3.2. Links between Secondary Education and Maternal Health Utilization in Uganda

A growing body of research identifies a positive relation between maternal education and utilization of maternal health care services. However, in the Ugandan context, much of the existing literature remains inconclusive as to whether this relationship is driven by education itself or by other related factors; economic growth and household incomes. According to the World Bank, Uganda has recorded a steady decline in maternal mortality ratio from 580 in 2000 to 343 in 2018 out of 100,000 births. (Amwonya, Kigosa, & Kizza, 2022a)

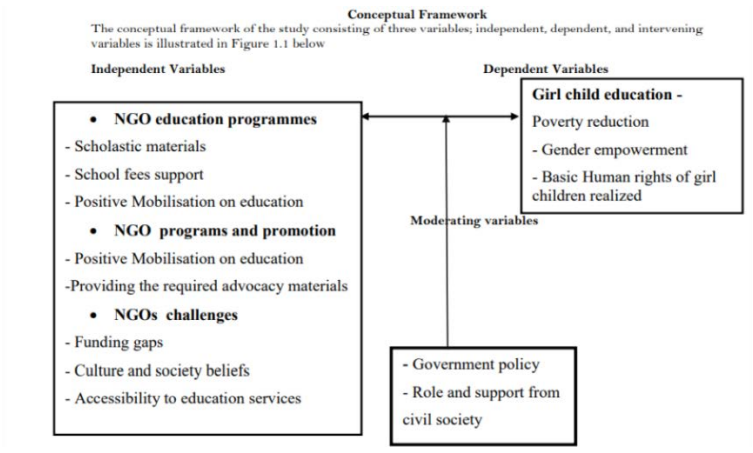
Evidence suggest that educated women are more likely to attend at least four antenatal care -taking the first visit within first trimester and seek services from skilled health professionals. Education also shapes maternal health-seeking behaviour in differentiated ways with post-higher education being more effective than primary education alone. However, when demographic and social factors are controlled, the adjusted odds ratio associated with education are notably lower that unadjusted estimates. This indicates that education, while important, does not operate in isolation. Beyond education, maternal health is also

influenced by demographic, socioeconomic and contextual factors. (Amwonya, Kigosa, & Kizza, 2022b)

5.3.3. Role of Government and Non-Governmental Organizations in Promoting Girls' Education in Uganda

Although governments are primarily responsible for providing education to vulnerable children, limited capacity and budgetary constraints, particularly in developing countries have created gaps that NGOs are increasingly filling. By supporting school fees, building classrooms, and providing learning resources, NGOs complement state efforts to achieve universal education goals.in Uganda, this role expanded following COVID19, with NGOs focusing on vulnerable girls facing persistently low enrolment, high dropout, and poor completion rates. Despite sustained support from NGOs, churches, and families, educational progression remains limited: about 60% of vulnerable girl's complete primary education, only 30% sit for ordinary level examinations, and just 15% reach advanced stage of education (RIWE Africa, 2025).

Figure 2. Action Aid Gender Program Implementation Model



Source: *Action Aid Gender Program Implementation Model, 2010, Modified by the Researcher, 2023*

5.4. South Africa

5.4.1. Relatively High Female Literacy but Persistent Health Inequities

Health outcomes differ markedly according to individuals' living arrangements, socioeconomic status, and level of urbanization. Evidence indicates that women who are black, younger and have lower levels of education face vulnerability to poor health outcomes, regardless of their household living arrangements (Biney et al., 2020) Through an in-depth analysis of five key themes:- The Past is Present - Apartheid's Continuing Legacy, Configurations of inequality, Intersectionalities/ multidimensionality of inequality, Unrealised repair: factors hampering repair, Resisting repair),the review highlights the complex challenges that continue to progress toward equity in the post-apartheid era. The finding carries important implication for educational policy and practice, demonstrating that deeply rooted racial and socioeconomic inequalities still shape access to quality education. Despite extensive policy reforms since the end of apartheid, significant inequalities persist, underscoring the gap between formal policy commitments and lived educational realities. (Muyambi & Ahiaku, 2025)

5.4.2. Role of Tertiary Education in South Africa:

Tertiary education is a key driver of social mobility, human development and economic progress in South Africa, particularly in the context of high unemployment, inequality and skill shortages. Maternal education influences child health through two main pathways: indirectly by improving women's engagement in work force and household income, and directly by improving maternal health literacy and health-realter decision-making. Higher levels of education, reflected in tertiary attainment, school life expectancy, and lower NEET (not in employment, education, or training) rates, are highly associated

with thr reduction of infant mortality rate and higher life expectancy at birth (Raghupathi & Raghupathi, 2020)

5.4.3. Intersectionality: race, class, and education in maternal health access

Intersectionality, a framework explaining how overlapping social catagories (e.g., race, class, gender) shape distinct experiences of advantage or discrimination (Crenshaw, 1989), is critical for understanding systemic inequalities in South African maternal health.

Race and Class: race emerged as the strongest predictor of healthcare access, with respondents from marginalized racial groups more likely to report improvements since199.among the 2773 female household rspondant, 32%indicated that access to healthcare had improved in the four years following the first democratic election. In contrast, actual access to healthcare was primarily shaped by socioeconomic status: women from low and middle income groups were significantly less likely to obtain care when ill, highlighting a persistent gap between perceived progress and lived access (Lalloo, Myburgh, Smith, & Solanki, 2004).

Geography: Women residing within a one-hour walking distance of health facility in the health and social services (HSS) catchment area exhibited substantially higher per capita use of maternal services, approximately twice the utilization rates of who are living one to two hours away, and nearly three times those of women residing more than two hours from a facility ((Ihantamalala et al., 2025).

6. CHALLENGES AND BARRIERS

6.1. Cultural and Gender Norms & Early Marriage.

- **Uganda** has one of the highest burdens of child marriage, with an estimated five million girls entering marriage before the age of 18,including about 1,3 million who entered before turning 15.Although the practice has decreased over the past 25 years, change has been gradual: the proportion of women aged20-24 who were married before age18 fell from 45%in 1991 to 3%in 2016(UNFPA & UNICEF, 2021 a).Despite these gains, the pace of decline remains insufficient to achieve sustainable Development Goal(SDG)5, which aims to eradicate child marriage by 2030.projections suggest that if current trends continue, nearly 29% of girls in Uganda will still be married during childhood by 2030.even under a more optimistic scenario, where recent progress accelerates substantially, child marriage would persist, affecting and estimated 18%of girls by 2030 and declining to only about 85by 2050. (UNFPA & UNICEF, 2021b)

- **Ghana.** Ghana continues to face a significant burden of child marriage, with an estimated two million girls entered marriage before turning 18, including approximately 600,000 who entered marriage before turning 15. Although the Ghana's rate of child marriage, affecting 19% of young women married before age 18, is the lowest in west and central Africa compared to other countries, where the regional average is 39%, the practice is still widespread. Child marriage has declined steadily over the past three decades, falling from 34%in 1993.Nevertheless, current progress is insufficient to meet the Sustainable Development Goal of eliminating child marriage by 2030.projections indicate that with accelerated efforts, the prevalence could decrease to 12% by 2030 and further decline to around 5% by 2050(UNFPA & UNICEF, 2021 c)

- **Morocco**. In 2011, early marriage affected a considerable proportion of women. nearly one in five women aged 20-49(18.7%) had been married before the age of 18şand 2.6% of women aged 15-49 entered marriage before the age of 15, highlighting ongoing concerns regarding child marriage. (UNICEF MENA & ICRW, 2017)

- **South Africa**. Child marriage remains widespread in east and southern Africa, with a prevalence of 36%, above the world average and about 10%of the girls married before the age of 15. however, prevalence varies considerably across countries, ranging from as high as 52% in South Sudan to as low as 6% in south Africa (UNFPA East and Southern Africa Regional Office, 2017)

6.2. Poverty and Access to Education

The Structural Impact of Poverty across Africa

Poverty reduction, and ultimately its eradication, has long been a central concern for both scholars and policymakers, particularly in developing world, where large segments of the people still fall under the poverty line. World Bank estimates indicate that approximately 60%of the global population survives on less than US2$ per day, underscoring the scale and persistence of poverty worldwide. (Akanbi, 2015)

Across Sub Saharan Africa, a lack of financial resources within household continues to hinder access to education. Having School fees as a major barrier with54% of adults in Sub-Saharan Africa are worried about education costs and 29 % citing them as their primary financial concern, constraints that can negatively affect maternal health later in life. (World Bank, 2023)

Cross-Country Trends and Disparities

Ghana: The country's financial resource commitment to the education sector exceeds the global average and is well

beyond the UNESCO target of 6% of GD (Akanbang, Aneleru, & Aziabah, 2023 a). Despite global efforts to expand access to education, many girls continue to be excluded from schooling due to persistent barriers such as poverty, gender inequality, and long distance to schools. Education attainment remains to be identified by both wealth and location: girls aged 20-24from the poorest rural households complete, on average, only about four years of schooling, compared to approximately 13 years among girls from urban families. Gender disparities also become more pronounced at higher levels of education. Despite the progress made in reducing gender gap at primary education, disparities in school completion persist and widen at the secondary and high school levels, even among the wealthiest family ('Education | UNICEF Ghana', n.d.).

Girls in Ghana continue to face high dropout rates and low enrolment at the post-primary level. only41% of children enrolled at Junior High School level were in school, with girls disproportionately represented among those who were out of school. This pattern becomes even more pronounced during the transition to secondary education: while girls constitute a majority at primary school (67,6%), their representation lowers sharply at secondary level, falling to just 6.0% (Akanbang, Aneleru, & Aziabah, 2023 b)

Uganda: Policy Limitations and Economic Constraints.

The proportion of people aged 10 years and older who are literate rose 69% in 2006 to 76.1% in 2020. The mean years of schooling increased from 3.9 years in 2000 to 6.2 years by 2022 (59 per cent growth). The total primary school enrolment has grown from 2.5 million pupils in 1996 to 10.8 million in 2019 while secondary enrolment increased from 814,087 in 2006 to 2 million learners by 2019. (UNICEF Uganda, 2024 a) UPE (universal primary education) contributed to narrowing gender

disparities and promoting gender equality by expanding girls 'access to primary education, while also reducing dropouts linked to financial barriers. It particularly improved access for poor and marginalized children, with the largest gains among girls aged 6 to 8 years. The increase in access notwithstanding, the UPE policy in Uganda as well as in other SSA countries has been criticized for improving access to primary school at the expense of deteriorating school quality (Amwonya, Kigosa, & Kizza, 2022a) However, despite the progress made, Uganda's education sector still faces challenges of access, equity, and quality, which are mainly attributed to high population growth, high poverty rates and inadequate funding (UNICEF Uganda, 2024 b)

6.3. Policy Gaps and Intersectoral Collaboration

- **South Africa: as** conceptualized by the World Health Organization, many countries have implemented the health-promoting school model to better integrate health initiative within the education system. In south Africa, this concept was introduced in 1994 as part of broader efforts to integrate health promotion into school environment. Central to the process of becoming a health-promoting school is the systematic monitoring and evaluation of ongoing changes and developments to ensure that health initiatives are effectively implemented and sustained. (Amwonya, Kigosa, & Kizza, 2022b)

- **Morocco**: Although the reform doesn't show how education and health sectors should work together, the education reform vision for 2019-2030 has brought real improvement on how teacher teach and school functions. And as a result, the maternal health literacy is still not taught as is must be (Ministère de l'Éducation Nationale, 2021; World Bank, 2021).

- **Ghana**: In Ghana schools don't teach reproductive health, which means that students are not getting the healthcare services that they must because of unawareness, despite it being

offered by the Ghana's national health insurance scheme, which resulted from the weak connection between the health care program and education. At all it fails to connect policy and practice (Agyei, Kaura, & Bell, 2025)

6.4. Education Quality and Maternal Health

Health is particularly important because it shapes individuals' capacity to accumulate others forms of human capital, including education. Children's health is a strong predictor of long-term socioeconomic outcomes later in life, shaping educational achievement, economic productivity, and overall well-being (Ohonba, Ngepah, & Simo-Kengne, 2018 a)

Maternal education is closely linked to greater use of maternal healthcare services, which in turn contributes to improved child survival outcomes (Okyere et al., 2025).The evidence shows that manal education benefits not only women but is also crucial for child survival and well-being. It influences child health through two main pathways: indirectly increasing women's labour force participation and household income, which improves access to healthcare; and directly, by enhancing maternal health literacy and informed decision-making related to nutrition, disease prevention, and timely healthcare use(Ohonba, Ngepah, & Simo-Kengne, 2018b).

7. INNOVATIONS AND BEST PRACTICES

7.1. Conditional Cash Transfers and School Health Programs

Ghana: Livelihood Empowerment against Poverty (LEAP) Program

Launched in 2008, The Livelihood Empowerment Against Poverty (LEAP) programme serves as Ghana's principal cash transfer scheme under the National Social Protection

Strategy and implemented by the Ministry of gender, children and social Protection (UNICEF Ghana, 2022 a)

Two impacts of The Livelihood Empowerment against Poverty (LEAP) programme

- The first was conducted between 2010 and 2016 in eight regions across Ghana. A key finding from this evaluation in 2012 was that LEAP payments were of low value (eroded by inflation) and not made in a predictable, regular manner (UNICEF Ghana, 2022 b)

- second evaluation was conducted to evaluate impacts of LEAP 1000, which at the time was a pilot to extend LEAP benefits to households with infants and pregnant women (UNICEF Ghana, 2022c)

South Africa: The Integrated School Health Policy (ISHP)

- School health services consisting of health education, health screening and selected on-site health services designed to support children's health throughout their schooling, from the entry into school through t their final year in Grade 12(Department of Health & Department of Basic Education, 2012).

- Community participation refers to the processes and activities through which members of a population are given a voice, empowered to take part in decision-making, and enabled to work collaboratively with other structures in addressing health promotion issues (Rasesemola, Matshoge, & Ramukumba, 2019)

7.2. Comprehensive Sexuality Education (CSE)

Comprehensive Sexuality Education (CSE) is a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of human

sexuality. Its Strategic Plan, which puts adolescents and youth at the front and centre. Too many young people receive confusing and conflicting information about relationships and sex as they make the transition from childhood to adulthood. This has led to an increasing demand from young people for reliable information, which prepares them for a safe, productive and fulfilling life. CSE is generally offered formally (in-school) and informally (out-of-school). (UNFPA Sub-Regional Office for the Caribbean, 2024). Which is designed to the learner's age and development. Younger students learn basic concepts like family and respect, while older students address more advanced topics such as consent, gender-based violence, HIV, and pregnancy. When effectively taught and supported by health services, CSE empowers youth to make informed choices, helping them navigate risks like unintended pregnancy, HIV, and violence. It also protects children by teaching them about their bodies and safety. Conversely, without quality, age-appropriate education, young people are more vulnerable to exploitation, harmful behaviors, and misinformation. (UNESCO, 2024 a)

Impact of CSE according to (UNESCO, 2024 b)

- Enhances young people’s understanding, attitudes, and practices concerning sexual and reproductive health
- delayed sexual initiation, increased use of condoms and contraception, better understanding of healthy relationships, and reduced risky and unprotected sexual behaviour
- Abstinence-only programmes have shown little effectiveness in postponing sexual initiation or lowering sexual risk, underscoring the importance of comprehensive and inclusive sexuality education

- CSE programmes that address gender norms and power relations are up to five times more effective in preventing unintended pregnancies and sexually transmitted infections.
- The impact of CSE is strongest when school-based education is reinforced by parental involvement, trained educators, and access to youth-friendly health services.

7.3. Community Engagement and Adult Literacy

Community engagement refers to a participatory process that brings together institutions and groups connected by place, common interests shared circumstance to address issues influencing their well-being. When carried out effectively, it fosters trust, deepens understanding of community needs, strengthens local capacity and empowerment, and facilitates the identification of partners and resources. (McNeish, Albizu-Jacob, & Memmoli, 2022). From 2018 to 2021, adult literacy rates differed markedly across Africa, with Seychelles, reporting literacy levels of 96% and South Africa, reporting literacy levels of 95, showing a high proportion of literate adults. On the other hand, lowest literacy rate has been witnessed in chad at the same period. (Intelpoint, 2025) Adult literacy refers to the ability of adults to read, write, and understand information effectively plays a pivotal role in enabling individuals to engage with written content that is integral to daily activities in our modern, text-driven society. Possessing adequate literacy skills allows adults to manage their health, engage with community and government, participate in the workforce, and support their children's education (Project New Yorker, 2024)

Key Features and Impact of literacy

o Improved Personal Wellbeing: 78% of literate individual's report being satisfied with their lives, compared to

only 50% among those with low or no literacy, highlighting the link between literacy, confidence, and quality of life (YMCA of Simcoe/Muskoka, 2022 a)

- Increased Community Involvement: Literacy levels shape individuals' confidence and engagement in social and community life. Limited literacy often reduces social participation, as individuals may feel less confident or excluded (YMCA of Simcoe/Muskoka, 2022 b)

- Culturally Tailored Delivery: Adapting content to local languages and contexts significantly increases participant confidence, engagement, and knowledge retention (UNESCO, 2023 a).

- Literacy strongly affects employment and income: Low literacy increases unemployment and workplace risks, while improved literacy raises skills, wages, and job satisfaction. Each dollar invested in adult literacy returns $7.41 to society, demonstrating its economic value. (YMCA of Simcoe/Muskoka, 2022 c)

8. POLICY RECOMMENDATIONS

Education is recognized as a basic human right essential for socioeconomic status, shaping livelihood and, critically, health outcomes. Its central role is reflected in sustainable Development Goal (SDG), which aims to ensure inclusive, equitable and high-quality education and to promote lifelong learning opportunities for all. However, in many developing countries, life expectancy remains low due insufficient investment in human capital, with substantial number of children continuing to face limited access to essential health services and education (Kouladoum, 2023a). Africa reflects rich diversity and underscores the importance of tailoring solutions to the local

context. African education leaders are invited to use this evidence-based framework to inform education policy decisions, invest in untapped learning potential and implement context appropriate school improvements. African nations can create more equitable, efficient and resilient education systems that serve all learners by focusing on these three actions (Kouladoum, 2023b)

1. Inform: Use local education data to make informed decisions that address country-specific challenges.
    - Prioritize equity- Interventions to address gender, disability and rural inequities can improve outcomes for everyone.
    - Maximize instruction time- Set clear expectations for instruction hours, manage absences and reduce reliance on double-shift systems.
    - Improve pedagogical quality- Strengthen teacher training pathways and offer ongoing pedagogical support.
2. Invest: Direct education investments on areas in need.
    - Focus on early learning, support vulnerable students, and capitalize on digital technology
3. Implement: Design implementation plans that respond to local contexts and embed implementation research for continuous learning improvements.
    - Tailor implementation. Incorporate an equity-focus and adjust resourcing levels to account for diverse local contexts.
    - Embed data and research. Include data during planning and implementation for learning, continuous improvement and timely course corrections.

8.1. Investing in Girls' Secondary and Tertiary Education: Policy Recommendations for Africa

The African union continues to prioritize the education of most vulnerable and marginalized children, particularly girls. Despite advancements in some areas, sub–Saharan Africa is still home to roughly 30% of all out of school children worldwide. Among this population,32.6 million are girls aged for primary and lower secondary education who are not enrolled and crucially,9,.3 million are predicted to remain entirely excluded from the school system. Advances in educational access for girls and other marginalized groups have been constrained by persistent sociocultural, economic, and political challenged, such as poverty, gender inequality, humanitarian crises, and forced displacement. (UNESCO IICBA, 2024 a)

Call to action and key recommendations according to (UNESCO IICBA, 2024 b)

EMPHASIS: legal and policy measures to ensure all children, especially girls and can reintegrate and continue their education

1. Acknowledge the multiple, intersecting barriers experienced by adolescent girls, including those from indigenous communities, residing in rural areas, having disabilities, or who are pregnant or young mothers, and ensure their participation in formal education, access to informal learning opportunities such as STEM and TVET programs, and benefit from diverse alternative learning pathways.
2. REINEFORCE: implementation of commitments from the 2022 transforming education summit and AU gender experts meeting on the Dakar declaration to secure primary education, mitigate COVID-19 related

learning loss, and integrate holistic approaches into curricula and policies

3. PROMOTE: gender-responsive financing policies to ensure equitable interventions, promote and protect girls' education, generation of gender disaggregated data in education management information systems and women's leadership in and out of schools, engaging female principals, teachers, role models, and networks, helps empower girls and women and narrow gender disparities, in male-dominated fields
4. REDUCE: the digital literacy gap by integrating into foundational learning and recovery programs for both students and teacher and encourage AU Member States to implement the #AfricaEducatesHer campaign at national level.

8.2. Targeted Interventions for Marginalized Groups: Culturally Sensitive Policies to Address Intersectional Disparities

Sensitive practices like culture and religion are harder and needs a good approach to address and it should be seen in a holistic way. According to (UN Network, 2022) these are their recommendations towards intersectional disparities.

1. Application of an intersectionality perspective involves recognizing the overlapping

Dimensions of discrimination and minority exclusion, fostering solidarity and empathy to support inclusive and meaningful participation, advancing a holistic and structural understanding of inequality, and adopting a survivor-centred approach in both policy and practice.

2. Participation of affected individuals and communities: Create spaces in which the voices of individuals affected by intersectional discrimination can be heard and amplified and to increase the participation of individuals affected by intersectional discrimination, oppression and marginalization
3. Design and implement context-specific, responsive policies and programmes in priority strategic areas: Collects should focus on collecting, analysing, and publishing disaggregated data to identify those left behind; strengthening the availability, accessibility, acceptability, and quality of basic infrastructures perspective across all stages of programme and project design and implementation.
4. Strengthen legal and institutional systems: advance reforms for inequalities and discriminatory structures, while actively confronting and changing the social norms that perpetuate them.
5. Collaboration and engagement: Actively pursue cross-UN system collaboration and work in partnership with universities, research institutions, civil society groups and workers' and employers 'or employers 'with expertise in intersectionality and the advancement of equality, diversity, and inclusion.
6. Awareness raising, advocacy and education: promote understanding of racism, sexism, homophobia, and other forms of intolerance, while addressing harmful stereotypes and discriminatory cultural norms and practices.

8.3. Empower Women through Legal and Social Reforms: Promoting Gender Equality in Education and Healthcare

Generally, education system of Africa focuses on boys caused by the culture norms and colonial practice. Education for girls was often restricted for domestic roles. Despite some progress made but so many needs to be done in the education system (‘Bridging The Gender Gap In African Education: Key Strategies For Lasting Change - African Leadership Magazine’, n.d.)Change cultures norms and stereotypes: create awareness by having by having programs such as the campaign for female education (CAMFED)

1. Provide gender - sensitive school facilities- by investing in appropriate infrastructure, particularly safe sanitation facilities and supportive learning environments that enables girls to participate fully and remain engaged in their education.
2. Financial support and scholarships play a critical role in expanding girls 'access to education. UNESCO reports that. Despite significant economic barriers. around30% of girls from low-income in sub-Saharan Africa have been able to attend school.
3. Expand the presence of female role models in education: greater representation positively influences girls' aspiration, confidence, and educational ambitions
4. Use technology to widen access: technology opens new pathways for making education more reachable and inclusive for learners.
5. Advocate for supportive government policies: long term progress requires government-led reforms, as shown by Rwanda's advances in girls’ eduction.

6. Build community awareness and engagement: community-based advocacy is crucial for sustainable change. Awareness campaigns and programs help address and dispel misconceptions

9. CASE STUDIES AND SUCCESS STORIES

Case Study 1: Ghana's LEAP 1000 – Conditional Cash Transfers Supporting Maternal and Child Health (UNICEF Ghana, 2022 d)

Program Overview is a cash transfer programme and a flagship social protection initiative under Ghana's National Social Protection Strategy. The program is built around three core components: 1) registering pregnant women in a national pregnancy registry, (2) providing regular informative text messages, and (3) offering access to an interactive help desk for guidance and support.

Impact: The LEAP1000 programme was associated with meaningful improvements in birth outcomes.it reduced the prevalence of low birthweight by 3.5 percent overall and by 4.1 percent during the dry season.in addition, average birthweight increased by 94g overall, with gains og 109 in dry season and 79in rainy season. (Quinones et al., 2023).

Case Study 2: South Africa's MomConnect – Mobile Health for Maternal Literacy

Program Overview: it is a maternal Health initiative launched by South Africa's National Department of Health, aimed at strengthening maternal health outcomes and improving the quality and coverage of antenatal services national wide level (Barron et al., 2018)

Impact: within 3 years, MomConnect initiative achieved coverage across 95% of public health facilities and engaged 63%

of women their first antenatal visit, while also driving several innovative developments in maternal health delivery service (Barron et al., 2018).

10. THE FUTURE OF WOMEN'S EDUCATION AND MATERNAL HEALTH IN AFRICA

10.1. The Future of Women's Education and Maternal Health in Africa

As emphasized in the global development agenda, particularly Sustainable Development Goal (SDG) 3 (Good Health and Well-being) and SDG 4 (Quality Education), universal access to quality health care and education is a shared global commitment. Yet, Africa has not reached these targets. Maternal mortality remains far above the SDG benchmark of fewer than 70 deaths per 100,000 live births, indicating the need for sustained and intensified efforts **(WHO et al., 2025)**. At the same time, deep educational inequalities persist, with girls from the poorest households remaining the least likely to complete secondary education (UNESCO, 2023 b).

Strategies for Future Progress according to (Lule et al., 2005)

Focusing on the identification and prioritization of vulnerable populations, strengthening accountability among service provider, and establishing fair and inclusive financing arrangements.

1. increase Community engagement
2. Promoting Cross-Sectoral collaboration: integrate women's education with infrastructure, nutrition initiatives.
3. Using technology to reach women

10.2. Digital Inclusion and eLearning for Women's Health Literacy in Africa

Digital literacy is a catalytic driver of women's empowerment and an essential enabler of many Sustainable development goals (SDGs). Empowering women with digital literacy open up numerous opportunities, contributing significantly to their economic inclusion and overall advancement. Despite persistent gender gaps in technology access and digital skills, the urgency to engage all stakeholders, policymakers, educators, community leaders, and private sector organizations is clear. Healthcare access and outcomes (SDG 3) are also positively impacted by using digital literacy. Women can leverage telehealth services, access vital health information, and make informed decisions about their well-being and that of their families (Digital Literacy and Women's Empowerment: Bridging the Gender Gap in Technology for Achieving Sustainable Development Goals (SDGs) (Aslam Syed Nisar Mehdi Abidi & Safdar Abbas Rizvi, 2024)

Impact on Sustainable Development Goals

SDG 1 (No Poverty): Digital literacy enhances women's economic opportunities by enabling access to online labour markets and entrepreneurial platforms

SDG 4 (Quality Education): Digital literacy empowers women to access a wide range of display of educational resources and engage in online learning

SDG 5 (Gender Equality): Bridging the digital gender gap is necessary for achieving gender equality. Digital literacy empowers women to participate completely in financial, social, and political existence

SDG 8 (Decent Work and Profitable Growth): Digital literacy equips women with the abilities needed for modern

workplaces, fostering economic growth and reducing gender disparities in employment.

SDG 9 (Assiduity, Innovation, and Structure): Comprehensive digital programs and infrastructure advancements are crucial for ensuring that women benefit from technological

Case study

Digital Literacy Programme (Kenya): By integrating digital literacy into the education system, this program aims to equip students, especially girls, with essential digital skills from an early age. The program has resulted in increased enrolment rates for girls in technology related fields

(Aslam Syed Nisar Mehdi Abidi & Safdar Abbas Rizvi, 2024)

10.3. Integrating Education into Maternal Health Emergency Preparedness and Health System Strengthening

Effective coordination and response during emergencies depend on having systems that are supported by education and preparedness. Education has a critical role in maternal health emergency preparedness, as it provides individuals and communities with the knowledge required to prevent complications and to respond effectively when the crises happen. By teaching early warning signs, preparedness measures, and timely response strategies, education strengthens collective readiness and reduces delays in seeking care during maternal emergencies. (Gooding, Bertone, Loffreda, & Witter, 2022a)

1. Education as an Early Warning System to develop Maternal Health Toolkit for Emergency (Craemer et al., 2024)
2. Ensuring Continuity of Health Education during Crises: Education in emergencies ensures that children and youth continue learning even when crises disrupt regular schooling. Using digital media (radio, TV, offline apps) to deliver maternal health education when schools and clinics are disrupted (Newsome, Newsome, & Miller, 2023)
3. Community Health Workers as Bridge Educators: Train community health workers (CHWs) to deliver maternal health and emergency preparedness education in schools and youth groups (Yao et al., 2023)
4. Data Integration for Predictive Response: Link education and health data systems to identify emerging maternal risks (Dixon et al., 2024)
5. Support for Economic Recovery and Development: Create dedicated, joint budget lines for cross-sectoral emergency preparedness within health and education ministries (Gooding, Bertone, Loffreda, & Witter, 2022b)

11. CONCLUSION

Women's education has been shown as an essential driver to health and global social development in Africa, as shown with the research collected from Ghana, Morocco, Uganda, and South Africa. Women who have a higher educational attainment, especially at the secondary and higher education levels, consistently have better maternal health behaviour, such as

getting recommended antenatal care on time and using a skilled practitioner during childbirth, and more knowledge-based reproductive decisions. While primary education, in many ways, serves as building blocks of education for women, the ultimate education level which yields the highest cumulative gain in maternal health outcomes is achieved through secondary and/or higher (post-secondary) education. Countries like South Africa have a very high female literacy rate, with disparities in access to maternal health care, which suggests the need for additional health-based educational engagement. Notwithstanding the persistent barriers of economic deprivation, gender-based inequities, and weak cross sectoral collaboration among government bodies, the implementation of integrated solutions holds significant promise. These measures are vital for creatin sustainable, equitable access to maternal health care and for making headway on sustainable Development goal 3, which centers on health and well-being throughout life, alongside sustainable Development Goal, which is dedicated to ensuring inclusive, equitable quality education and lifelong learning for all segments of society.

REFERENCES

World Bank. (2025, April 29a). A new community health model in Morocco puts mothers and children in rural areas at the center. https://www.worldbank.org/en/news/feature/2025/04/29/a-new-community-health-model-in-morocco-puts-mothers-and-children-in-rural-areas-at-the-center

World Bank. (2025, April 29b). A new community health model in Morocco puts mothers and children in rural areas at the center. https://www.worldbank.org/en/news/feature/2025/04/29/a-new-community-health-model-in-morocco-puts-mothers-and-children-in-rural-areas-at-the-center

Agyei, F. B., Kaura, D. K., & Bell, J. D. (2025). Perspectives of parents and adolescents on sexual and reproductive health information communication in Ghana. Journal of Public Health in Africa, 16(1), 845. https://doi.org/10.4102/jphia.v16i1.845

Akanbang, B. A. A., Aneleru, C., & Aziabah, M. A. (2023). Incentives and girl child education in Ghana: An examination of CAMFED's support scheme on enrolment, retention and progression in Garu-Tempane District. SAGE Open, 13(2), 1-12. https://doi.org/10.1177/21582440231179780

Akanbi, O. A. (2015). Structural and institutional determinants of poverty in Sub-Saharan African countries. Journal of Human Development and Capabilities, 16(1), 122-141. https://doi.org/10.1080/19452829.2014.985197

Ameyaw, E. K., Tanle, A., Kissah-Korsah, K., & Amo-Adjei, J. (2016). Women's Health Decision-Making Autonomy and Skilled Birth Attendance in Ghana. International

Journal of Reproductive Medicine, 2016, 1–9. https://doi.org/10.1155/2016/6569514

Amwonya, D., Kigosa, N., & Kizza, J. (2022). Female education and maternal health care utilization: evidence from Uganda. Reproductive Health, 19(1), 142. https://doi.org/10.1186/s12978-022-01432-8

Amwonya, D., Kigosa, N., & Kizza, J. (2022a). Female education and maternal health care utilization: evidence from Uganda. Reproductive Health, 19(1), 142. https://doi.org/10.1186/s12978-022-01432-8

Amwonya, D., Kigosa, N., & Kizza, J. (2022b). Female education and maternal health care utilization: evidence from Uganda. Reproductive Health, 19(1), 142. https://doi.org/10.1186/s12978-022-01432-8

Antenatal care - UNICEF DATA. (n.d.). Retrieved March 1, 2026, from https://data.unicef.org/topic/maternal-health/antenatal-care/?utm_source=chatgpt.com

Arthur, E. (2012). Wealth and antenatal care use: implications for maternal health care utilisation in Ghana. Health Economics Review, 2(1), 14. https://doi.org/10.1186/2191-1991-2-14

Aslam Syed Nisar Mehdi Abidi, A., & Safdar Abbas Rizvi, S. (2024). Digital Literacy and Women's Empowerment: Bridging the Gender Gap in Technology for Achieving Sustainable Development Goals (SDGs). Pakistan Journal of Gender Studies, 93(2). Online.

UNESCO. (2017). *Education transforms lives*. https://doi.org/10.54675/ATYY6762

Ayawine, A., & Atinga, R. A. (2023). "We know it is not good, but we are constrained": A study on quality of emergency obstetric and newborn care in Northern Ghana. Heliyon,

9(4), e15250. https://doi.org/10.1016/j.heliyon.2023.e15250

Barron, P., Peter, J., Lefevre, A. E., Sebidi, J., Bekker, M., Allen, R., Parsons, A. N., Benjamin, P., & Pillay, Y. (2018). Mobile health messaging service and helpdesk for South African mothers (MomConnect): history, successes and challenges. BMJ Global Health, 3, e000559. https://doi.org/10.1136/bmjgh-2017-000559

Benach, J., Friel, S., Houweling, T., Labonte, R., Muntaner, C., Schrecker, T., & Simpson, S. (2010). A Conceptual Framework for Action on the Social Determinants of Health. World Health Organization.

Biney, E., Amoateng, A. Y., & Ewemooje, O. S. (2020). Inequalities in morbidity in South Africa: A family perspective. SSM - Population Health, 12, 100653. https://doi.org/10.1016/j.ssmph.2020.100653

Bridging The Gender Gap In African Education: Key Strategies For Lasting Change - African Leadership Magazine. (n.d.). Retrieved December 28, 2025, from https://www.africanleadershipmagazine.co.uk/bridging-the-gender-gap-in-african-education-key-strategies-for-lasting-change/

Committee on Educating Health Professionals to Address the Social Determinants of Health, Board on Global Health, Institute of Medicine, National Academies of Sciences, Engineering, and Medicine. (2016). *A framework for educating health professionals to address the social determinants of health*. National Academies Press (US). https://pubmed.ncbi.nlm.nih.gov/27854400/

Craemer, K. A., Sayah, L., Glass, E., Scott, S., Wachter, D. R., Bergo, C. J., & Geller, S. E. (2024). Development of a

Maternal Health Toolkit for Emergency Department Education in Illinois. Women's Health Issues, 34(6), 553–561. https://doi.org/10.1016/j.whi.2024.08.001

Crenshaw, K. (1989). Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. University of Chicago Legal Forum, 1989(1), 139-167. https://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

Department of Health & Department of Basic Education, South Africa. (2012). Integrated School Health Policy. Republic of South Africa. https://www.health.gov.za/policies/

Dimbuene, Z. T., Amo-Adjei, J., Amugsi, D., Mumah, J., Izugbara, C. O., & Beguy, D. (2018). Women's education and utilization of maternal health services in Africa: A multi-country and socioeconomic status analysis. Journal of Biosocial Science, 50(6), 800–822. https://doi.org/10.1017/S0021932017000505

Dixon, B. E., Inderstrodt, J., Riggins, D. P., Price, J. P., Schlyer, T. K. L., & Grannis, S. J. (2024). Linking Maternal and Child Health Data to Enhance Public Health Surveillance and Implement Sustainable Interventions. Studies in Health Technology and Informatics, 316, 1889–1890. https://doi.org/10.3233/SHTI240801

Duodu, P. A., Bayuo, J., Mensah, J. A., Aduse-Poku, L., Arthur-Holmes, F., Dzomeku, V. M., Dey, N. E. Y., Agbadi, P., & Nutor, J. J. (2022). Trends in antenatal care visits and associated factors in Ghana from 2006 to 2018. BMC Pregnancy and Childbirth, 22(1), 59. https://doi.org/10.1186/S12884-022-04404-9

Dzakpasu, S., Soremekun, S., Manu, A., ten Asbroek, G., Tawiah, C., Hurt, L., Fenty, J., Owusu-Agyei, S., Hill, Z.,

Campbell, O. M. R., & Kirkwood, B. R. (2012). Impact of Free Delivery Care on Health Facility Delivery and Insurance Coverage in Ghana's Brong Ahafo Region. PLoS ONE, 7(11), e49430. https://doi.org/10.1371/JOURNAL.PONE.0049430

Educating & Skilling Africa | International Institute for Capacity Building in Africa. (n.d.). Retrieved December 28, 2025, from https://www.iicba.unesco.org/en/magazine

Edouihri, A. (2019). Fatima Agnaou. 2004. Gender, Literacy, and Empowerment in Morocco. Gender Studies, 18(1), 179–181. https://doi.org/10.2478/GENST-2020-0013

Ennaji, M. (2018). Morocco's Experience with Gender Gap Reduction in Education. Gender and Women's Studies, 2(1), 5. https://doi.org/10.31532/gendwomensstud.2.1.005

Evidence Overview of LEAP and LEAP 1000 impacts. (2010).

Ganle, J. K., Parker, M., Fitzpatrick, R., & Otupiri, E. (2014). Inequities in accessibility to and utilisation of maternal health services in Ghana after user-fee exemption: a descriptive study. International Journal for Equity in Health, 13(1), 89. https://doi.org/10.1186/S12939-014-0089-Z

Gesese, S. S., Mersha, E. A., & Balcha, W. F. (2023). Knowledge of danger signs of pregnancy and health-seeking action among pregnant women: a health facility-based cross-sectional study. Annals of Medicine and Surgery, 85(5), 1722. https://doi.org/10.1097/MS9.0000000000000610

Gething, P. W., Johnson, F. A., Frempong-Ainguah, F., Nyarko, P., Baschieri, A., Aboagye, P., Falkingham, J., Matthews, Z., & Atkinson, P. M. (2012). Geographical access to care at birth in Ghana: a barrier to safe motherhood. BMC

Public Health, 12(1), 991. https://doi.org/10.1186/1471-2458-12-991

Ghana Demographic and Health Survey 2022 Key Indicators Report. (n.d.).

Ghana Health Service. (2022). 2021 annual report. Ghana Health Service, Ministry of Health. https://ghs.gov.gh/publications/

Ghana Statistical Service (GSS) & ICF. (2023). Ghana Demographic and Health Survey 2022: Summary report. GSS and ICF. https://statsghana.gov.gh/gdhs/page/fes%20materials.html

Girls Education Movement Clubs in Uganda (GEM clubs) - SDG 4 Knowledge Hub. (n.d.). Retrieved December 28, 2025, from https://www.unesco.org/sdg4education2030/en/knowledge-hub/girls-education-movement-clubs-uganda-gem-clubs

Gooding, K., Bertone, M. P., Loffreda, G., & Witter, S. (2022a). How can we strengthen partnership and coordination for health system emergency preparedness and response? Findings from a synthesis of experience across countries facing shocks. BMC Health Services Research, 22(1). https://doi.org/10.1186/S12913-022-08859-6

Gooding, K., Bertone, M. P., Loffreda, G., & Witter, S. (2022b). How can we strengthen partnership and coordination for health system emergency preparedness and response? Findings from a synthesis of experience across countries facing shocks. BMC Health Services Research, 22(1). https://doi.org/10.1186/S12913-022-08859-6

Health Organization, W. (2025). World report on social determinants of health equity: executive summary. https://doi.org/10.2471/B09387

Health workforce. (n.d.). Retrieved December 28, 2025, from https://www.who.int/health-topics/health-workforce#tab=tab_1

Idris, I. B., Hamis, A. A., Bukhori, A. B. M., Hoong, D. C. C., Yusop, H., Shaharuddin, M. A. A., Fauzi, N. A. F. A., & Kandayah, T. (2023). Women's autonomy in healthcare decision making: a systematic review. BMC Women's Health, 23(1), 643. https://doi.org/10.1186/S12905-023-02792-4

Ihantamalala, F. A., Randriamihaja, M., Miller, A. C., Rakotonanahary, R. J. L., Raza-Fanomezanjanahary, M., Kotchofa, J. A., Randriamanambintsoa, M., Ramarson, H., Razafinjato, B., Rasoanandrasana, V., Bonds, M., Finnegan, K. E., & Garchitorena, A. (2025). Persistence of geographic barriers to maternal care services following a health system strengthening initiative in rural Madagascar. BMC Pregnancy and Childbirth, 25(1), 997. https://doi.org/10.1186/s12884-025-08134-6

Intelpoint. (2025). Adult literacy rates of African countries. Intelpoint Insights. https://intelpoint.co/insights/adult-literacy-rates-of-african-countries/

Kassaw, A., Debie, A., & Geberu, D. M. (2020). Quality of Prenatal Care and Associated Factors among Pregnant Women at Public Health Facilities of Wogera District, Northwest Ethiopia. Journal of Pregnancy, 2020, 9592124. https://doi.org/10.1155/2020/9592124

Kipo-Sunyehzi, D. D., Ayanore, M. A., Dzidzonu, D. K., & Ayalsumayakubu, Y. (2019a). Ghana's Journey towards

Universal Health Coverage: The Role of the National Health Insurance Scheme. European Journal of Investigation in Health, Psychology and Education, 10(1), 94. https://doi.org/10.3390/ejihpe10010009

Kipo-Sunyehzi, D. D., Ayanore, M. A., Dzidzonu, D. K., & Ayalsumayakubu, Y. (2019b). Ghana's Journey towards Universal Health Coverage: The Role of the National Health Insurance Scheme. European Journal of Investigation in Health, Psychology and Education, 10(1), 94. https://doi.org/10.3390/ejihpe10010009

Kouladoum, J.-C. (2023a). Inclusive education and health performance in Sub Saharan Africa. Social Indicators Research, 165(3), 879-900. https://doi.org/10.1007/s11205-022-03046-w

Kouladoum, J.-C. (2023b). Inclusive education and health performance in Sub Saharan Africa. Social Indicators Research, 165(3), 879-900. https://doi.org/10.1007/s11205-022-03046-w

Lalloo, R., Myburgh, N. G., Smith, M. J., & Solanki, G. C. (2004). Access to health care in South Africa—The influence of race and class. South African Medical Journal, 94(8), 639-642. PMID: 15352587.

Lule, E., Ramana, G. N. V., Ooman, N., Epp, J., Huntington, D., & Rosen, J. E. (2005). Achieving the Millennium Development Goal of improving maternal health: Determinants, interventions and challenges (HNP Discussion Paper). World Bank. Retrieved March 1, 2026, from http://hdl.handle.net/10986/13744

McNeish, R., Albizu-Jacob, A., & Memmoli, C. (2022). Engaging the community to effectively plan and implement community-based mental health programs.

The Journal of Behavioral Health Services & Research, 49(2), 149-161. https://doi.org/10.1007/s11414-021-09767-z

Ministère de l'Éducation Nationale, du Préscolaire et des Sports. (2021). Mise en œuvre de la loi-cadre 51-17 et du nouveau modèle de développement. Royaume du Maroc. https://www.men.gov.ma/Pages/default.aspx

Ministry of Education, Ghana. (2023). Education sector performance report 2023. Government of Ghana, Ministry of Education. https://moe.gov.gh/2023/page/6/

Ministry of Health, Ghana. (2014). Holistic assessment of the health sector programme of work 2013. Government of Ghana, Ministry of Health. https://ghdx.healthdata.org/record/ghana-ministry-health-holistic-assessment-health-sector-programme-work-2013

MomConnect – National Department of Health. (n.d.). Retrieved December 28, 2025, from https://www.health.gov.za/momconnect/

Morocco | World Bank Gender Data Portal. (n.d.). Retrieved December 28, 2025, from https://genderdata.worldbank.org/en/economies/morocco

Morocco World News. (2024, December 23). Morocco's illiteracy rate stands at 24.8% in 2024. Morocco World News. Retrieved March 1, 2026, from https://www.moroccoworldnews.com/2024/12/166863/moroccos-illiteracy-rate-stands-at-24-8-in-2024

Muyambi, G. C., & Ahiaku, P. K. A. (2025). Inequalities and education in South Africa: A scoping review. International Journal of Educational Research Open, 8, 100408. https://doi.org/10.1016/j.ijedro.2024.100408

NATIONAL DEPARTMENT OF HEALTH ANNUAL REPORT 2023/24 2 0 2 3 / 2 4 ANNUAL REPORT. (2023).

Newsome, D., Newsome, K. B., & Miller, S. A. (2023). Teaching, Learning, and Climate Change: Anticipated Impacts and Mitigation Strategies for Educators. Behavior and Social Issues, 32(2), 494–516. https://doi.org/10.1007/S42822-023-00129-2

Nordensvard, J. (2014a). Gender and education policy in Ghana: The impact of informal citizenship and informal labour markets on the formal education of girls. Women's Studies International Forum, 47(Part B), 278-286. https://doi.org/10.1016/j.wsif.2013.12.010

Nordensvard, J. (2014b). Gender and education policy in Ghana: The impact of informal citizenship and informal labour markets on the formal education of girls. Women's Studies International Forum, 47(Part B), 278-286. https://doi.org/10.1016/j.wsif.2013.12.010

Ohonba, A., Ngepah, N., & Simo-Kengne, B. (2018). Maternal education and child health outcomes in South Africa: A panel data analysis. Development Southern Africa, 36(1), 1-17. https://doi.org/10.1080/0376835X.2018.1456908

Okyere, J., Hey, D. Z., & Yaya, S. (2025). Influence of paternal education on maternal and child health outcomes in Sub-Saharan Africa: evidence from demographic and health surveys. Reproductive Health, 22(1). https://doi.org/10.1186/S12978-025-02086-Y

Osamor, P., & Grady, C. (2017). Factors associated with women's health care decision-making autonomy: Empirical evidence from Nigeria. Journal of Biosocial

Science, 50(1), 70. https://doi.org/10.1017/S0021932017000037

Ouabou, S., Achraouaou, H., Akhsay, R., & Outalb M'hand, A. (2025). Gender disparities and stereotypes in Moroccan schools: The role of cultural, religious, and political factors. Frontiers in Education, 10, 1538827. https://doi.org/10.3389/feduc.2025.1538827

Ouahid, H., Mansouri, A., Sebbani, M., Nouari, N., Khachay, F. E., Cherkaoui, M., Amine, M., & Adarmouch, L. (2023). Gender norms and access to sexual and reproductive health services among women in the Marrakech-Safi region of Morocco: a qualitative study. BMC Pregnancy and Childbirth, 23(1), 407. https://doi.org/10.1186/s12884-023-05724-0

(PDF) Achieving the millennium development goal of improving maternal health: determinants, interventions and challenges. (n.d.). Retrieved December 28, 2025, from https://www.researchgate.net/publication/228610623_Achieving_the_millennium_development_goal_of_improving_maternal_health_determinants_interventions_and_challenges

Project New Yorker. (2024, January 5). What is adult literacy and why is it important? Project New Yorker. https://www.projectnewyorker.org/post/what-is-adult-literacy-and-why-is-it-important

Quinones, S., Mendola, P., Tian, L., Lin, S., Novignon, J., Angeles, G., & Palermo, T. (2023). Ghana's Livelihood Empowerment Against Poverty (1000) Program Seasonally Impacts Birthweight: A Difference-in-Differences Analysis. International Journal of Public Health, 68, 1605336. https://doi.org/10.3389/IJPH.2023.1605336

Raghupathi, V., & Raghupathi, W. (2020). The influence of education on health: An empirical assessment of OECD countries for the period 1995–2015. Archives of Public Health, 78, 20. https://doi.org/10.1186/s13690-020-00402-5

Rasesemola, R. M., Matshoge, G. P., & Ramukumba, T. S. (2019). Compliance to the Integrated School Health Policy: Intersectoral and multisectoral collaboration. Curationis, 42(1), 1912. https://doi.org/10.4102/CURATIONIS.V42I1.1912

RIWE Africa. (2025). Education: Expanding access to knowledge and opportunity among pastoralist children and youth. RIWE Africa. Retrieved March 1, 2026, from https://riweafrica.org/education/

South Africa | World Bank Gender Data Portal. (n.d.). Retrieved December 28, 2025, from https://genderdata.worldbank.org/en/economies/south-africa

Terjesen, S. (2004). Amartya Sen's Development as Freedom.

Trends in maternal mortality estimates 2000 to 2023. (n.d.).

UGANDA BUREAU OF STATISTICS 2022 STATISTICAL ABSTRACT. (n.d.a). Retrieved December 28, 2025, from https://www.ubos.org.

UGANDA BUREAU OF STATISTICS 2022 STATISTICAL ABSTRACT. (n.d.b). Retrieved December 28, 2025, from https://www.ubos.org.

Uganda Bureau of Statistics. (2023). Girl Education Movement: School-based health program report. UBOS. https://www.ubos.org/publications/

UN Network on Racial Discrimination and Protection of Minorities. (2022). Guidance note on intersectionality, racial discrimination and protection of minorities. United Nations Office of the High Commissioner for Human Rights. https://www.ohchr.org/sites/default/files/documents/issues/minorities/30th-anniversary/GuidanceNote-Intersectionality-Racial-Discrimination-Protection-Minorities.pdf

World Health Organization. (2023). *Social determinants of health: Progress on the World report on social determinants of health equity*. World Health Organization

UNESCO. (2023). Bringing living heritage to the classroom in Asia-Pacific: A resource kit. United Nations Educational, Scientific and Cultural Organization. https://ich.unesco.org/en/clearinghouse-education

UNESCO. (2023). Cracking the code: Girls‘ and women’s education in science, technology, engineering and mathematics (STEM). UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000386644

UNESCO. (2024a). Comprehensive sexuality education: For healthy, informed and empowered learners. United Nations Educational, Scientific and Cultural Organization. https://www.unesco.org/en/health-education/cse

UNESCO. (2024b). Comprehensive sexuality education: For healthy, informed and empowered learners. United Nations Educational, Scientific and Cultural Organization. https://www.unesco.org/en/health-education/cse

UNESCO. (2025, December 15). Girls Education Movement Clubs in Uganda (GEM clubs). SDG 4 Knowledge Hub. Retrieved March 1, 2026, from

https://www.unesco.org/sdg4education2030/en/knowledge-hub/girls-education-movement-clubs-uganda-gem-clubs

UNICEF Ghana. (n.d.). Education. UNICEF Ghana. Retrieved March 1, 2026, from https://www.unicef.org/ghana/education

UNESCO Institute for Statistics. (2023a). Education indicators by country. UIS.Stat. Retrieved March 1, 2026, from http://data.uis.unesco.org/

UNESCO Institute for Statistics. (2023b). Education indicators by country. UIS.Stat. Retrieved March 1, 2026, from http://data.uis.unesco.org/

UNESCO International Institute for Capacity Building in Africa. (2024a). Educating & skilling Africa. UNESCO IICBA. https://www.iicba.unesco.org/en/educating-skilling-africa

UNESCO International Institute for Capacity Building in Africa. (2024b). Educating & skilling Africa. UNESCO IICBA. https://www.iicba.unesco.org/en/educating-skilling-africa

UNFPA. (2021). Emergency obstetric and newborn care. United Nations Population Fund. https://www.unfpa.org/emergency-obstetric-and-newborn-care

UNFPA East and Southern Africa Regional Office. (2017). Child marriage: A mapping of programmes and partners in twelve countries in East and Southern Africa. United Nations Population Fund. https://esaro.unfpa.org/en/publications/child-marriage-

mapping-programmes-and-partners-twelve-countries-east-and-southern

UNFPA Sub-Regional Office for the Caribbean. (2024). Comprehensive sexuality education (CSE) toolkit for out-of-school youth. United Nations Population Fund. https://caribbean.unfpa.org/en/publications/comprehensive-sexuality-education-cse-toolkit-out-school-youth

UNFPA & UNICEF. (2021a). UNFPA-UNICEF Global Programme to End Child Marriage: Country profile 2020 - Uganda. In Act now: Accelerating gender equality by eliminating child marriage in a pandemic. United Nations Population Fund and United Nations Children's Fund. https://www.unicef.org/protection/unfpa-unicef-global-programme-end-child-marriage

UNFPA & UNICEF. (2021b). UNFPA-UNICEF Global Programme to End Child Marriage: Country profile 2020 - Uganda. In Act now: Accelerating gender equality by eliminating child marriage in a pandemic. United Nations Population Fund and United Nations Children's Fund. https://www.unicef.org/protection/unfpa-unicef-global-programme-end-child-marriage

UNFPA & UNICEF. (2021c). UNFPA-UNICEF Global Programme to End Child Marriage: Country profiles 2020. United Nations Population Fund and United Nations Children's Fund. https://www.unicef.org/protection/unfpa-unicef-global-programme-end-child-marriage

UNICEF. (2021). Health programme results 2021: Maternal, newborn and adolescent health. UNICEF. https://www.unicef.org/reports/global-annual-results-2021

UNICEF. (2022). Antenatal care. In Maternal and newborn health coverage database. UNICEF. https://data.unicef.org/topic/maternal-health/antenatal-care/

UNICEF. (2024). 2023 annual results and Phase II (2020-2023) report: Amplifying change - Harnessing collective power to end child marriage. UNICEF. https://www.unicef.org/search?query=ending+child+marriage+2023

UNICEF Ghana. (2022a). Cash transfers in Ghana: Evidence overview of LEAP and LEAP 1000 impacts 2010-2022. United Nations Children's Fund. https://www.unicef.org/ghana/reports/cash-transfers-ghana

UNICEF Ghana. (2022b). Cash transfers in Ghana: Evidence overview of LEAP and LEAP 1000 impacts 2010-2022. United Nations Children's Fund. https://www.unicef.org/ghana/reports/cash-transfers-ghana

UNICEF Ghana. (2022c). Cash transfers in Ghana: Evidence overview of LEAP and LEAP 1000 impacts 2010-2022. United Nations Children's Fund. https://www.unicef.org/ghana/reports/cash-transfers-ghana

UNICEF Ghana. (2022d). Cash transfers in Ghana: Evidence overview of LEAP and LEAP 1000 impacts 2010-2022. United Nations Children's Fund. https://www.unicef.org/ghana/reports/cash-transfers-ghana

UNICEF Middle East and North Africa Regional Office & ICRW. (2017). Child marriage in the Middle East and North

Africa: Morocco country brief. United Nations Children's Fund and International Center for Research on Women. https://www.icrw.org/publications/child-marriage-in-the-middle-east-and-north-africa/

UNICEF Uganda. (2015). Last-mile delivery of health supplies: Evaluation report. UNICEF. https://www.unicef.org/uganda/reports/last-mile-delivery-2015

UNICEF Uganda. (2024, Julya). Overcoming the challenges of education in Uganda (UNICEF Policy Note No. 1/2024). United Nations Children's Fund. https://www.unicef.org/uganda/media/16861/file/Challenges%20of%20Education%20Sector%20in%20Uganda%20in%20Brief.pdf.pdf

UNICEF Uganda. (2024, July b). Overcoming the challenges of education in Uganda (UNICEF Policy Note No. 1/2024). United Nations Children's Fund. https://www.unicef.org/uganda/media/16861/file/Challenges%20of%20Education%20Sector%20in%20Uganda%20in%20Brief.pdf.pdf

WHO, UNICEF, UNFPA, World Bank Group, & UNDESA/Population Division. (2025). Trends in maternal mortality 2000 to 2023: Estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. World Health Organization. https://www.who.int/publications/i/item/9789240108462

World Bank. (2004). Gender and development in the Middle East and North Africa: Women in the public sphere. World Bank. https://documents.worldbank.org/en/publication/documents-

reports/documentdetail/976511468756854365/gender-and-development-in-the-middle-east-and-north-africa-women-in-the-public-sphere

World Bank. (2023). World Development Indicators: Maternal mortality ratio [Data set]. World Bank Open Data. Retrieved March 1, 2026, from https://data.worldbank.org/indicator/SH.STA.MMRT

World Bank. (2023, March 12). The high price of education in Sub-Saharan Africa. World Bank Blogs. https://blogs.worldbank.org/en/developmenttalk/high-price-education-sub-saharan-africa

World Bank. (2024). Education finance watch 2024. World Bank Group. https://www.worldbank.org/en/topic/education/publication/education-finance-watch

World Bank. (2025). World Development Indicators: Reproductive health indicators [Data set]. World Bank Open Data. Retrieved March 1, 2026, from https://data.worldbank.org/indicator/SH.STA.ANVC.ZS

World Bank. (n.d.). Ghana. World Bank Gender Data Portal. Retrieved March 1, 2026, from https://genderdata.worldbank.org/countries/ghana/

World Bank. (n.d.a). A new community health model in Morocco puts mothers and children at the center. https://www.worldbank.org/en/news/feature/2025/04/29/a-new-community-health-model-in-morocco-puts-mothers-and-children-at-the-center

World Bank. (n.d.b). A new community health model in Morocco puts mothers and children at the center. https://www.worldbank.org/en/news/feature/2025/04/29/

a-new-community-health-model-in-morocco-puts-mothers-and-children-at-the-center

World Bank. (2025, April 29a). *A new community health model in Morocco puts mothers and children in rural areas at the center*. https://www.worldbank.org/en/news/feature/2025/04/29/a-new-community-health-model-in-morocco-puts-mothers-and-children-in-rural-areas-at-the-center

World Bank. (2025, April 29b). *A new community health model in Morocco puts mothers and children in rural areas at the center*. https://www.worldbank.org/en/news/feature/2025/04/29/a-new-community-health-model-in-morocco-puts-mothers-and-children-in-rural-areas-at-the-center

World Health Organization. (2023). Maternal mortality ratio (per 100,000 live births). In Global Health Observatory data. WHO. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/maternal-mortality-ratio-(per-100-000-live-births)

World Health Organization Regional Office for Africa. (2023). Health systems in Africa: 2023 review. WHO AFRO. https://www.afro.who.int/publications/health-systems-africa-

YMCA of Simcoe/Muskoka. (2022, September 21 a). The benefits of literacy in our communities. YMCA of Simcoe/Muskoka. https://www.ymcaofsimcoemuskoka.ca/the-benefits-of-literacy-in-our-communities/

YMCA of Simcoe/Muskoka. (2022, September 21 b). The benefits of literacy in our communities. YMCA of

Simcoe/Muskoka. https://www.ymcaofsimcoemuskoka.ca/the-benefits-of-literacy-in-our-communities/

Yao, N., Kowalczyk, M., Gregory, L., Cheatham, J., De Clemente, T., Fox, K., Ignoo, S., & Volerman, A. (2023). *Community health workers' perspectives on integrating into school settings to support student health*. Frontiers in Public Health, 11, 1187855. https://doi.org/10.3389/fpubh.2023.1187855

THE MIGRATION OF DOCTORS FROM EASTERN AFRICA: FIVE NATIONAL PERSPECTIVES

Abdiwahid Abdikhabir MOHAMED[1]

Mehmet Enes GÖKLER[2]

Nimetcan Mehmet ORHUN[3]

1. INTRODUCTION

African countries continue to face a growing challenge due to the large-scale migration of their health professionals to more developed nations, a trend that has intensified the shortage of skilled workers within their health systems. (Organization., Health workforce migration: Global evidence and policy implications. WHO Press., 2023) Migration of personnel is described as "the voluntary movement of workers from one employment station to another in search of alternative or improved working arrangements."(Blacklock et al., 2014) The migration of health personnel takes place both within countries and across international borders. The term "brain drain" is commonly used to describe the movement of highly skilled professionals from one nation to another. Although this trend is not new to the African continent, the rapid increase in its intensity in recent years has become a growing concern.(M. Awases, A.

[1] Postgraduate Student, Health Policy and Global Health Department, Public Health Institute, Ankara Yildirim Beyazit University, ORCID: 0009-0004-6616-5462

[2] Assoc. Prof. Dr. Public Health Department, Faculty of Medicine, Ankara Yıldırım Beyazıt University, ORCID: 0000-0002-1524-8565

[3] Assoc. Prof. Dr. Public Health Department, Faculty of Medicine, Ankara Yıldırım Beyazıt University, ORCID: 000-0002-7854-7044

Gbary, 2004). Due to various economic and political factors, many health professionals have migrated to destinations both within the region and overseas. The emergence of more advanced electronic communication systems since the 1990s has further facilitated this movement by providing potential migrants with easier access to information about opportunities in other countries. The 1997 report by the Special Working Group on the World Health Organization (WHO) Constitution and the Brain Drain Problem in Africa recommended that WHO urge its member states to assess the scale and impact of issues arising from the migration of health professionals. (Awases, Migration of Health professionals in six countries, 2004).

According to estimates derived from World Health Organization data, there is a significant global shortage of approximately 2.8 million physicians, a gap that is particularly pronounced in low- and middle-income countries (LMICs), where health systems often struggle to meet the growing demands of their populations.(Saluja et al., 2020) The unequal distribution of physicians across the globe is worsened by the movement of medical professionals from low- and middle-income countries (LMICs) to high-income countries (HICs). This substantial migration has significant economic and health consequences, including higher mortality rates in LMICs due to insufficient physician coverage and diminished capacity to provide essential healthcare services.(Ebeye et al., 2023)

The critical issue of international migration of health professionals from developing to developed countries has been brought to the fore in recent years by the World Health Organization (WHO, 2003; 2005; 2006; 2010) In its 2006 World Health Report: Working Together for Health, WHO reiterated: "A strong human infrastructure is fundamental in closing today's gap between health promise and health reality and anticipating the health challenges of the 21st century.(Who, 2011)

Despite having only 2% of the global supply of physicians, SSA has 10% of the world population, and bears 24% of the global burden of disease including 68% of the world's HIV/AIDS infections.(Anyangwe & Mtonga, 2007). Physicians hold a unique place in society, witnessing life's joys, sorrows, and struggles. These experiences shape their professional judgment and ethical responsibilities, highlighting the vital role they play in the lives of individuals and the community. Above all, physicians' specialized skills and mastery of the medical sciences are irreplaceable and make their contribution to public health essential.(Dharamsi et al., 2011)

This report presents the results of surveys that were conducted in six Eastern African countries, namely Kenya, Ethiopia, Somalia, Uganda and Rwanda, But Eastern African countries contain 20 countries (Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, South Sudan, Sudan, Tanzania, Uganda, Zambia, Zimbabwe). It provides detailed information about migration patterns and numbers, the reasons for migration and its effects on the quality of health care.

The findings of this report can be used to develop human resource policies and strategies to strengthen the capacity of health systems to deliver efficient and effective services. It is a timely response to the expressed needs for better information in this area from within the World Health Organization, the Member States and their development partners.

2. HISTORICAL CONTEXT OF DOCTOR MIGRATION

Global migration patterns have changed notably in recent years, driven by factors like economic challenges, conflict,

environmental shifts, and evolving social conditions. Below are some of the main emerging trends.(UNHCR, 2023)

Colonial legacy: The healthcare systems in Eastern Africa have been deeply shaped by the region's colonial history. Under colonial rule, health services were mainly designed to support the needs of European settlers and colonial officials, while the health needs of the local population were largely ignored. This led to a lack of investment in medical infrastructure, rural services, and the training of local healthcare workers.(Iliffe, 1998)

After independence, many countries in the region inherited weak and uneven health systems, with urban areas prioritized and rural regions left underserved. These historic imbalances still affect healthcare delivery today and contribute to ongoing challenges such as low pay, poor working conditions, and limited professional growth for doctors. As a result, many health professionals choose to migrate to countries with better opportunities. The continued dependence on international aid and training also reflects the long-term effects of colonial systems that failed to build self-sufficient healthcare sectors.(Willcox et al., 2015)

Regional patterns: Doctor migration from Eastern Africa exhibits distinct regional patterns. A significant number of health professionals relocate to Western countries, including the United Kingdom, United States, Canada, and Australia, drawn by higher salaries, advanced training opportunities, and improved working conditions. At the same time, an increasing proportion of physicians are moving to Middle Eastern countries—particularly Saudi Arabia, the United Arab Emirates, and Qatar—where demand for foreign healthcare workers is high and active recruitment continues. (A decade review of the health workforce in the WHO African Region)

There is also notable intra-African migration, where doctors move from lower-income countries like Somalia and South Sudan to relatively more stable or better-paying systems in countries like Kenya, South Africa, or Botswana. In many cases, doctors use these countries as stepping stones before moving on to Europe or North America. These patterns reflect both economic opportunity and the ongoing challenges in health systems across the region.(Africa Center for Strategic Studies, 2023)

Rising displacement: Ongoing conflicts in areas such as the Middle East and parts of Africa have caused a significant increase in forced migration. As a result, the number of people fleeing their homes either across borders as refugees or within their own countries as internally displaced persons has reached an all-time high.

Migration economic: Many people from developing nations move abroad in search of improved job prospects and higher wages. Countries like those in North America and Western Europe are especially attractive to skilled professionals seeking better living conditions and career advancement.

Environmental change: A major reason for population movement. People are being forced to relocate due to climate-related challenges such as floods, droughts, rising sea levels, and other natural disasters that threaten their homes and livelihoods.

Urban migration: Increase in people moving from rural areas to urban centers. This shift is largely driven by the search for improved living conditions, access to services, and better economic opportunities that cities often provide.

Eastern Africa include nation such as Ethiopia, Kenya, Somalia, Tanzania, Rwanda, Uganda and others. Those countries population have health care challenges, home to over 400 million people, high prevalence of infectious disease like malaria,

HIV/AIDS and Tuberculosis. Low healthcare spending per capita.(Covell et al., 2016)

Table 1. Doctor-to-Population Ratios by Country

Country	Doctor-to-Patient Ratio
Ethiopia	1 doctor per 10,000 people
Rwanda	1 doctor per 10,000 people
Kenya	1 doctor per 10,000 people
Somalia	1 doctor per 33,000 people
Uganda	1 doctor per 15,000 people
Tanzania	1 doctor per 20,000 people

The world health organization (WHO) recommends a minimum ratio of one doctor per 1,000 people for adequate healthcare delivery. These rations in Eastern Africa highlight the urgent need for strategies to address the brain drain and improve healthcare system.

General causes of migration

Many doctors in Eastern Africa choose to leave their home countries due to several difficult conditions. Low pay, lack of professional recognition, and minimal chances for career growth often discourage them from continuing their work locally. In addition, healthcare facilities in some regions face major shortages of equipment and trained support staff. Political instability and safety concerns further add to the challenges, pushing medical professionals to consider opportunities elsewhere for a more secure and fulfilling career.

In contrast, countries with more developed healthcare systems offer better incentives that attract foreign-trained doctors. These include attractive salaries, opportunities to specialize in advanced medical fields, and access to cutting-edge medical tools. The promise of a higher quality of life and access to good education for their children also plays a big role in the decision to migrate. These benefits make working in such environments more appealing compared to the limitations faced back home.

The movement of doctors out of Eastern Africa leads to a shortage of skilled health professionals, which affects healthcare delivery in the region. This situation calls for urgent action from governments and stakeholders to improve working conditions, offer professional development, and create policies that encourage doctors to remain and serve their communities. According to the World Health Organization (WHO), strengthening the health workforce is a key strategy for building resilient and effective health systems, especially in low-resource settings.

3. COUNTRY-SPECIFIC PERSPECTIVES ON DOCTOR MIGRATION

3.1. Ethiopia

3.1.1. Geographical Overview

Ethiopia is a landlocked country in the Horn of Africa, covering about 1.1 million km², making it the 10th largest country in Africa. It has a diverse landscape including highlands, plateaus, valleys, and the Great Rift Valley, which affects accessibility to healthcare services. The population exceeds 125 million, with about 80% living in rural areas where health facilities are sparse. (2023).

Ethiopia faces a critical shortage of healthcare professionals, particularly medical doctors. The doctor-to-population ratio remains far below the WHO recommended standard, with most doctors concentrated in urban areas like Addis Ababa. Limited postgraduate training opportunities and resource constraints exacerbate workforce challenges. (Fekadu, Perceptions of Ethiopian physicians on migration and retention: A qualitative study.).

Importance of Medical Doctors in Health System Performance

Medical doctors play a crucial role in delivering high-quality clinical care, guiding and supervising healthcare teams, and spearheading public health programs. Their presence directly contributes to improved health outcomes, more efficient service delivery, and a stronger, more resilient health system. A shortage of doctor's limits access to care and negatively affects patient outcomes, particularly in both primary healthcare and specialized medical services.(AAMC President and CEO Darrell G. Kirch, n.d.)

Global Context of Health Worker Migration

Ethiopian doctors are increasingly moving to high-income countries in search of higher salaries, advanced training opportunities, and safer working conditions. This "brain drain" is part of a global trend in which low- and middle-income countries lose skilled health professionals to wealthier nations. Such migration reduces Ethiopia's healthcare capacity and exacerbates existing disparities in access to medical services.(Deressa & Azazh, 2012)

3.1.2. Historical Background of Physician Migration in Ethiopia

Physician migration in Ethiopia is not a recent phenomenon; it has historical roots dating back to the 1970s and 1980s. Political instability, civil conflict, and economic hardship during and after the Derg regime (1974–1991) prompted many trained doctors to seek employment abroad. The trend continued in the 1990s and 2000s due to persistent challenges such as low salaries, limited postgraduate training opportunities, inadequate medical infrastructure, and poor working conditions. Over the decades, this "brain drain" has contributed to chronic shortages of doctors, particularly in rural areas, and has posed significant

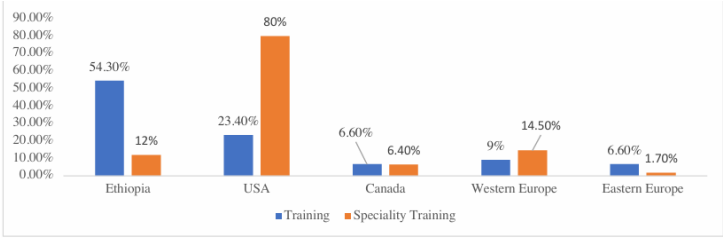
challenges to the country's healthcare system development. (Fekadu, Perceptions of Ethiopian physicians on migration and retention: A qualitative study.).

3.1.3. Current Status of Doctors' Migration

The level of physician emigration in Ethiopia is alarming because the country has not been able to train sufficient number of physicians to provide adequate medical services for its ever-growing population. Between 1987 and 2006, close to 75% of physicians in Ethiopia left the public sector to emigrate overseas or join the local Non-Governmental Organizations or private sector, making them less accessible to the ordinary Ethiopian.(Scelza, n.d.) According to a World Bank report from 2011, about 26.4% of physicians trained in Ethiopia were living and practicing abroad. (Ratha D). A study by the Migration Policy Institute found that 531 Ethiopian physicians were practicing in the US in 2011, of which 78 graduated between 2000 and 2008.

According to older data: among Sub-Saharan African physicians working in the United States, there were as of early 2000s ≈ **257 physicians who trained in Ethiopia.** (Hagopian A & 1). Qualitative research among Ethiopian doctors indicates that many prefer destinations such as the United States; Middle-East countries and European nations are often considered as "back-up or transition destinations" rather than primary preference.(Jembere, 2020).

Figure 1. Respondents volunteer Experience and future interest



(Jembere, 2020).

3.1.4. Push factors for Ethiopian doctors

- Low pay and poor compensation: Many Ethiopian doctors report that salaries are too low to meet basic needs given their years of training and workload
- Poor working conditions and weak health-system infrastructure Lack of resources, inadequate facilities and medical equipment, and general system underfunding make practicing medicine difficult and unsatisfying.
- Limited opportunities for postgraduate training, specialization, career development Many doctors feel there are insufficient paths for professional growth, advanced training or research pushing them to consider migration.(van de Klundert et al., 2018)

3.1.5. Pull factors for Ethiopian doctors

- Better remuneration and living conditions: Higher salaries and improved standard of living abroad make migration attractive.
- Opportunities for postgraduate training, specialization and career advancement: Access to advanced training, subspecialties, research, professional development, and long-term career path make migration more appealing.
- Access to advanced medical infrastructure, modern health-system, and better work environment: Well-equipped hospitals, modern technology, reliable supplies, and quality working conditions in high-income countries (or better-resourced settings) are strong attractions.
- Better job security and work-life balance: Stable employment, predictable workloads, better support

systems abroad compared to uncertainties and high workload in Ethiopia.

3.1.6. Consequences for Ethiopia

- Critical shortage of physicians: Migration exacerbates the already low doctor-to-population ratio, leaving many rural and underserved areas with insufficient medical care.
- Unequal distribution of healthcare services: Urban centers retain most doctors while rural and peripheral regions face extreme scarcity, increasing health inequities
- Loss of experienced specialists: Senior doctors and highly trained specialists are more likely to emigrate, reducing mentorship opportunities and clinical leadership.
- Threat to health system performance: Shortages undermine service delivery, limit public health programs, and slow progress toward universal health coverage. (Michael et al., 2011).

3.1.7. Benefits and Opportunities

- Remittances: Emigrated doctors often send money home, supporting families and local economies.
- Professional development and skills transfer Doctors gain advanced training abroad and may bring back expertise if they return.
- Global networks and collaborations: Diaspora doctors can establish international partnerships, research collaborations, and training programs.

3.1.8. Government and Stakeholder Responses

- Scaling up medical education: Expansion of medical schools and enrollment to increase the number of trained doctors, though this sometimes leads to underemployment.
- Retention strategies: Initiatives include financial incentives, housing, rural service allowances, career advancement pathways, and improved working conditions.
- Diaspora engagement programs: Encouraging Ethiopian doctors abroad to return temporarily or permanently through fellowship programs, short-term missions, or telemedicine collaborations.
- Policy frameworks for human resources for health: Ethiopia has attempted to develop HRH strategies aligning with Universal Health Coverage goals, though implementation and monitoring remain challenging.(Ministry of Health and Social Services, 2019)

3.2. Kenya

3.2.1. Geographical Overview of Kenya

Kenya is an East African country located along the equator, bordering the Indian Ocean to the southeast. It shares land borders with Ethiopia to the north, Somalia and South Sudan to the east and northwest, Uganda to the west, and Tanzania to the south. Covering an area of approximately 580,367 km², Kenya.(United Nations Statistics Division, 2013)

Kenya's population exceeds **58 million**, with a majority residing in highland and urban areas such as Nairobi (the capital) and Mombasa, while arid northern regions remain sparsely populated. This geographical diversity affects healthcare

accessibility, distribution of medical personnel, and regional disparities in health service delivery.(Team, n.d.)

Importance of Medical Doctors in Health System Performance.

Medical doctors are essential to Kenya's healthcare system, forming the backbone of clinical care, health service management, and public health initiatives. They provide diagnosis, treatment, and management of diseases, particularly in tertiary and specialized care settings. Doctors also supervise and mentor nurses, clinical officers, and other health workers, ensuring quality and adherence to medical standards. (Ministry of Health).Shortages or unequal distribution of doctors, especially in rural and remote areas, compromise healthcare access, reduce service quality, and increase morbidity and mortality. Urban centers such as Nairobi and Mombasa have higher doctor-to-population ratios, whereas northern and arid regions experience severe shortages, emphasizing the critical role doctors play in ensuring equitable health system performance. (Organization., State of the Health Workforce in Kenya.).

Global Context of Health Worker Migration

Kenya, like many low- and middle-income countries, experiences significant outflows of trained health professionals to higher-income countries. This trend, often termed "brain drain," reflects a global pattern where skilled health workers migrate to countries offering better pay, improved working conditions, and opportunities for professional development. Common destination countries for Kenyan doctors, nurses, and other health workers include the United States, United Kingdom, Canada, Australia, and Gulf states.(Liese & Dussault, 2004)

3.2.2. Historical Background of Physician Migration

After independence, Kenya trained medical professionals domestically, but many Kenyan doctors and other African physicians historically sought further training or employment abroad. For example, some of the early Kenyan-trained physicians who pursued advanced studies abroad opted not to return, contributing to a gradual outflow.(Mwaniki & Dulo, 2008).

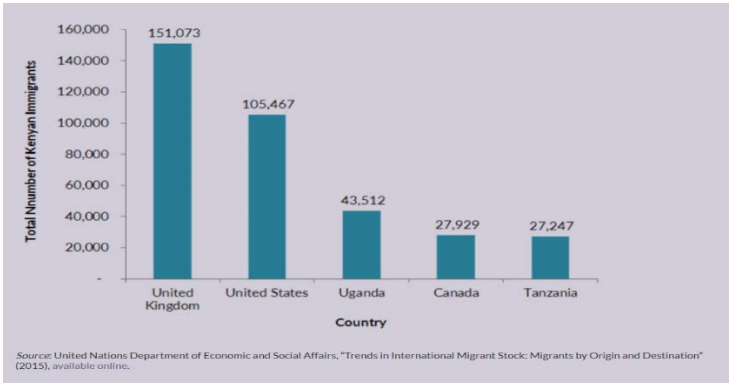
3.2.3. Current Status of Doctors' Migration

According to a 2023 "Health Labour Market Analysis" in Kenya, the overall stock of active health workers including doctors, nurses, midwives, clinical officers and others — has *more than doubled* over the past decade. As of that report, there are about 189,932 active health workers across 13 major health-occupations.(Mwaniki & Dulo, 2008). An estimated 25-40% of Kenyan doctors work abroad, primarily in developed countries, despite Kenya's critical shortage of healthcare workers.

Kenya's doctor-to-patient ratio is approximately 1 doctor per 16,000 people, far below the World Health Organization (WHO) recommended ratio of 1:1,000. Migration contributes to this deficit.(*UK-Kenya-Health-Bilateral-Agreement*, n.d.).

Kenyan healthcare workers migrate to countries such as the United States, United Kingdom, Canada, Australia, and South Africa, drawn by better salaries, working conditions, and career opportunities.

Figure 2. Countries with the largest populations of kenyan immigrants



Source: United Nations Department of Economic and Social Affairs, "Trends in International Migrant Stock: Migrants by Origin and Destination" (2015), available online.

3.2.4. Push factors (why doctors leave Kenya)

- Poor working conditions and under-resourced health system. This includes lack of necessary equipment, overwork, high patient loads, weak infrastructure, and limited protective gear (especially relevant for high-risk work).
- Limited career growth / lack of professional development & training opportunities. Many doctors cite absence of clear career-paths, limited opportunities for specialization, continuing education or research.
- Weak health-system governance & instability in employment. Poor governance, insufficient job security, and unpredictable employment prospects drive doctors to seek more stable environments abroad.

3.2.5. Pull factors (What attracts them abroad / to other countries)

- Better salaries and financial incentives: Developed countries often offer far higher pay and better

allowances compared to Kenya, making migration financially attractive.

- Better working conditions, modern facilities and well-resourced health systems: Availability of up-to-date equipment, safer workplaces, and efficient health systems are important draws.
- Opportunities for further professional development, specialization, research, continuing education: Access to modern training, specialization, and research opportunities that are limited in Kenya.
- Improved quality of life, social stability, safety and better living conditions: Stable socio-political environment, better living conditions and general welfare in receiving countries are pull factors.

3.2.6. Consequences for Kenya (negative impacts)

- Reduced health service capacity & higher mortality risk. Physician emigration reduces doctor density and is associated with worse population health outcomes and excess mortality in source countries.
- Loss of public investment / economic cost. Training a physician is a major public investment; when doctors emigrate the country loses that return on investment (quantified in global studies of "physician emigration" costs).
- Worsening of rural and primary care shortages. Emigration disproportionately removes clinicians that are more experienced and those willing to work in underserved/rural posts, increasing inequities in access to care.
- Service disruption & morale problems for remaining staff. High outflow increases workloads for

remaining health workers, harming job satisfaction and retention (a feedback loop that accelerates further exits).(Mills et al., 2011)

3.2.7. Benefits & Opportunities (positive effects / potential gains)

- Remittances and household welfare. Health workers abroad contribute remittances which support education, health, and consumption at home — an important source of foreign exchange. (While doctors remit less in number than larger unskilled migrant flows, skilled diasporas still contribute to foreign exchange and investment.)
- Skills, training and technology transfer (if circular migration occurs). Return or temporary migration can result in upgraded clinical skills, exposure to new technologies and practices, and professional networks that benefit the home system if reintegration and recognition are in place.
- Diaspora networks and health partnerships. Diaspora clinicians can support telemedicine, training programs, collaborative research, and targeted investments in health infrastructure. Organized diaspora engagement can channel these gains.

3.2.8. Government & Stakeholder Responses (what Kenya and partners are doing)

- Active labour-mobility / diaspora policies. Kenya has adopted formal diaspora and labour-mobility policies (e.g., *Kenya Diaspora Policy 2024,* National strategies) that treat migration as a managed economic and skills strategy rather than purely a loss.

These policies emphasize safe migration, remittance facilitation and technology/skills transfer.

- Bilateral labour agreements & placement programmers. The government has negotiated agreements and run placement programmers (healthcare placements among them) to formalize overseas recruitment and protect workers' rights. Reuters and major news coverage have documented government-led drives to place Kenyan workers abroad, including health workers.
- Health workforce policy & retention strategies. The Ministry of Health and partners have produced health workforce strategies that include increased training, retention incentives, career paths, and proposals for better working conditions although implementation and financing remain challenging. Recent analytical reviews and WHO/IOM profiles discuss these plans and gaps.
- Calls for international cooperation & ethical recruitment. Kenya (with WHO/IOM) supports measures for ethical recruitment practices and technical cooperation to mitigate negative impacts. e.g., recognition of skills, circular migration frameworks, and support for returnee.

3.3. UGANDA

3.3.1. Geographical Overview of Uganda

Uganda's total land area is about 199,810 km². (worldometer). The country lies on the equator and has varied natural features: lakes (part of the Great Lakes region), mountains, rift valley, plateaus, and fertile plains. Uganda is moderately urbanized, but the majority of the population lives in

rural areas: roughly, 70–75% rural population, while about 25–30% is urban. As of recent estimates, Uganda's population is over 45 million.(CIA.gov, n.d.)

Importance of Medical Doctors in Uganda's Health System Performance

Medical doctors are essential to Uganda's healthcare system, serving as the backbone of clinical care, hospital management, and public-health interventions. They diagnose and treat diseases, manage complications, and deliver specialized care in referral hospitals. Doctors also supervise and mentor other health-workers (nurses, midwives, and clinical officers), ensuring adherence to medical standards and quality of care. As pointed out in analyses of Uganda's health workforce, the shortage and unequal distribution of doctors particularly the skew towards urban areas — seriously undermines health-service delivery.

Shortages or unequal distribution of doctors especially in rural and remote parts of Uganda — compromise access to essential healthcare, reduce service quality, and contribute to increased morbidity and mortality. Many rural health-centres remain understaffed or lack qualified doctor's altogether, forcing reliance on lower-cadre health-workers or requiring patients to travel long distances for care.

Global Context of Health Worker Migration – Uganda

Uganda, similar to many low- and middle-income countries, faces substantial loss of health professionals to higher-income nations. This outward migration—commonly referred to as "brain drain"—aligns with a global trend in which skilled health workers move to countries offering better remuneration, safer and better-equipped working environments, and expanded opportunities for specialization and career progression.(IOM, 2015) Ugandan doctors, nurses, and allied health professionals frequently migrate to destinations such as the United Kingdom,

United States, Canada, Australia, and Middle Eastern countries, where the demand for internationally trained health workers remains high. This continued migration exacerbates Uganda's already limited health-worker capacity and further strains the nation's ability to deliver equitable and effective healthcare services.(IOM, 2015)

3.3.2. Historical Background of Physician Migration

Historically, the migration of physicians from Uganda began soon after independence, when the country started training its own medical professionals but lacked adequate postgraduate opportunities, prompting many doctors to seek specialization abroad, where a portion did not return. During the political instability of the 1970s—particularly under Idi Amin— Uganda experienced a severe outflow of health professionals, with the number of doctors reportedly dropping from about 978 to 574 between 1968 and 1974, largely due to insecurity, deteriorating working conditions, and poor remuneration. (Organization, 2010) This emigration pattern continued through the 1980s and 1990s as economic decline, underfunded health facilities, and limited career advancement pushed skilled physicians to seek stable and better-resourced environments overseas. Studies that are more recent show that physician migration remains a persistent issue; for example, nearly 45% of final-year medical students in Uganda report intentions to emigrate after graduation, citing lack of equipment, overwhelming workloads, and low salaries as major drivers. (Mullan, 2015) Overall, this long historical trend has significantly weakened Uganda's medical workforce and contributed to ongoing challenges in health-system strengthening.

3.3.3. Current Status of Doctors' Migration

According to the Uganda Health Labour Market Analysis (UHLMA 2019), Uganda experiences out-migration of health workers, including doctors — for example, the report estimates

that about 10% of doctors leave the country each year, many going to Canada, Kenya, the United Kingdom, etc.

As of the data roughly around 2013, a leaked estimate suggested that nearly 50% of the registered medical practitioners had left Uganda over the previous 10 years. In one older report, it was stated that "about 43%" of Ugandan-born doctors live and work outside the country.

The doctor-to-patient (or more precisely doctor-to-population) ratio has been reported as very low. One source gives a ratio of 1 doctor per 15,000 Ugandans, and 1 medical specialist per 25,000 people.(March, 2020).

3.3.4. Push Factors (why doctors leave Uganda)

- Low salaries / poor pay & uncompetitive benefits: Many doctors cite inadequate remuneration compared with the workload and level of training.
- Poor working conditions: Shortage of essential medical supplies and equipment; inadequate hospital infrastructure; lack of resources to practice properly (e.g. even specialists cannot perform complex procedures due to lack of equipment or supporting staff).
- Heavy workload / overburdening: High patient numbers, long hours, burnout risk.
- Lack of opportunities for career advancement / postgraduate training: Limited or poor-quality specialization and postgraduate training opportunities push doctors to look abroad.
- Underemployment / unemployment after graduation or internship — poor absorption into public health sector: Many newly graduated or licensed doctors are

not absorbed into public service, forcing them into private practice, informal sector, or migration.

3.3.5. Pull Factors (what attracts doctors to other countries / jobs abroad)

- Higher salaries / better pay & benefits abroad: A major motivator cited by many young doctors and medical students.
- Better working conditions, better-equipped hospitals, safer and more supportive work environments: Abroad, doctors expect functioning health systems, adequate equipment, manageable workload, and safer working environment — much better than what many experience at home.
- Opportunities for further training, specialization, career development, and academic growth: Many want postgraduate studies, specializations, research or career paths that are more available abroad.
- Job security and stable employment (public or private) abroad: Given public-sector hiring constraints in Uganda, foreign employment appears more stable.

3.3.6. Consequences for Uganda of Health-Worker Migration

- Severe shortage of doctors & weakened health-system capacity: Official data show that among ~37,368 health workers, only a small fraction are doctors many facilities are understaffed, especially in rural or underserved areas. As a result, access to and quality of health care decline — increased workload for remaining staff, longer patient wait-times, and risk of preventable morbidity and mortality.

- Loss of investment in training and human capital "leakage": Training a doctor is expensive: when doctors emigrate, Uganda loses the return on that investment.
- "Brain-waste" and under-employment for some trained professionals: Some trained health workers medical doctors and nurses end up unemployed, under-employed, or leave clinical practice altogether due to poor work conditions or lack of public-sector absorption.

3.3.7. Potential Benefits or Opportunities

- Financial benefits via remittances / diaspora contributions: Emigrated health workers may send money back home, which can contribute to household welfare, local economies, foreign exchange earnings, and support for dependents. Some analyses of "brain drain" argue remittances can partially offset losses.
- Skill enhancement and potential "return migration" / diaspora knowledge transfer: Doctors and health workers abroad may gain specialized training, exposure to advanced practice, technologies, research — and potentially return with enhanced skills or contribute via knowledge transfer, diaspora networks, or partnerships.
- Reduced pressure on job market in under-resourced health sector: Given constraints in public sector hiring and infrastructure, migration can relieve unemployment/under-employment among medical graduates (though at cost of losing their potential contribution).

3.3.8. Government and Stakeholder Responses in Uganda

Uganda acknowledges health-worker migration as a major development barrier. The Third National Development Plan (NDPIII) highlights that brain drain limits national innovation and long-term development, urging reforms in remuneration and recruitment to retain skilled workers. To improve retention, the government has introduced modest salary increases, offered limited professional-development opportunities, and expanded recruitment, although these efforts remain inadequate compared with the persistent push factors such as heavy workload, low pay, and poor infrastructure.(NPA, 2020)

The Uganda Ministry of Health Human Resources for Health Strategic Plan 2020–2030 identifies out-migration as a direct threat to achieving UHC and the SDGs. It calls for improved retention, better deployment, and equitable distribution of health workers, though implementation remains slow and resource-constrained.

3.4. RWANDA

3.4.1. Geographical Overview of Rwanda

Rwanda is a small, land-locked country in the Great Lakes region of East-Central Africa, covering about 26,338 km². (Factbook., 2021), It is bordered by Uganda to the north, Tanzania to the east, Burundi to the south, and the Democratic Republic of the Congo to the west. The western border lies along Lake Kivu, while the country sits on the Congo–Nile watershed, giving it dense rivers and wetlands. Despite being near the equator, Rwanda has a temperate tropical highland climate with mild temperatures and two rainy seasons due to its high elevation. The capital city, Kigali, is centrally located and serves as the main urban and economic hub.

Importance of Medical Doctors in Health System Performance

Medical doctors play a critical role in health system performance because they provide essential clinical care, diagnose and manage diseases, lead health teams, and contribute to quality improvement and patient safety. Their availability strongly influences service delivery, health outcomes, and overall system efficiency.(Review, 2008). Doctors also supervise and mentor other health professionals, support evidence-based decision-making, and drive public health initiatives. In regions with doctor shortages, healthcare access, continuity of care, and patient trust are often compromised, reducing system effectiveness. Ensuring an adequate number of well-trained doctors is therefore essential for achieving universal health coverage and improving population health outcomes.(Ajmi & Aase, 2021).

Global Context of Health Worker Migration

The global migration of health workers including doctors, nurses and other professionals has increased markedly over the past decades. Globalization, demographic shifts, and demand in high-income countries have fueled a growing international labour market for health personnel.

Even though much of Africa experiences heavy out-migration of health professionals, Rwanda appears by many accounts to have largely avoided significant brain-drain among its health workforce. Scholars suggest that this relative retention results from a mix of factors: merit-based career advancement, better working conditions (compared to some neighboring countries), strong national commitment among graduates (even those trained abroad), and active workforce development strategies.(Africa CDC, 2025).

3.4.2. Historical Background of Physician Migration in Rwanda

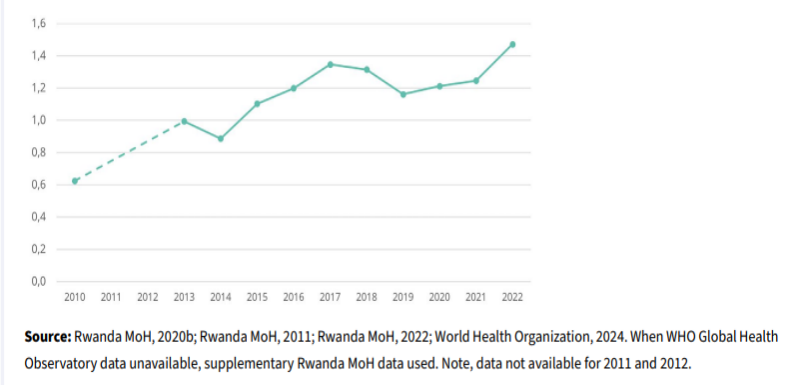
Physician migration in Rwanda has been a concern since at least the mid-2010s, when surveys showed that over half of final-year medical students intended to work abroad after graduation. (Binagwaho, 2016) Between 2000 and 2019, about 22% of medical specialists and 13% of health professionals left the country, reducing the clinical workforce. (Medbox, 2024) In addition to external migration, internal attrition occurs when doctors shift to NGOs or non-clinical roles, further limiting service delivery. Despite efforts to retain staff, Rwanda remains vulnerable to both external brain drain and internal workforce loss.

3.4.3. Current Status of Doctors' Migration

According to a 2025 policy brief, about 9% of all health professionals in Rwanda leave the health sector annually, and many of these exits involve emigration abroad — making workforce attrition a major challenge. Among professionals graduated between 2000 and 2016, about 22% of medical specialists and 13% of all health professionals have left the country by 2019.(WHO, 2021).

Rural–urban disparities remain stark: although about 82% of Rwanda's population lives in rural areas, only a small fraction of physicians serves in rural districts. (Odhiambo J).

Figure 3. Medical doctor density per 10,000 population



Source: Rwanda MoH, 2020b; Rwanda MoH, 2011; Rwanda MoH, 2022; World Health Organization, 2024. When WHO Global Health Observatory data unavailable, supplementary Rwanda MoH data used. Note, data not available for 2011 and 2012.

Rwanda has made efforts to expand its health workforce: as of early 2024, the total number of doctors (alongside other health workers) is rising under national reforms to increase training capacity and staffing. Even with these efforts, the overall density of health workers remains below national and global recommendations, meaning that many communities still face shortage of doctors and limited access to specialized care.(WHO, 2021).

3.4.4. Push Factors (things pushing doctors *away* from Rwanda)

- Poor working conditions: lack of adequate equipment and medication, limited clinical resources especially among specialists such as anesthesiologists.
- Heavy workload and burnout, especially in rural or under-resourced hospitals.
- Limited career development opportunities: in some rural or public-sector settings, promotion, specialization and continuing professional development may be restricted.
- Inadequate remuneration / financial compensation relative to workload and risk making emigration or

private/foreign-sector work more attractive.(Odhiambo et al., 2017)

3.4.5. Pull Factors (what attracts doctors toward other countries)

- Better clinical infrastructure, well-equipped hospitals, access to modern technology and resources improving ability to practice medicine effectively.
- Higher wages and better financial benefits compared with what is available in Rwanda (or other LMICs) economic incentives remain a major driver.
- Opportunities for further training, specialization, professional growth, and research, which may not be sufficiently available at home.
- Better living standards, perceived stability, and improved working environment (less resource constraints, safer/safer working environment, and more peer support) in destination countries. ("6 Health Worker Production." National Academies of Sciences).

3.4.6. Consequences for Rwanda of Health-Worker Migration

- Negative impact on service delivery, especially in rural areas: At a rural district hospital in 2013, for example, 81.8% of doctors left employment during that year reflecting how attrition disproportionately affects rural health facilities and undermines continuity of care, increasing workload and decreasing quality. (Odhiambo et al., 2017)
- Loss of specialized skills (e.g. anesthesiology) reduces capacity for critical services: A qualitative study among anesthesiologists in Rwanda found that

lack of equipment, medication, and poor working conditions drive migration — reducing availability of specialists and limiting ability to provide safe surgical and anaesthesia care.

- Persistent shortage & uneven distribution of health workers: A recent 2025 policy brief reports that about 9% of all health professionals leave the health sector annually, many emigrating — putting strain on Rwanda's public health system.(Ndikubwimana et al., 2024).

3.4.7. Potential Benefits or Opportunities

- Scaling up of health-worker training and growth of local capacity: Through the Human Resources for Health (HRH) Program (2012–2019) and the subsequent National Strategy for Health Professions Development (NSHPD) 2020–2030, Rwanda has invested in training and retaining more health professionals effectively turning a brain-drain risk into a "brain-gain" effort. (Ndenga et al., 2016)
- Improved access to services via expansion of infrastructure and workforce: As part of health reforms, Rwanda has expanded health posts and upgraded facilities so more people are within reasonable distance to care this expansion depends on a stable supply of health-workers.
- Potential for more equitable health coverage if retention and distribution are improved: If attrition is managed, Rwanda's efforts could lead to better coverage (urban + rural), bridging gaps in specialist and primary care services.

3.4.8. Government & Stakeholder Responses in Rwanda

Rwanda has implemented a range of strategies to mitigate health-worker migration/attrition and strengthen the health workforce:

- The HRH Program (2012–2019) and its successor policy NSHPD (2020–2030) aimed to build and maintain a skilled, motivated, and equitably distributed health workforce. (WHO, 2021)
- To address public-to-private or public-to-abroad "brain drain," Rwanda introduced a Dual Clinical Practice (DCP) policy, allowing health professionals to engage in regulated private practice alongside public service, as an incentive for retention. (Kayumba et al., 2025)
- The 2025 policy brief (by the national centre in partnership with WHO Regional Office for Africa / AHOP) recommends competitive remuneration, career advancement opportunities, improved working conditions (e.g. equipment, accommodation), and targeted retention strategies — as a comprehensive response to ongoing attrition.
- Scaling up health-care infrastructure: the government continues expanding health posts, referral hospitals, and specialized facilities — a foundational effort to ensure that an improved workforce can translate into enhanced access and quality of care. (Africa).

3.5. Somalia

3.5.1. Geographical Overview of Somalia

Somalia is located in the Horn of Africa, bordering Djibouti to the northwest, Ethiopia to the west, Kenya to the

southwest, the Gulf of Aden to the north, and the Indian Ocean to the east. It covers about 637,657 km², (Central Intelligence Agency (CIA), 2023). With largely arid to semi-arid climate, irregular rainfall, and recurring droughts. The terrain consists of plateaus, plains, and mountains in the north, with the Jubba and Shabelle rivers supporting agriculture in the south. Somalia has a long coastline (~3,025 km), pastoral rangelands, and limited arable land, which shape livelihoods, health access, and population distribution.

Importance of Medical Doctors in Health System Performance – Somalia

Medical doctors play a critical role in Somalia's health system by providing essential clinical care, diagnosing and managing diseases, supervising other health professionals, and guiding public health initiatives.(Kayumba et al., 2025). In Somalia, where health infrastructure is limited and many areas are underserved, doctors are crucial for improving service delivery, reducing mortality, and supporting emergency and maternal-child health services. Their presence strengthens health system efficiency, ensures continuity of care, and contributes to achieving universal health coverage despite the country's ongoing health workforce shortages.(Kayumba et al., 2025).

Global Context of Health Worker Migration

There is a chronic global shortage of health workers, especially in low- and middle-income countries (LMICs). One widely cited estimate from early 2000s put the shortage at ~4.3 million health workers worldwide (doctors, nurses, midwives, etc.) (Aluttis C, 24560265, & PMC3926986.). Migration of health professionals from LMICs toward high-income countries (HICs) is a long-standing and growing phenomenon. The main drivers are large wage/benefit differentials; better working conditions, more opportunities for

specialization, and stable employment in destination countries. (WHO, Health workforce).

As a low-resource, post-conflict country with chronic health-workforce shortages and weak infrastructure, Somalia is among those LMICs vulnerable to "brain drain." The global demand for health professionals offers incentives for Somali-trained doctors and nurses to seek work abroad.

The global shortage of health workers and widespread recruitment by richer countries increases pull pressure on Somali health workers, risking further depletion of an already scarce workforce, which undermines Somalia's efforts to rebuild its health system. (WHO, Health workforce).

3.5.2. Historical Background of Physician Migration in Somalia

Before the 1990s, Somalia had an operational health-system with medical training: the first medical faculty was established at Somali National University (SNU) in Mogadishu (1973), and by the late 1970s/1980s the number of Somali-trained doctors and other health personnel had increased.(Hassan et al., 2024), the outbreak of the civil war in 1991 devastated the country's health infrastructure. The medical faculty was looted/destroyed, and a large proportion of health professional is doctors, nurses, midwives fled the country or relocated internally. By the early 1990s most specialists had left, leaving only a few general practitioners.(Somalia, 2020).

The war and collapse of state institutions caused a near-total disruption of medical education, training and service delivery. Private clinics, NGOs and humanitarian organisations replaced the public health system, but the loss of qualified medical professionals created a chronic shortage and long-lasting gap in physician coverage.

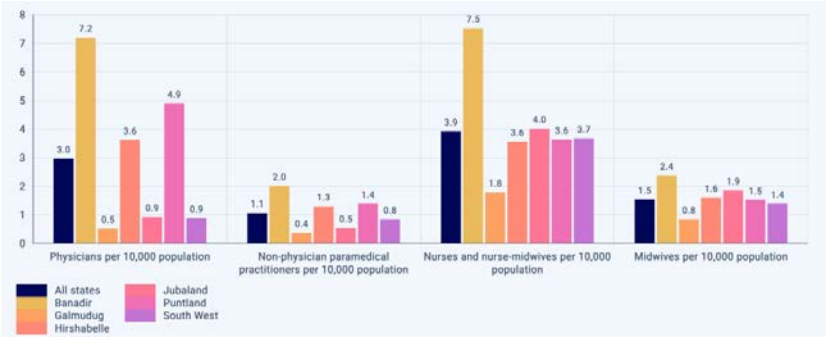
Over the decades since, attempts to rebuild the health workforce have been gradual. By 2024, a recent study reports the re-emergence and growth of health-professions education: the number of medical training institutions increased from one in 1991 to over 25 by 2024 showing a renewed but fragile effort to regenerate Somalia's physician workforce.(Somalia, 2020).

3.5.3. Current Status of Doctors' Migration

According to the 2022–2023 national health-facility assessment, Somalia has about 3.0 physicians per 10,000 people, overall roughly one doctor for every 3,400 people but this varies widely by region. In some states (e.g. Galmudug), the ratio is as low as one physician per 20,000 people. When all health workers are counted (physicians, nurses, midwives, paramedical staff), the total density is about 7.9 health-workers per 10,000 people.(Somalia, 2020).

The workforce is heavily skewed toward urban areas; rural and remote regions remain severely under-staffed. (Said, 2024).

Figure 4. Health Workforce Density



(Report, 2024).

Across the six states, there are 3.0 physicians, 1.1 non-physician paramedical practitioners, 3.9 nurses and nurse midwives, and 1.5 midwives per 10,000 people. This is equivalent

to one physician for every 3,400 people, one nurse or nurse-midwife for every 2,500 people, and one midwife for every 6,500 people. When combining physicians, nonphysician paramedical practitioners, nurses, nurse-midwives, and midwives, there are 7.9 health workers per 10,000 people, equivalent to one health worker for every 1,300 people. The availability of health workers at facilities varies considerably by state. In Banadir, health worker density is twice as high as the national average, over six times higher than Galmudug, and three times higher than South West and Jubaland. Banadir has one physician for every 1,400 people, whereas Galmudug has one physician for every 20,000 people.

Many health professionals (including doctors) reportedly have migrated abroad or shifted out of public service contributing to chronic shortage.(Dr. Ali Issa and Dr. Aues Scek, 2021).

3.5.4. Push Factors in Somalia

- Insecurity and political instability due to decades of conflict, violence, and terrorism make it unsafe for doctors to work.
- Weak health system infrastructure, including poorly equipped hospitals, shortages of medicines, and inadequate diagnostic facilities.
- Low and irregular salaries, making it difficult for doctors to achieve financial stability.
- High workload and burnout, as Somalia faces a severe shortage of healthcare professionals.
- Limited opportunities for specialization, postgraduate training, and continuous professional development.
- Poor governance and weak regulation, creating uncertainty and lack of professional support.

- Lack of research facilities and academic advancement opportunities within local institutions.
- Inadequate welfare, insurance, and social protection for health workers. (Abdi, 2022).

3.5.5. Pull Factors for Somali Doctors

- Higher salaries and better financial incentives in high-income and Gulf countries.
- Advanced medical technology and well-equipped hospitals that support better clinical practice.
- Access to structured and accredited postgraduate training such as residency and fellowship programs.
- Better working conditions, including manageable workloads and safer workplaces.
- Opportunities for long-term career growth and professional stability.
- Attractive immigration pathways, including permanent residency or citizenship in countries like the UK, Canada, and the USA. (Bank, 2023)
- Strong Somali diaspora networks that support newly arriving doctors socially and economically.
- Safer living conditions and better quality of life for families, including education, healthcare, and social amenities. (Services, 2021).

3.5.6. Consequences for Somalia of Health-Worker Migration / Attrition

- Severe shortage of qualified doctors and health-workers Somalia remains massively understaffed: skilled-health-worker density (doctors, nurses, midwives) is far below global minimums,

making it virtually impossible to cover basic care needs.

- Unequal distribution urban-bias and rural neglect. Many health professionals are concentrated in urban centers, while rural, remote, or conflict-affected areas are left without any qualified care providers, leaving large segments of the population without access to essential services.
- Breakdown of service delivery, weakened public-health system, and compromised emergency response. Due to lack of staff, insufficient infrastructure, and weak system governance, Somalia's capacity to respond to outbreaks, provide maternal-child healthcare, manage chronic diseases, or deliver emergency care is severely undermined.
- Over-reliance on external aid and NGOs, compromising sustainability. Given low domestic capacity, many facilities and services depend on international funding and NGOs; when aid cuts or donor fatigue occur, the system becomes fragile, leading to closures or degraded care.
- Lower quality of care and increased health risks. The lack of sufficiently trained staff, poor regulation of training institutions, and fast-tracked or sub-standard medical education can lead to suboptimal care, misdiagnosis, and increased morbidity and mortality.

3.5.7. Potential Benefits or Opportunities

- Possibility of "brain-drain reversal" / diaspora return / knowledge transfer. There are recent reports of some diaspora health professionals returning to Somalia,

bringing back skills and experience. This could help rebuild capacity if reintegration is supported.

- Expansion of health-professions education institutions. In recent years some growth in medical and health-training institutions has been observed, which if quality and regulation are improved could increase local production of doctors and reduce reliance on foreign-trained staff.
- Opportunities for health-system reform and international support. Given the crisis, there is international and donor interest; global health initiatives, humanitarian aid, and international agencies may invest in rebuilding the health workforce and infrastructure, offering a window for systemic reform.

3.5.8. Government & Stakeholder Responses in Somalia

- Regulatory and Human-Resource for Health (HRH) reforms. The national authorities (post-conflict) have attempted to re-establish regulatory frameworks for human resources in health, aiming to coordinate training, accreditation, workforce deployment, and retention.
- Support from international agencies and NGOs. The World Health Organization (WHO), UN agencies, and other NGOs remain key partners: they support immunization campaigns, emergency response, and sustain some health services in fragile settings where local capacity is insufficient.
- Emerging focus on rebuilding health education and scaling training institutions. There has been growth in medical and health-training schools, with efforts to

train more doctors, nurses and midwives to replenish the workforce though progress remains fragile.

3.6. Key Challenges in Retaining Healthcare Workers

- Economic challenges: low wages and limited benefits for medical professionals, poor funding of public healthcare systems.
- Workplace challenges: overburdened healthcare facilities, lack of access to modern medical technologies and equipment.
- Inadequate Infrastructure: Poorly equipped hospitals and clinics, Lack of modern technologies and facilities.
- Limited Career Development Opportunities: Few chances for advanced training or specialization, Limited access to professional development programs.
- Global Competition for Talent: Aggressive recruitment by developed countries offering better prospects, Immigration policies favoring skilled professionals.
- Lack of Support Systems: Inadequate mentorship and peer support, Weak union representation or advocacy for worker rights.

Addressing these challenges requires coordinated efforts by governments, healthcare institutions, and international organizations.(Duvivier et al., 2017)

3.7. Ethical Issues and policies

3.7.1. Ethical issue in brain drains

The migration of doctors from Africa to high-income countries presents serious ethical challenges related to equity and

global health disparities. African governments often invest scarce public resources in training physicians; yet fragile health systems, low remuneration, and poor working conditions compel many doctors to migrate. This loss of public investment weakens already overstretched health systems, reduces access to essential care, and compromises patient rights in local communities. As a result, healthcare inequities between low- and high-income countries are further intensified. While physicians have, an ethical right to seek better professional and personal opportunities, high-income countries also carry moral responsibility for recruiting health workers from regions facing critical shortages.

3.7.2. Policies Addressing Brain Drain

Policies Addressing Brain Drain focus on both national retention strategies and global collaboration. In Eastern Africa, retention efforts include improving working conditions through competitive salaries, better-equipped health facilities, and expanded training and career development opportunities. Additional incentives for rural service such as housing allowances, hardship bonuses, and tax exemptions aim to address geographic misdistribution of health workers. Some countries have also implemented bonding agreements that require publicly funded medical graduates to serve locally for a defined period. At the global level, international cooperation is essential. The WHO Global Code of Practice on the International Recruitment of Health Personnel (2010) promotes ethical recruitment, discourages active recruitment from countries with critical workforce shortages, and encourages bilateral agreements that ensure mutual benefits, such as training support, financial compensation, or skills transfer.

3.8. Solutions and strategies

- Improving Working Conditions: strengthening working conditions is essential to retaining healthcare professionals. This includes offering competitive salaries that align with regional or international standards, investing in modern health infrastructure and medical technologies, and expanding professional development opportunities through continuous training, workshops, and skills enhancement programs.
- Retention Incentives: Targeted incentives can improve long-term retention. Financial incentives, such as loan forgiveness schemes for medical graduates, tax reductions, and housing allowances, can reduce economic pressures. In addition, rural service programs should include structured reward systems—such as salary top-ups, accelerated promotion, or education benefits—to encourage service in underserved areas.
- Policy Reforms: Effective policy reforms are necessary to balance workforce mobility and national needs. Bonding agreements can require newly trained doctors to serve in their home countries for a defined period before migrating, provided fair working conditions are ensured. Increasing health sector budget allocation is also critical to strengthening health systems and supporting sustainable workforce retention.
- Ethical Recruitment Practices: At the international level, ethical recruitment must be reinforced. The WHO Global Code of Practice on the International Recruitment of Health Personnel should be actively implemented to promote fair recruitment by high-income countries. Compensation models, whereby destination countries contribute financially to the

training costs incurred by source countries, can help offset workforce losses.

- Diaspora Engagement: Engaging the health professional diaspora offers valuable opportunities. Return and circular migration programs can facilitate temporary or permanent return of skilled professionals. Additionally, knowledge and skills transfer can be promoted through virtual mentorship, telemedicine, joint research, and training collaborations with migrant health workers.
- Monitoring and Evaluation: Continuous monitoring is essential for evidence-based policymaking. Data collection and research should regularly track health worker migration patterns and their impacts on health systems. Policy review mechanisms should be institutionalized to periodically assess and revise retention and migration strategies based on measurable outcomes.

3.9. Recommendations and Best Practices

- Develop Comprehensive National Policies on health workforce migration, integrating retention strategies, diaspora engagement, and collaboration with destination countries.
- Enhance Working Conditions and Professional Growth through competitive compensation, career development opportunities, and a supportive work environment.
- Leverage Diaspora Engagement & Return Programs to encourage skilled professionals to return, contribute, or support capacity-building efforts in their home countries.

- Improve Data & Economic modeling to track migration patterns, assess policy effectiveness, and quantify the economic impact of outmigration.
- Utilize economic modeling and scenario analysis to quantify the economic impact of outmigration and strengthen the investment case for effective interventions

4. CASE STUDIES AND BEST PRACTICES

4.1. Kenya's Strategy to Retain Doctors

Kenya has taken several steps to curb the migration of its doctors by improving working conditions and career development pathways. The government has increased investment in the health sector through the Managed Equipment Services (MES) program, which brought modern diagnostic tools to public hospitals. Additionally, Kenya has expanded postgraduate training opportunities in local universities and increased salaries for public healthcare workers under collective bargaining agreements with doctors' unions. The creation of the Universal Health Coverage (UHC) pilot program in counties has also improved access to services and strengthened health system capacity, giving healthcare professionals more structured roles and recognition.

4.2. Ethiopia's Health Extension Program (HEP)

Ethiopia's Health Extension Program (HEP), launched in 2003, focuses on training and deploying Health Extension Workers (HEWs) to deliver basic care in rural areas. While not directly aimed at doctors, the program reduced the burden on physicians by shifting preventive and primary healthcare tasks to trained community health workers. This allowed doctors to focus on more advanced care. By improving rural healthcare access and reducing professional isolation, the program helped retain health

workers in their home regions and reduced the push for migration from rural to urban and eventually to international destinations.

4.3. Rwanda's Healthcare Reforms

Rwanda is often cited as a model for healthcare reform in low-income countries. After the 1994 genocide, the government rebuilt its health system with a strong focus on equity, performance-based financing, and local capacity building. The government introduced twinning programs with international universities, allowing Rwandan doctors to train locally under visiting specialists. The Human Resources for Health (HRH) program, launched in collaboration with U.S. institutions, helped build in-country postgraduate training. Rwanda also offers rural service incentives, competitive public sector wages, and continuous medical education, which have helped reduce doctor migration significantly.

5. THE FUTURE OF DOCTOR MIGRATION IN EASTERN AFRICA

5.1. Trends and Predictions

The future of doctor migration in Eastern Africa will likely continue to be shaped by a combination of economic pressures, political stability, and healthcare investment across the region. If current conditions persist such as low wages, weak infrastructure, and limited specialization opportunities outmigration of skilled doctors will likely remain high. However, increased regional collaboration through bodies like the African Union and East African Community (EAC) may open new opportunities for intra-regional mobility and retention.

Countries like Kenya, Rwanda, and Ethiopia, which are investing more in domestic health systems, may see a slower rate of outward migration compared to fragile states like Somalia or

South Sudan. At the same time, destination countries such as the UK, Canada, and Gulf states are expected to continue recruiting African doctors to address their own workforce shortages. Unless significant local reforms are implemented, the doctor-to-patient gap in Eastern Africa is likely to widen.

5.2. The Role of Technology

Technological advancements have the potential to reshape doctor migration trends in the region. Telemedicine platforms can allow doctors to consult, diagnose, and treat patients remotely, reducing the need for physical relocation. This is particularly useful for rural and conflict-affected areas in Somalia, Ethiopia, and Uganda. Additionally, online learning and e-health training platforms can offer local doctors access to continuous professional development without traveling abroad. Furthermore, digital health record systems, virtual medical conferences, and diaspora-led online mentoring programs are helping bridge the skills gap between local and international healthcare standards. If supported by national policies, these tools could improve job satisfaction, enhance training, and reduce the urgency for migration.

6. CONCLUSION

The migration of doctors from Eastern Africa to developed countries presents a complex challenge with significant implications for both regions. While developed nations benefit from an influx of skilled healthcare professionals, Eastern African countries face severe shortages, weakening their healthcare systems and exacerbating existing disparities. Brain drain undermines local medical training investments and limits access to quality care, particularly in rural areas. However, for migrating doctors, the move often offers better salaries, advanced facilities, and career growth opportunities that may not be

available at home. Addressing this issue requires a balanced approach, including improved working conditions, competitive incentives, and international cooperation to ensure equitable healthcare workforce distribution. Sustainable solutions must involve partnerships between Eastern African governments and developed nations to create mutually beneficial arrangements.

Initiatives such as conditional scholarships, mandatory service periods, and telemedicine collaborations could help retain talent while still allowing mobility. Additionally, investing in local healthcare infrastructure, education, and research can reduce push factors driving migration. Ultimately, a global commitment to ethical recruitment and fair compensation is essential to mitigate the negative effects of this trend. Without systemic changes, the continuous outflow of doctors will deepen healthcare inequities, leaving vulnerable populations in Eastern Africa at greater risk while perpetuating global health disparities.

REFERENCES

AAMC President and CEO Darrell G. Kirch, M. (n.d.). New research shows increasing physician shortages in both primary and specialty care. *Association of American Medical Colleges*. https://www.aamc.org/news/press-releases/new-research-shows-increasing-physician-shortages-both-primary-and-specialty-care?utm_source=chatgpt.com

Africa CDC. (2025). *Outmigration of Health Workers: Case studies of Nigeria, Rwanda and Zambia*. *April*, 1–6. https://doi.org/10.1186/s12939-022-01789-z.

Africa Center for Strategic Studies. (2023). *African Migration Trends to Watch in 2023*. 4.

Ajmi, S. C., & Aase, K. (2021). Physicians' clinical experience and its association with healthcare quality: A systematised review. *BMJ Open Quality*, *10*(4), 1–8. https://doi.org/10.1136/bmjoq-2021-001545

Anyangwe, S. C. E., & Mtonga, C. (2007). Inequities in the global health workforce: The greatest impediment to health in Sub-Saharan Africa. *International Journal of Environmental Research and Public Health*, *4*(2), 93–100. https://doi.org/10.3390/ijerph2007040002

Blacklock, C., Ward, A. M., Heneghan, C., & Thompson, M. (2014). Exploring the migration decisions of health workers and trainees from Africa: A meta-ethnographic synthesis. *Social Science and Medicine*, *100*, 99–106. https://doi.org/10.1016/j.socscimed.2013.10.032

CIA.gov. (n.d.). *geographycal UGANDA*. Worldfactbook. https://www.cia.gov/the-world-factbook/about/archives/2022/countries/uganda/?utm

Covell, C. L., Neiterman, E., & Bourgeault, I. L. (2016). Scoping review about the professional integration of internationally educated health professionals. *Human Resources for Health*, *14*(1), 1–12. https://doi.org/10.1186/s12960-016-0135-6

Deressa, W., & Azazh, A. (2012). Attitudes of undergraduate medical students of Addis Ababa University towards medical practice and migration, Ethiopia. *BMC Medical Education*, *12*(1), 1. https://doi.org/10.1186/1472-6920-12-68

Dharamsi, S., Ho, A., Spadafora, S. M., & Woollard, R. (2011). The physician as health advocate: Translating the quest for social responsibility into medical education and practice. *Academic Medicine*, *86*(9), 1108–1113. https://doi.org/10.1097/ACM.0b013e318226b43b

Dr. Ali Issa and Dr. Aues Scek. (2021). Health, Economic and Social Impact of Covid-19 in Somalia. *National Economic Council (Nec) Somalia , June*, 1–69. https://nec.gov.so/wp-content/uploads/2021/11/Policy-Brief-on-The-Health-Economic-and-Social-Impact-of-Covid-19-in-Somalia.pdf

Duvivier, R. J., Burch, V. C., & Boulet, J. R. (2017). A comparison of physician emigration from Africa to the United States of America between 2005 and 2015. *Human Resources for Health*, *15*(1), 1–12. https://doi.org/10.1186/s12960-017-0217-0

Ebeye, T., Lee, H., & Sriharan, A. (2023). Physician-Suggested Innovative Methods for Health System Resilience amidst Workforce Emigration and Sociopolitical Unrest in Nigeria: A Survey-Based Study. *Annals of Global Health*, *89*(1), 1–17. https://doi.org/10.5334/aogh.4025

Hassan, M. M., Ali, A. N., Ali, I., Mohamed, Z. O., Abdullahi, H. M., Ahmed, M. M., Mohamud, A. K., Adebisi, Y. A., Okesanya, O. J., & Lucero-Prisno, D. E. (2024). Regulation of health professions education and the growth of schools in Somalia. *BMC Medical Education*, *24*(1). https://doi.org/10.1186/s12909-024-06179-3

Iliffe, J. (1998). *East African Doctors*. *null*(1979), null.

IOM. (2015). Migration in Ugandaigration in Uganda A RAPID COUNTRY PROFILE 2013 International Organization for Migration Plot 6A Bukoto Crescent. *International Organisation for Migration*. http://uganda.iom.int/

Jembere, F. (2020). *The Exodus of Medical Professionals from Ethiopia : An Examination of Emigration , Continued Stay and Return Intentions*. 1–72.

Kayumba, K., Ntihabose, C., Musange Furere, S., Ngabo, B., Irakiza, P., Rubuga, F. K., Umutoni, N., Kalisa, I. R., Birindabagabo, P., Rwamasirabo, E., Kayibanda, E., Mukundirukuri, P., Absolomon, G., Dhanani, S., & Condo, J. (2025). Dual Clinical Practice (DCP) policy to improve the retention of human resources for health in Rwanda: a mid-term review using a cross-sectional and retrospective study design. *BMC Health Services Research*, *25*(1). https://doi.org/10.1186/s12913-025-12313-8

Liese, B., & Dussault, G. (2004). *The State of the Health Workforce in Sub-Saharan Africa :* 52.

M. Awases, A. Gbary, J. N. and R. C. (2004). *MIGRATION OF HEALTH PROFESSIONALS IN SIX COUNTRIES*. WHO Regional Office for Africa.

March. (2020). *" Effective h ealth workforce coverage and resilience "*.

Michael, Y., Jira, C., Girma, B., & Tushune, K. (2011). Health workforce deployment, attrition and density in East Wollega Zone, Western Ethiopia. *Ethiopian Journal of Health Sciences*, *20*(1). https://doi.org/10.4314/ejhs.v20i1.69426

Mills, E. J., Kanters, S., Hagopian, A., Bansback, N., Nachega, J., Alberton, M., Au-Yeung, C. G., Mtambo, A., Bourgeault, I. L., Luboga, S., Hogg, R. S., & Ford, N. (2011). The financial cost of doctors emigrating from sub-Saharan Africa: Human capital analysis. *BMJ (Online)*, *343*(7835), 1–13. https://doi.org/10.1136/bmj.d7031

Ministry of Health and Social Services. (2019). *National Human Resources for Health Strategic Plan, 2020-2030*. 1–35. https://pdf.usaid.gov/pdf_docs/PA00X19S.pdf

Mwaniki, D. L., & Dulo, C. O. (2008). Migration of health workers in Kenya: The impact on health service delivery. *EQUINET and IOM Discussion Paper Series*, *55*(March), 1–38. http://www.equinetafrica.org/bibl/docs/Diss55KenyaHRMig.pdf

Ndenga, E., Uwizeye, G., Thomson, D. R., Uwitonze, E., Mubiligi, J., Hedt-Gauthier, B. L., Wilkes, M., & Binagwaho, A. (2016). Assessing the twinning model in the Rwandan Human Resources for Health Program: Goal setting, satisfaction and perceived skill transfer. *Globalization and Health*, *12*(1), 1–14. https://doi.org/10.1186/s12992-016-0141-4

Ndikubwimana, A., Matsiko, E., Kamanzi, C., Umubyeyi, A., Chisare, D., Kanya, L., & Simmons, B. (2024). Strengthening Rwanda ’ s health workforce Strategies to improve retention in the health sector Strengthening Rwanda ’ s health workforce Strategies to improve

retention in the health sector. *African Health Observatory - Platform on Health Systems and Policies (AHOP)*, 6–7, 14–15. https://ahop.aho.afro.who.int/2025/03/19/new-ahop-policy-brief-presents-strategies-to-address-health-worker-attrition-in-rwanda/?form=MG0AV3%0Ahttps://www.afro.who.int/countries/rwanda/publication/strengthening-rwandas-health-workforce-strategies-improve-

NPA. (2020). Third National Development Plan (NDPIII) 2020/21-2024/25. *Uganda Vision 2040, Third*, 341. http://www.npa.go.ug/wp-content/uploads/2020

Odhiambo, J., Rwabukwisi, F. C., Rusangwa, C., Rusanganwa, V., Hirschhorn, L. R., Nahimana, E., Ngamije, P., & Hedt-Gauthier, B. L. (2017). Health worker attrition at a rural district hospital in Rwanda: A need for improved placement and retention strategies. *Pan African Medical Journal*, *27*, 1–7. https://doi.org/10.11604/pamj.2017.27.168.11943

Report, N. (2024). *Somalia_HHFA_National (1). October*.

Review, L. (2008). *Functional Mentoring : A Practical Approach With*. *28*(3), 157–164. https://doi.org/10.1002/chp

Saluja, S., Rudolfson, N., Massenburg, B. B., Meara, J. G., & Shrime, M. G. (2020). The impact of physician migration on mortality in low and middle-income countries: An economic modelling study. *BMJ Global Health*, *5*(1), 1–8. https://doi.org/10.1136/bmjgh-2019-001535

Scelza, S. (n.d.). Ethiopia's Health Workforce Shortage: Strategies To Train & Retain. *Global Health for The Borgen Project*. https://borgenproject.org/ethiopias-health-workforce-shortage

Somalia, ministry of health in. (2020). Human Capital Development Strategies. *The International Encyclopedia of Higher Education Systems and Institutions*, *May*, 1677. https://doi.org/10.1007/978-94-017-8905-9_300339

Team, G. (n.d.). *Population in Kenya compared to Somalia: Trends, Charts, Rankings*. https://georank.org/population/kenya/somalia?utm

UK-kenya-health-bilateral-agreement. (n.d.).

UNHCR. (2023). *Global Trends report 2023*. UNHCR Global Website. https://www.unhcr.org/media/global-trends-report-2023

United Nations Statistics Division. (2013). *Demographic Yearbook—Table 3: Population by sex, rate of population increase, surface area and density*. 1–13. https://unstats.un.org/unsd/demographic/products/dyb/dyb2005.htm

van de Klundert, J., van Dongen-van den Broek, J., Yesuf, E. M., Vreugdenhil, J., & Yimer, S. M. (2018). 'We are planning to leave, all of us'-a realist study of mechanisms explaining healthcare employee turnover in rural Ethiopia. *Human Resources for Health*, *16*(1), 1–13. https://doi.org/10.1186/s12960-018-0301-0

Who. (2011). World Health Statistics 2011. *WHO Library Cataloguing-in-Publication Data*.

WHO. (2021). *Strengthening Rwanda's health workforce Strategies to improve retention in the health sector*. http://apps.who.int/bookorders.

Willcox, M. L., Peersman, W., Daou, P., Diakité, C., Bajunirwe, F., Mubangizi, V., Mahmoud, E. H., Moosa, S., Phaladze, N., Nkomazana, O., Khogali, M., Diallo, D., De Maeseneer, J., & Mant, D. (2015). Human resources for

primary health care in sub-Saharan Africa: Progress or stagnation? *Human Resources for Health, 13*(1). https://doi.org/10.1186/s12960-015-0073-8

CHALLENGES OF PRIMARY HEALTH CARE IN EASTERN AFRICA: A FOCUS ON ETHIOPIA AND NEIGHBORING COUNTRIES

Feven Frew TEFERI[1]

Gülsüm ÖZTÜRK EMIRAL[2]

Egemen ÜNAL[3]

1. INTRODUCTION

The role of Primary Health Care (PHC) in a particular society or country has a larger role to play in community well-being within the dynamic environment that we find ourselves in. Primary health care is on a universal status as the foundation is any given society. Primary health care is advocated as a basic, cost-effective medical system that is available to persons and families. It is the entry point of the national health system, and the closest possible execution of services is achieved in the place where people live and work (WHO, 1978). Here, the paper will

[1] Postgraduate Student, Health Policy and Global Health Department, Public Health Institute, Ankara Yildirim Beyazit University. ORCID: 0009-0004-8685-1590.

[2] Assist. Prof. Dr. Public Health Department, Faculty of Medicine, Ankara Yildirim Beyazit University. ORCID: 0000-0001-8781-4127.

[3] Assoc. Prof. Dr. Public Health Department, Faculty of Medicine, Ankara Yildirim Beyazit University. ORCID: 0000-0002-9939-9191.

analyze the main issues of health in Ethiopia and its neighbors, including Kenya, Uganda, South Sudan, and Somalia, which can be considered as a regional view of the East African area. These nations represent a variety of political backgrounds, economic capabilities, and structures of the health system. The case of Ethiopia shows a high level of commitment, considering its community-based Health Extension Program. In contrast, Kenya has its devolved system of health services that have different financial and governance challenges. Uganda is struggling with the human resource issue of service delivery. South Sudan and Somalia, in the meantime, are the cliches of healthcare systems that are in the protracted conditions of weakness and war, wherein the principle of public health is entirely disputed (World Bank, 2025).

The existences of these challenges create a regional crisis in primary care. These challenges are not isolated: they are deeply interconnected, creating a various cycle that weekend the entire health system. The most pioneers include

- Shortage of healthcare personnel: The existence of practitioners, nurses and midwives across these countries falls below the World Health Organization (WHO) minimum rate.
- Unpredictable Financing: The health facilities are not financed well. Low government health expenditure is making the health facilities are forced to heavily reliance on two volatile sources: out of pocket payments by households, which push millions in to poverty each year and external donors funding, which

can be unpredictable and misaligned with long term national priorities (WHO, 2022a)

- Fragile supply chain and infrastructure: periodical shortage of stocks of essential medicines, vaccines and basic medical equipments, weak logistics management, inadequate storage and poor infrastructure, especially in remote areas as well as the lack of necessary tools for effective treatment are often unavailable
- The impact of poor governance: In a country like South Sudan and Somalia, a practical conflict has led to direct targeting of health workers and facilities, the collapse of governance and mass displacement. Even in relatively stable countries, governance challenges such as administrative inefficiencies, limited institutional capacity and weak accountability mechanisms can hinder the effective allocation of resources to front line primary health care services

These constraints are expected to highly reduce a system responsiveness and a delay in the delivery of essential PHC interventions, particularly in underserved setting. However, this landscape is not one of unrelenting gloom. The region is also a hot bed of resilience. Ethiopia's Health stand as among the world's most extensive community health worker programs (Assefa et al, 2019). The hard working efforts of non-governmental organizations and frontline health workers in Somalia and South Sudan provide a lifeline for millions of the community who would otherwise have no access to care. These efforts of providing health care to the community has helped the health aspects of the country.

Therefore, the assessment of moves beyond a soiled and it differs from county by country examinations. It seeks to synthesize the different types of evidence which are existed in these five national contexts to construct a comprehensive and nuanced picture of the state's health system in Eastern Africa country. The central thesis is the challenges facing PHC in these regions are systematic and reinforcing; a weakness in one area such as financing, directly exacerbated challenges in another, such as health workforce or drug availability. Through identifying all these inter-linkages, as well as through pointing out similar and distinct struggles, this paper shall offer a strong background to the realization of the fundamental hitch in the way of effective primary care (Kruk, 2018).

The paper aims to inform and make recommendations, which are integrated and multi-level recommendations that are addressed to policy makers, donors, and other stakeholders in the health sector, as it is not only a health requirement to build resilient PHC systems in Ethiopia, but this is also a key requirement to sustain its economic prosperity and long-term stability in the region. It is this analysis that opens that pivotal work by initiating the stage with an in-depth examination of the inter-relationship of the challenges that are present in the First-level health care arena in Eastern Africa.

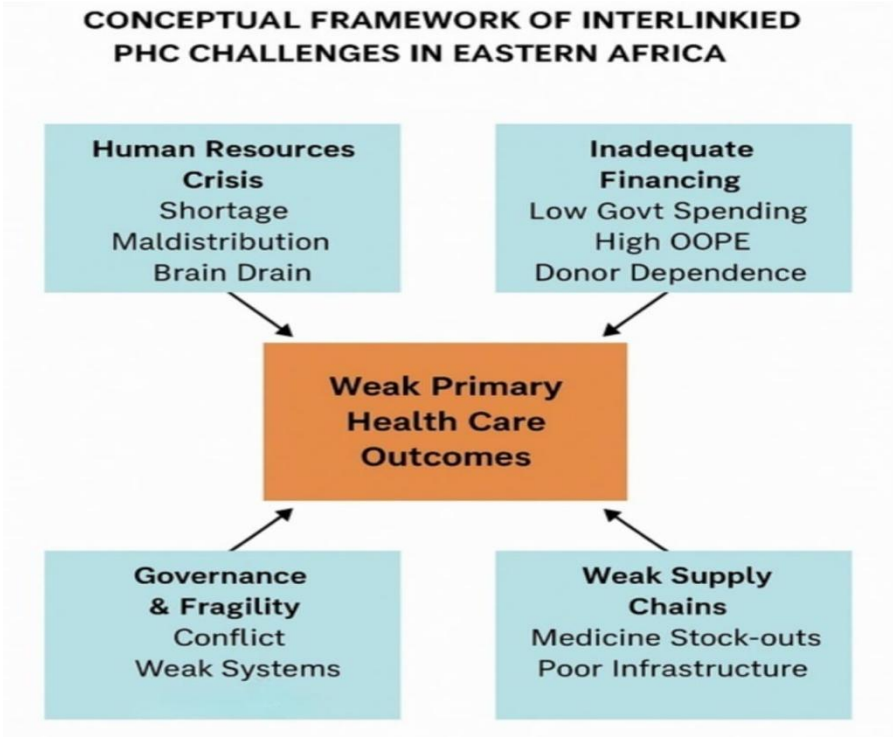


Figure 1. Conceptual Framework of Integrated PHC Challenges in Eastern Africa

Source: *Developed by the author based on WHO (2016); Kruk et al. (2018); World Bank (2021); WHO (2022b); Kebede et al. (2022).*

2. THE HEALTH EXTENSION PROGRAM: STRUCTURE, ACHIEVEMENT AND REGIONAL INFLUENCE

The (HEP) is the key to the provision of essential health care administration in Ethiopia. The fact that the program has been recognized to have made immense service decentralisation in improving the accessibility of community-based services.

However, the program still faces severe problems in the health system. The HEP Optimization Roadmap (2020- 2035) can be used as an effective framework in the reorganization and operationalization of services aimed at enhancing sustainability and long-term efficiency. One of the strongest points about HEP was the use of the so-called health extension workers (HEWs) given the roles of extending PHC cover to various communities.

Although many studies have been arduous in pointing out challenges faced by HEWs, there is not much evidence on the implementation of initiatives by enhancing the labor environment of the latter and the health disparities of the targeted populations. Despite the frequent statement that HEP is a successful model, such issues as low remuneration, lack of clearly defined career progression patterns, and supportive professional development frameworks that are consistently present have become the subjects of growing concern. The challenges have led to low motivation, job dissatisfaction, and skills and core competencies gaps among the HEWs, which in effect has limited the efficiency and output of the program.

The application of decentralized paraprofessional health workers has a small history in the Ethiopian health system. The introduction of auxiliary health workers occurred in the late 1970s as part of the broader efforts to raise PHC (Wang et al., 2016). Nosotropically, the Government of Ethiopia officially rolled out HEP in 2003 under the Health Sector Development Program II in a bid to counter the limitations recorded with the original community-based health worker initiatives. The implementation of the program was due to disease burden indicators, low service coverage of the maternal and child health services, and extensive

differences between rural and urban citizens regarding access to health services (Assefa et al., 2019).

The HEP was rolled out in 2003, in rural regions, then pastoral (2006) and urban (2009) regions. It was based on its core service delivery of 16 packages in 4 thematic areas, which pertained to family health, disease prevention, sanitation, and communication (Assefa et al., 2019). The 2016 release of the second-generation HEP amended this clinical framework and included mental health and chronic disease management, and maximised the known ways of care delivery, classes of which include long-acting contraception.

2.1. Health System and Workflow in Ethiopia

The medical care of Ethiopia has three levels of care, including primary, secondary and tertiary care. Health Extension Program (HEP) is one of the programs in the primary health care unit (PHCU) and acts as the first point of entry of the population to the health system. A PHCU is made up of three integrated service points, which include health posts, health centers, and primary hospitals. According to Teklu et al. (2020) health posts in rural zones are set at the lowest level of administration, which is the kebele, the smallest administrative unit, and one health post serves around 1,000 households or 3,000-5,000 individuals. Every health post is connected with a health centre supervising about 25,000 people (Ethiopia FMoH, 2005). In an urban community where the availability of facilities of a higher level is closer to it, a health centre in such an environment serves on average 40,000 individuals.

Two health extension workers (HEWs) manned health posts in rural regions and health centers in urban regions, and were the frontline implementers of HEP. HEWs provide services at health centers and in the community by making household visits and outreach (Ethiopia MoH,2021). The HEWs are differently paid government employees as opposed to the introduction of community health workers in the past, where volunteers were used (Ethiopia FMoH, 2024).

HEWs are mainly female hires who are selected based on their communities because they know the local languages, cultural practices, as well as the needs of the community. It must be eligible in terms of at least Grade 10 education (Banteyerga, 2011; Workie & Ramanda, 2013). Prior to deployment, HEWs attend a one-year pre-service vocational training on health promotion, prevention of diseases, and provision of basic curative care. Supervising, mentoring, and logistical support of the health centres and kebele administrations help them in their work. To reach as many people as possible, HEWs use the vast system of volunteer community health workers known as the Women Development Army or Health Development Army (Community Health Roadmap, 2021).

2.2. Health Extension Program in Ethiopia

The Health Extension Program (HEP) has considerably extended its coverage, infrastructure, and services. The program had an approximate of 40,000 health extension workers and 17,500 health posts throughout the country by 2019. HEP, by its very nature, was originally focused more on promotive and preventive care, but over the years, it has implemented the basic curative services and currently covers a wider spectrum of health-

related conditions (Ethiopia MoH, 2020). The program has also grown not only in rural, but also in pastoralist and urban environments, where the models of service delivery have been localized. Among the major changes, the implementation of male health extension workers in pastoralist settings and the launch of Family Health Teams in urban localities to support more intricate health problems are included (Teklu et al., 2020).

Reforms to urban health centres can be found in Urban Family Health Teams, introduced in 2018. These multidisciplinary teams, which include nurses, midwives, environmental health workers HEWs, and other workers, are all geared towards addressing complex community health needs, especially for the underserved groups. In the future, reforms have been proposed in the HEP Optimisation Roadmap, including the modernisation of selected health posts to offer more comprehensive health services and the improvement of staffing in health centres for HEP units (Ethiopia MoH, 2020).

3. CHALLENGES OF PRIMARY HEALTH CARE IN ETHIOPIA AND NEIGHBORING COUNTRIES

II - Inadequate Salary & Incentives

Despite the current government supports for health centers, there are also many challenges in Ethiopia and across the neighboring countries. the following were ranked as the factors impacting the motivation and retention of HEWs in Ethiopia: financial reasons such as higher salaries; material reasons such as the development of the infrastructure at the facility and providing

childcare services to the HEWs; and non-material reasons like self-image, acceptance, and recognition of the community and supervisors of the HEWs (Arora et al., 2020). Even after implementing the best practice in professionalizing and delivering pay to HEWs, the following issues afflict (Teklu et al., 2020):

- HEWs feel that the renumeration is poor, especially in comparison to the adjustment in their duties and the broadening of the service portfolio.
- The bottom line in dissatisfaction is a lack of salary increments, incentives, as well as overtime payments.
- HEWs do not receive uniform salary packages and benefits in all regions.
- The non-monetary incentive systems provided in the HRH strategic plan are not fulfilled significantly. Moreover, it is not clear whether the Health Extension Workers (HEWs) will be eligible for such motivational schemes.
- Intangible de-motivating aspects exist, including the unappreciation and non-acceptance by communities/supervisors.

II - Lack of Training Support & Supervision

Before employment and after employment training is a fundamental mechanism towards maintaining and enhancing the quality of delivery of health care. Training, in the case of the Health Extension Program (HEP), can also be understood as training or rather instruction done to provide health workers with

the necessary skills to execute HEP activities, whereas academic learning and long-term professional growth are considered in isolation. Training is aimed at enhancing the health workers' knowledge, applied skills, attitudes, motivation, and commitment towards the profession about which is critical in-service delivery (Schleiff et al., 2021). Inseparably connected with training is such a phenomenon as supportive supervision that focuses on guiding, mentoring, and encouraging health workers to achieve anticipated performance levels and provide high-quality care.

The extension workers (HEWs) are first subjected to a one-year pre-service training at level 3, which is offered in the technical and vocational schools or health colleges at various places nationwide. At this point, the training is provided in 22 colleges across the country. The curriculum accords with the scope of work of the HEWs and encompasses all the HEP service packages, which integrate classroom teaching with a field experience. Once they complete the training successfully, trainees are offered a certificate of competency, which makes them qualified to be deployed (Community Health Roadmap, 2021).

Integrated Refresher Training (IRT) is one of the measures that has been prescribed to sustain the post-deployment competencies. IRT is performed every two years and aimed both at updating clinical practices and standards and at enhancing the current knowledge and developing new technical skills based on the new priorities of national health (Schleiff et al., 2021). The purpose of the unified approach is to cut training redundancies and, at the same time, improve the quality of services. Moreover, HEWs are involved in professional development, which is module-based and specific to certain pillars of HEP.

The HEP, the second generation, offered new training opportunities, such as one extra year of study that helps an HEW to improve the level of education to level 4, becoming a qualified community health nurse. This educational upgrade would take 2 years of commitment to the entry-level candidates venturing directly out of secondary education. Enlarged career paths have been implemented since 2019, providing health care workers with a chance to acquire a Bachelor of Science in Family Health (Schleiff et al., 2021).

HEW performance incorporates clinical oversight. The weekly supportive supervision is offered to the staff of the health centre through assessing the implementation and operational issues related to HEP with standardized checklists, and the goals of the supervision are to document and share the feedback with the supervisors (Teklu et al., 2020). Frequent monitoring is done by woreda health offices at monthly levels and regional, zonal, and national levels at quarterly levels. A multi-country qualitative appraisal provided evidence that HEWs providing integrated community case management received long-term clinical mentoring and formal follow-up meetings following training (Nsibande et al., 2018). Performance monitoring is also contributed to by the community members and the local committees, and the HEWs, in their turn, oversee and assist the WDA/HDA volunteers.

In a 2019 review, the technical competency of staff was compromised by inadequate initial accreditation and professional upskilling programs and poor supervision. These loopholes were reported to adversely affect the delivery of midwifery, clinical, and environmental health care (Teklu et al., 2020).

- Even though they participate in the high-level three program, many of the HEWs stay uncertified and have significant knowledge and performance disparity.
- Not more than half of the HEWs who were involved in the HEP evaluation had undergone the IRT training as required. On a positive side, IRT attendees were contented with the offered training and would refer to it among other HEWs.
- Noncommunicable diseases represent the least attended of the short training courses provided (approximately 30%), although this package had recently been added to HEP.
- Current in-service training has been unable to fill the gap in competencies between HEW and the needs of the HEP's broadening service portfolio.
- Beneficial supervision is of low quality and frequency, with more advanced oversight being more dysfunctional.

III - Limited Opportunities for Career Development

Provision of further learning and explicit career ladders is significant in enhancing motivation, performance, and maintenance of the workforce. During the initial stages of the Health Extension Program (HEP), the focus was not so much on long-term professional development of the health extension workers (HEWs). In reaction to this, the Ministry of Health (MoH) has come up with a career progression framework. In this pathway, HEWs are able to graduate from level 3, which they achieved on pre-service training, to level 4 after they have completed a one-

year diploma course and received a certificate of competency. This upgrading process is among the priorities of the HEP Optimization Roadmap because it will increase the number of level 4 HEWs (Ethiopia Ministry of Health, 2020). In September 2021, half of rural HEWs went through this training and reached level 4 (Community Health Roadmap, 2021).

Other tertiary education available to a level 4 HEW as part of the career structure is the Bachelor of Family Health. In its debut in 2019, this programme was offered in most universities of Ethiopia, and 240 students were enrolled during the first year (Community Health Roadmap, 2021). Graduates can be hired as Family Health Professionals (FHPs), the current members of the family health team who assist in the service delivery in the city. The number of individuals who had successfully become FHPs amounted to approximately 260 HEWs by September 2021. The Optimization Roadmap outlines action plans on how to move forward with midwifery, nursing, and public health services, as well as environment and family health programs. In cases where the HEWs fail to satisfy academic standards to pursue additional training, other administrative and support positions in the health system are offered (Ethiopia MoH, 2020).

The experience in Ethiopia shows that the availability of a clear system of career trajectory is also loosely associated with job satisfaction and decreased physical turnover among HEWs (Nsibande et al., 2018). Although these reforms focus on important gaps, there are still problems. In other cases, the minimum educational qualifications to participate in upgrade programmes are unmet by some of the HEWs, particularly in rural zones, which impairs the quality of the services provided, as well

as the growth in their careers. Besides this, the promotion and transfer, especially from rural to urban areas, is rare, and there are also no avenues available beyond the degree level training.

4. HEALTH EXTENSION PROGRAMS IN ETHIOPIA & EAST AFRICAN COUNTRIES

While cross-cutting challenges of human resources, financing, and governance affect the entire region, each country presents a unique manifestation of these struggles. This section provides an overview of the primary PHC challenges and key adaptive responses in Ethiopia, Uganda, Kenya, South Sudan, and Somalia.

4.1. Ethiopia: The Health Extension Program and its Strains

Ethiopia's Health Extension Program (HEP) is a flagship community-based initiative, deploying over 40,000 Health Extension Workers (HEWs) to more than 17,000 health posts (Ethiopia FMoH, 2020). It has significantly improved key indicators such as under-five mortality and contraceptive prevalence. However, the program is now strained by workforce overload, limited career progression for HEWs, a critical shortage of mid-level clinicians for supervision and referral, and persistent supply chain failures. The fixed post model has difficulty accessing mobile pastoralists as well. In reply, the government is experimenting with digital health tools, enhancing the control within the district by the use of so-called Woreda Transformation Teams, and with outreach aimed at pastoralists using their mobile phones.

4.2. Uganda: The Quintessential HRH Crisis

The PHC system is one of the examples of the human resources crisis in Uganda; the health worker density is among the lowest in the region, and vacancy rates in state facilities are more than 40% (MoH Uganda, 2021). The fundamental problem is that health workers are not able to stay in the rural regions because of low salaries, harsh working conditions, and insufficient impact on their career growth. Innovations have aimed at transferring tasks to middle-level cadres and piloting performance-based finance packages and retention packages in rural areas, but they are still disjointed.

4.3. Kenya: Financing PHC in a Devolved System

The health service delivery in Kenya has, since the 2010 constitution, suffered a setback of inequitable PHC financing and fragmentation of service delivery, since the constitution devolved the health service delivery to 47 counties. Counties with more wealth spend more and contribute to the geographic inequalities. In this regard, a number of countries are adopting results-based financing (RBF) models. Countries such as the free maternity programs known as the Linda Mama and a continuous thrust to increase the National Hospital Insurance Fund (NHIF) cover to cover outpatient primary care to ease financial burdens (Orangi et al,2021).

4.4. South Sudan: Maternal and Child Health in a Fragile State

The extended history of instability has destroyed South Sudanese primary healthcare (PHC) and has left some of the most severe health outcomes in the world. It can be supported by the

fact that the maternal mortality rate is 1,223 deaths per 100,000 live births (UNICEF, 2022). The service utilization is hindered by the three-delay model, where the prevalence, pervasive conflict, displacement of people, and the destruction of physical infrastructure aggravate the difficulty of seeking, accessing, and receiving medical care. PHC is largely delivered by NGOs and UN agencies through a hybrid model of static clinics and mobile outreach teams operating within the humanitarian cluster system).

4.5. Somalia: PHC in a Context of Prolonged Conflict

Somalia's health system is characterized by extreme fragility and near-total dependence on external aid, with public health expenditure being among the lowest globally (World Bank, 2023). Insecurity, attacks on health facilities, and constant population displacement disrupt service delivery. Adaptive responses rely heavily on mobile clinics and trained CHWs distribute pharmaceutical supplies, a basic package of services, especially in inaccessible areas or for internally displaced populations. These mechanisms operate in a context of minimal government capacity and unpredictable donor funding.

Table 1. Summary of Country-Specific Primary Challenges and Innovation

Country	Primary Challenge	Key Innovation / Model
Ethiopia	System strain&HRH Support for HEWs	National scale Health Extension program
Uganda	Health Worker Recruitment & Retention	Training of Mid-level cadres
Kenya	Equitable Financing post-Devolution	County -level Result -Based Financing
South Sudan	Access in Fragile state	NGO-led Mobiclinics &outreach
Somalia	Delivering PHC amidst conflict	NGO/CHW-led Service Delivery

Developed by the author based on; FMoH,(2020) ;MoH Uganda (2021); MoH Kenya (2021); UNICEF;(2022).

5. POTENTIAL INTEGRATED SOLUTIONS FOR PRIMARY HEALTH CARE CENTERS IN ETHIOPIA & NEIGHBORING COUNTRIES

I - Improved salary commensurate with role

The evidence of other countries indicates that the ability to increase the financial remuneration might help to motivate health workers and increase their performance (Colvin et al., 2021). Financial incentive was identified as the factor that is closely related to the motivation of the job of the HEWs in a cross-sectional study carried out in southern Ethiopia (Mohammed et al., 2015). Likewise, in one more study (Gambella Region), rural HEWs listed salary increment as one of those factors that make them satisfied and motivated; a low wage acted

as a demotivating factor (Demmem et al., 2019). Some of the solutions to the challenges facing the HEW salaries include increasing all salaries, payment of salaries based on performance, performance-based pay reviews (salary based on roles and performance), or a better salary scale and increment (Pallas et al., 2013).

- The research has evaluated the evidence on the effects and possible issues with enhanced remuneration, although the evidence is scarce on the experiences and effects of enhancing remuneration policies at the community workforce tier.
- WHO advises health workers to be remunerated in proportion to job demand, complexity, hours worked, training, and job roles they take on, which is the best practice of remunerating health workers based on the local minimum wage (WHO, 2018).
- The available data on the usage of the improved remuneration model of community-based health workers is minimal. Nonetheless, Sierra Leone's evidence indicates that wage increments effectively increased the level of recruitment and minimized absenteeism in the workforce (Stevenson et al., 2012).
- The key point to be made is that the size of the increase should not be negligible, with the wage hike that fails to correspond with the rise in expenses and responsibilities undertaken likely to erode morale of the health workers (Wurie et al., 2016).

Overreliance on efficacy related incentives in itself may be problematic, and the use of result-oriented pay is not advisable (Gadsden et al., 2021). Such risks can consist of the decline in financial safety, a decline in work on non-incentivized duties, and a decline in motivation (because of perceived unfairness or the declining total compensation) (WHO, 2018).

- Incentives based on better remuneration should be treated adequately since failures to pay and delays, and irregularly distributed incentives have also been found to be de-motivating (Kok et al., 2015).
- Among other factors, enhanced compensation designs must put into careful consideration: (1) the necessity of commitment by the highest-level policy makers; (2) financial constraints and fiscal sustainability constraints; (3) (4) spillover effect of wage demands by other sectors; (4) the capacity to provide incentive over time/long term distortion (Hasnain, 2020). Such aspects are especially significant considering the poorly endowed financial capacity of HEP and in view of resource allocation trade-offs (Colvin et al., 2021).

The types of inducements include performance-based bonuses, in-kind social assistance, such as housing or transport allowance, and non-material rewards, such as publicity (Ormel et al., 2019). Although the effect of non-monetary benefits on retention of the labour force is reported, there is a serious need for context-related data to know the most effective mix of financial and non-financial options (WHO, 2018).

- According to the theoretical and empirical evidence of various settings, the non-salary incentives are notable stimulants that can mitigate workforce erosion (Kok et al., 2015; Pallas et al., 2013).
- A combination of transparent non-monetary rewards should be more effective than interventions that are based on either of the mentioned types of incentives, and is the one recommended by WHO (Bertone & Witter, 2015; Willis-Shattuck et al., 2008; WHO, 2018).
- Empirical studies conducted using discrete choice experiments suggest that these types of non-salary incentives may have a positive impact on the lives of community health workers, particularly in terms of job choice and wage expectations. The examples are transportation or transportation allowances (Uganda) (Agarwal et al., 2021), free family health check-ups (India) (Abdel-All et al., 2019), housing benefits (Zambia) Prust et al., 2019), and paid study leaves or education allowances (Ghana) Shiratori et al., 2016).
- Two general sources of modest incentives affecting social standing and intrinsic motivation were tested in Guinea-Bissau (the ability to win an honorific award due to good performance, and the inclusion of a video treatment due to employee-perceived value of the task). The researchers determined that the low-cost intervention on social status promoted the performance of CHW (Fracchia et al., 2019). Speaking of the suggested policy action plans with regard to Strategies 1 and 2, it should be noted that the combination of

incentives can have several effects on motivation in varying situations. The contextual differences play a significant role in their application in the motivation of incentives, and the combination of incentives must be specific to the context (Ormel et al., 2019). Ethiopian verified data and evidence will be needed to effect advocacy of certain policy actions, and to know what can be achieved by taking different actions.

II - Improve attendance at in-service training opportunities

Specific training time was also observed to be one of the most relevant job characteristics among HEWs in an Ethiopian stated choice experiment (Lamba et al., 2021). According to Agarwal et al. (2021), the same outcome was observed in other locations. The evidence used to improve attendance in the training course is described as follows:

- The type and level of CHW training have to be based on the roles and tasks they undertake, which are increasingly diversifying, as advised by WHO (2018).
- The empirical norms indicate that acquiring in-service training has to be systematic, i.e., a workshop, monthly courses, or destiny programs are required to incorporate the new clinical guidelines and represent the change of the working tasks (Javanparast et al., 2017).
- CHWs are more prone to attending and motivated in training as long as the content/quality has an intrinsic value to their job. This involves spending on capacity

building of training institutions so that the location, content, and duration of the programs are appropriate (O'Donovan et al., 2018). This should be recognized through formal certification that is based on competence (WHO, 2018).

- Technology/mobile technologies can be significant in training provision and should be explored, and it has been noted to be applicable in the environment of Africa (McKenna et al., 2019; O'Donovan et al., 2015). Training based on technology can ease the hurdles that come with the use of infrastructure and workloads of trainers, and can be promoted by the extensive presence of mobile phones. The virtual training and learning modalities are recommended to be used by HEWs (Teklu et al., 2020).

A word of warning: since the training and education needs of HEWs grow in terms of time and travelling farther, there are chances of challenges being encountered. One instance can be the inability to recruit and maintain more people in communities that HEWs will work in (Schleiff et al., 2021).

III - Improve supervision of HEWs

Although there is also no denying that supervision is a crucial factor that ensures the effectiveness and motivation of CHWs/HEWs, it tends to be poor (Westgate et al., 2021). The data on the best practices to enhance supervision are not sufficient (WHO, 2018). The evidence at hand can be summed up as follows:

- There is empirical data indicating that the quality of supervision is better related to enhancing outcomes

than the frequency of supervision itself. The supportive supervision models, community-based supervision, and structured quality improvement models are the most effective interventions. Still, the current analytical depth of these broad-based approaches has not been as extensive (Hill et al., 2014).

- Supervision is being tested using digital technologies and mobile health interventions on both small and large scales. Nevertheless, formal assessments are needed. To illustrate, in Mali, the application of a digital CHW dashboard was provided to resulted in a significant increase in home visits (Whidden et al., 2018); in Rwanda, the tasks of supervisors became simplified with a mobile phone supplying CHWs with an app to report the data (USAID, 2013).
- The preparation of supervisors is not given significant institutional attention since specialized capacity-building programs do not exist (Schleiff et al., 2021). This is specifically true of facility-based leads who are already facing overwhelming demands in terms of operation; therefore, the cultivation of a supervisory support model should be handled as a strategic priority (Westgate et al., 2021).
- An emergent institutional innovation strategy that involves the use of dedicated supervisors whose workload will be dedicated to CHW supervision without work overloads. This method is implemented in Bangladesh and Liberia and needs to be properly assessed (Westgate et al., 2021).

IV - Create career progression pathways, including to other health system roles

In Ethiopia, career opportunities when recruiting CHWs have been found to attract the attention of potential recruits (Ashraf et al., 2016). Further support in the findings of empirical discrete-choice experiments (India and Lao) holds that health workers prefer a promotion opportunity in the job (Rockers et al., 2013). Although there is already evidence showing that worker motivation and career progression are linked, the current research on the practical application of advanced professional pathways specifically in CHWs is scanty (Abdel-All et al., 2019).

- According to the WHO (2018), institutionalized career progression of CHWs is encouraged, with the criteria including basic training, competency-based qualifications, professional experience, and organized performance appraisals.
- According to the Perceptual data, there is an Ethiopian study that the recent advancements to the HEW career framework (i., level 3 and level 4 diplomas) have led to an increased level of job satisfaction and retention (Nsibande et al., 2018). The HEP Assessment suggests that competent HEWs should be left to compete in high cadre roles in health institutions (Teklu et al., 2020).
- A shorter work-before-study leave followed by career development opportunities, the so-called needs-specific motivational packages, have been received as a welcome retention tool amongst CHWs (Shiratori et al., 2016).

- The 2019 Assessment suggests that high-performing HEWs need to be offered upward mobility by competing and obtaining jobs at various institutional levels in the wider healthcare system (Teklu et al., 2020).

Strategy 6: Advance career development of rural and least academic qualified HEWs Career development infrastructure The career development of HEWs continues to be limited especially of those who lack level 3 and 4 qualifications (mostly rural HEWs) who are unable to move to level 3 or 4 or seek a career pathway. There is little evidence on the ways of enhancing the educational attainment and development opportunities of rural health workers and how such strategies may influence educational attainment. The literature will be summarized as below:

- One of the long-term strategies to address this is to make primary and secondary education quality better specifically in the rural communities (WHO, 2010).
- However, in the short-term, academic bridging programs have been employed in certain locations (e.g. in China, Thailand, and Vietnam) so that children with rural backgrounds are better able to be admitted into medical schools (WHO, 2010), which is a possibility to consider in order to enhance the level 3 attainment.
- Other factors which may obstruct education completion and career opportunities to accessibility by students in rural areas might be: The quality and content of training, language barrier, financial stress, and social barrier, in addition to academic support.

- The quality of rural pre-service training might be improved, so there is equal quality across places, i.e., infrastructure, trainers, content, and lessening language barriers, i.e., starting to provide content in local languages.
- According to the 2019 Assessment, recruitment procedures should be reviewed once more and improved to recruit better-qualified staff, such as by introducing an entrance examination or an eligibility change (Teklu et al., 2020).
- The continuing education programs must also be well-connected to the rural career path, especially where the rural health workers can access a career ladder, this time without any movement out of rural areas. There is a need to conduct more research on rural career ladders (WHO, 2010).

IIV - Improve professional development opportunities for rural and less academically qualified HEWs

Access to career development opportunities is still low amongst the HEWs, especially those who are not level 3 qualified (which is mainly rural-based HEWs), as they are unable to upgrade to level 3/ 4 and are not permitted to have access to career pathways. There are limited pieces of evidence about the strategies that could improve educational opportunities and the development of rural health workers, and the effect these strategies could have on the workers. The literature is summarized as below:

- One way to address this includes a long-term remedy to enhance the quality of higher education, both primary and secondary levels, especially in rural communities (WHO, 2010).
- Also, in some countries (as China, Thailand, and Vietnam) academic bridging programmes have been applied to help rural students get into medical schools (WHO, 2010), which may be a factor to consider in order to enhance level 3 achievement.
- Other obstacles to education and career opportunities in education among rural students can be, in addition to academic support, such as training standards and contents, language barriers, financial constraints, and social barriers.
- Some examples of rate improvements include: quality of the pre-service training in the rural areas can be improved so that all the places are treated equally in terms of quality i.e., infrastructure, trainers, contents, etc and also the language used to deliver the training can be improved to reduce the language barrier (i.e., local languages should be used to deliver contents).
- The 2019 Assessment suggests re-evaluating the recruitment process and seeking increased qualified applicants, among other strategies, by conducting an entrance test or modifications in the entrance requirements (Teklu et al., 2020).
- WHO (2018) stipulates that in rural environments, continuous professional development must always be

closely connected with promotion tracks that may enable practitioners to grow without having to change their place. At present, location-specific career ladder implementation is a minimally studied field that should be studied more.

6. CONCLUSIONS AND INTEGRATED RECOMMENDATIONS

The Eastern Africa paradox of health care, the situation of the primary health care market, shows that intense structural crises exist alongside a lack of robust areas of innovation. The problems have various forms, including the tension on the Health Extension Program in Ethiopia and massive labor shortages in Uganda, uneven financing in Kenya due to devolution, the reliance on donors, and institutional collapse in Somalia and South Sudan. Still, all of these issues rely on the others and reciprocally strengthen each other. The two make an endless cycle of vulnerability.

The low morale of staff results in low service quality and delayed service provision, thus discouraging the use of the service and reducing trust. Unreliable funding spawns medicine stock-outs, equipment shortages, and further demoralizes performance. The external actors play a major role in primary care, and, in the weakest settings, the pillars of the entire health system are destroyed by conflict in a one-stroke blow, transforming primary care into humanitarian aid, mostly by outsiders.

There must be a shift in expanding the short-term interventions into coordinated long-term measures in which the

components of the systems are known to affect each other. The following recommendations are based on the needs of institutions in the region, national governments, and development partners to collaborate to stabilize financing, empower health workers, strengthen supply chains, and make health assets, people-centered, and PHC regionally resilient.

I. Prioritize and Invest in the Health Workforce as the Foundational Pillar

The focal point of a successful PHC is the health workforce crisis. The most significant reform is investing in health workers. The development needs a three-pronged approach.

Dramatically Scale Up Strategic Training and Production: Governments are required to allocate more funds to medical schools, nursing schools, and midwifery schools to improve the number of students and curriculum revision. Graduates must be trained to serve a modern PHC - in terms of NCDs, mental health, and digital - with the role of producing mid-level providers (nurses, midwives, clinical officers) as anchor providers to rural services.

Implement Retention Waivers in Full and Intensive Form: To alleviate the consequences of the brain drain and internal exodus, countries need to enforce the complete package, which would make rural postings effective and profitable. Other than a pay increase, retention should be based on good housing of employees, clean water and electricity, good internet, regular professional development, training specialists, and non-merit-based career promotion.

Instituting and adopting Regional Ethical Recruitment and Standards: The regional agencies, such as EAC and IGAD, should set up mechanisms of ethical recruitment, such as possible payment to the countries of origin. The suggested coordinated training standards will contribute to safe labor mobility, quality, and shared training programs that will conserve resources.

II. Increase, Stabilize, and Smartly Target PHC Financing

Chronic underfunding is the cause of the PHC crisis. The funding would need radical internal reform and less risky and more serious international relationships to maintain the financing.

Meet Domestic Financial Obligation and earmark towards PHC: Governments should comply with the two-year-old requirement of the Abuja declaration, to allocate at least 15 percent, or more, of the budgets of nations, to health. Their principal care infrastructure and workforces, as well as the basic medicines, must receive their own individual share and not be overtaken by tertiary units.

Expedite Prepaid, Pool Financing: To protect households against disastrous spending, countries should immediately expand risk-pooling schemes, either national health insurance or community-based ones. These must be explicit on holistic outpatient primary care that would ensure there is dependability in the PHC facilities' funding.

Switch to Pre-decided, Predictable Donor Financing: Development partners need to switch from short-term, project-specific services to long-term, flexible, and reliable financing in accordance with the PHC priorities in the country. To achieve

capacity building and reductions of fragmentation in circumstances where they are permitted by governance requires a larger movement of funds through government systems (such as budget support or SWAps).

III. Fortify Systems for Medicines, Supplies, and Infrastructure

There is a necessity to improve the service delivery. Robust systems are connected with reliable access.

Modernize and Decentralize Supply Chain management: Invest in real time inventory systems at all levels as well as decentralizing procurement and logistics to Regional or district teams to address the local needs in response to local needs and minimize the stock-outs. This enhances accountability and transparency.

Create Local Production through Regional Partnerships: Regional institutions must encourage social and commercial alliances to produce basic drugs, vaccines, and other products in the region, lessening reliance on imports, decreasing expenditures and lead times, and enhancing the local health safety. It stimulates work and creativity.

IV. Adapt PHC Models for Contexts of Fragility and Marginalization

A single primary health care (PHC) model cannot be applied in an area with a high level of social, political, and geographic variations. PHC systems should be adaptable enough to suit the needs of weaker states and the marginalized people in the more stable environments. Adaptable service delivery strategies, especially towards mobile pastoralist communities and

fragile populations, should be put into institutional frameworks by governments and development partners through the incorporation of mobile clinics and outreach services into national health policies. The community health workers who work with these teams must be trained professionally, identified, and paid. Moreover, national health plans require spending on organized and knowledge-based interventions to address cross-border populations, urban slum dwellers, refugees, and internally displaced populations through a coordinated, cross-sectoral intervention.

V. Enhance Governance, Accountability, and Regional Collaboration

The above could not be maintained without proper governance and solidarity of the region.

- Enhance the Strength of Transparency and Accountability: Governments at all levels, including national ministries and governments of the facility management committees, must enforce sound transparency and social accountability mechanisms. This includes publicity of health budgets and expenditures, a community scorecard of health facilities, and exemplary anti-corruption systems to relay resources to their desired destination.
- Empower and give capabilities to Strengthen Cross-border Health Initiatives: The regional structures, such as the IGAD, should be provided with the ability as well as capacities of cross-border disease surveillance, coordinate to respond to the outbreak and establish

platforms that enable information to be exchanged instantly. Health threats do not identify borders and do not seek solutions.

The Health Extension Program (HEP) demonstrates the extent to which a structured, community-based initiative can help jumpstart the process of achieving universal health coverage (UHC). Combining this model with high levels of political commitment, coordination, and community participation, through deep-seated services within communities, enabled HEP to work towards making improvements to the population health measurable (Assefa et al., 2017). Necessary increases have been notified in MNCH, management of infectious diseases, and community hygiene standards (Assefa et al., 2019). Such developments were greatly attributed to the decentralization of services, where proximity to health posts is linked to efficient working personnel, well-equipped facilities, and adequate infrastructure. Strong performance of the programs has also been empowered by effective leadership and governance as well as community engagement (Workie & Ramanda, 2013).

The implementation constraints of HEP that limit its potential are not as high as its gains, despite such gains (Tekle et al., 2022). Policy changes such as the HEP Optimization Roadmap and the second Health Sector Transformation Plan (HSTP II) have attempted to solve these problems and improve workforce-related issues, but problems remain in the workforce (Haile Mariam et al., 2020). The three primary issues identified in the literature include salaries and incentives, training, supervision, and support systems, as well as the absence of career progression opportunities among the HEWs (Teklu et al., 2020).

It is also paramount to address these issues to ensure a process of maintaining and enhancing HEP outcomes.

Pay is still one of the causes of dissatisfaction among HEWs. Salaries are generally considered to be poor and uneven in different areas, with a lack of promotional and incentive pay schemes and overtime payment. A combination of financial and non-financial incentives (balanced package), along with just and position-specific salaries, may increase the motivation and quality of the provided services. Nonetheless, reforming salaries involves top-tier political judgement under a sparse resource state and rival priorities. Although improved pay will indeed be beneficial, solid empirical evidence will be required to inform policy decisions and make trade-offs. Meanwhile, there can be plausible solutions to cost-efficient and more sustainable alternatives, including performance recognition, better leave policy, housing assistance, or some other non-financial incentives. Specific evidence on contexts is required in identifying the mixes of incentives that are pragmatic and efficient.

Supervision and training are also major issues in the effective provision of services of the HEP. It has been indicated that a level of HEP package is yet to be applied, and to the extent that communities may independently maintain behavior change (Teklu et al., 2020). This emphasizes the importance of enhancing pre-service and in-service training in areas of content, time, and applicability to the changing service demands (O'Donovan et al., 2015). New methods, including the application of digital and mobile technology, can improve the quality of training, frequency, and reduce the load on the supervisor and trainer (Schleiff et al., 2021). Moreover, close ties in the community and constant

supervisory assistance at the higher levels of the health system are also essential to HEW performance and retention (Kok et al., 2015).

Recent reform has seen improvements in career development opportunities, such as roadmap optimization, which delineates diploma- and degree-level options and progressions to alternative health professions (Teklu et al., 2020). However, career structures have to be better defined, especially for the disadvantaged or rural educated HEWs, as they are hindered by structural disadvantages against career progression and income benefits. In the absence of handling such inequities, the motivation and retention in the workforce could be lopsided.

Workforce reforms need to be implemented through a careful consideration of the enabling and constraining factors and the interaction of the various strategies. After this commitment must be long-term by the government, health workers, and other stakeholders, which can only be sustained through credible financing. One crucial area of white spot is the inadequacy in the evaluation of the workforce strategies in Ethiopia and even worldwide. Exploratory trials, pricing, and intensive validation of new measures are needed prior to the approach of large-scale. Ongoing staff tracking on effectiveness, costs, and cost-effectiveness will also aid in ensuring that scarce resources are channeled towards those approaches with the best health impact.

This debate specifically deals with the workforce issues in HEWs. It is not applicable to the overall HEP problems, including infrastructure, service package alignment, funding, or the functions of other health cadres. It is also not an exhaustive study of the excessive workload of HEWs. The workforce issues must

be addressed, but not enough; the total system optimization of HEP will go into the agreement of coordinated adjustments across the system, as the population needs and health system requirements are changing.

The Optimization Roadmap addresses this issue by suggesting expanding the number and scope of professionals who work in health posts and health centers (Ethiopia MoH, 2020). Despite the existence of a few obstacles that cut across different cadres, the groups have distinctly different limitation points that are to be scrutinised keenly to ensure that the response is contextualised and best fitted.

REFERENCES

Abdel-All, M., Angell, B., Jan, S., Howell, M., Howard, K., Abimbola, S., & Joshi, R. (2019). What do community health workers want? Findings of a discrete choice experiment among Accredited Social Health Activists (ASHAs) in India. BMJ Global Health, 4(3), e001509. https://gh.bmj.com/content/4/3/e001509

Agarwal, S., Abuya, T., Kintu, R., Mwanga, D., Obadha, M., Pandya, S., & Warren, C. E. (2021). Understanding community health worker incentive preferences in Uganda using a discrete choice experiment. *Journal of global health, 11*, 07005. https://doi.org/10.7189/jogh.11.07005

Altare, C., Kahi, V., Ngwa, M., Goldsmith, A., Hergott, D., & Borrel, A. (2019). Infectious disease epidemics in refugee camps: A retrospective analysis of UNHCR data (2009–2017). Journal of Global Health Reports, 3, e2019064. https://doi.org/10.29392/joghr.3.e2019064

Arora, N., Hanson, K., Spicer, N., Estifanos, A. S., Keraga, D. W., Welearegay, A. T., Tela, F. G., Hussen, Y. A., Mandefro, Y. S., & Quaife, M. (2020). Understanding the importance of non-material factors in retaining community health workers in low-income settings: a qualitative case-study in Ethiopia. BMJ Open, 10(10), e037989. https://bmjopen.bmj.com/content/10/10/e037989.abstract

Ashraf, N., Bandiera, O., & Lee, S. (2016). Do-gooders and go-getters: career incentives, selection, and performance in public service delivery Working Paper.

https://conference.nber.org/confer/2015/SI2015/PPL/Ashraf_Bandiera.pdf

Assefa, Y., Damme, W. V., Williams, O. D., & Hill, P. S. (2017). Successes and challenges of the millennium development goals in Ethiopia: lessons for the sustainable development goals. BMJ Global Health, 2(2), e000318.: https://gh.bmj.com/content/2/2/e000318

Assefa, Y., Gelaw, Y. A., Hill, P. S., Taye, B. W., & Van Damme, W. (2019). Community health extension program of Ethiopia, 2003–2018: Successes and challenges toward universal coverage for primary healthcare services. Globalization and Health, 15(1), 24. https://link.springer.com/article/10.1186/s12992-019-0470-1

Banteyerga, H. (2011). Ethiopia's health extension program: improving health through community involvement. MEDICC Rev,

13(3), 46-49. Available at: https://doi.org/10.37757/MR2011V13.N3.11

Bertone, M. P., & Witter, S. (2015). The complex remuneration of human resources for health in low-income settings: policy implications and a research agenda for designing effective financial incentives. Hum Resour Health, 13, 62. Available at: https://doi.org/10.1186/s12960-015-0058-7

Central Statistical Agency (CSA) [Ethiopia] and ICF. (2020). *Ethiopia demographic and health survey 2019.* CSA and ICF. https://dhsprogram.com/pubs/pdf/FR363/FR363.pdf.

Colvin, C. J., Hodgins, S., & Perry, H. B. (2021). Community health workers at the dawn of a new era: 8. Incentives and remuneration. Health Res Policy Syst, 19 (Suppl 3), 106. https://doi.org/10.1186/s12961-021-00750-w.

Community Health Roadmap. (2021). Community Health Roadmap, Ethiopia: 2021 . https://www.scribd.com/document/640017311/Untitled.

Demmem, A. M., Terefe, W., Tewabu, G. (2019). Assessing Satisfaction and Motivation of Health Extension Workers (Hews) and Factors Associated with it in Gambella Region, Gambella, Southwest Ethiopia, 2018: A Cross-Sectional Study. Journal of Nutrition and Health Sciences, 6(3), ISSN: 2393-9060. https://www.gynaecologyjournal.net/archives/2020/vol2issue1/PartA/2-1-11-936.pdf

Ethiopian Public Health Institute (EPHI), & ICF. (2019). Ethiopia Demographic and Health Survey 2019. EPHI and ICF. https://dhsprogram.com/pubs/pdf/FR363/FR363.pdf

Ethiopia Federal Ministry of Health. (2005). Health sector plan(HSDP-III) 2005/06-2009/10.Addis Ababa, Ethiopia. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/ethiopia/ethiopia-health-sector-development-planhsdp-iii.pdf

Ethiopia Federal Ministry of Health. (2024). Accelerated Expansion of Primary Health coverage in Ethiopia ,2005-2009. https://documents1.worldbank.org/curated/en/099110001

122233702/pdf/Draft0Environm0ervices000P17516702.pdf

Ethiopia Ministry of Health. (2020). Realizing Universal Health Coverage Through Primary Healthcare. A Roadmap for Optimizing the Ethiopian Health Extension Program 2020-2035. http://repository.iphce.org/bitstream/handle/123456789/1176/HEP_Roadmap_Abridged_Version_Final.pdf?sequence=1&isAllowed=y

Ethiopia Ministry of Health. (2021). Health Sector Transformation Plan II (HSTP II) 2020-21-2024/25. Available at: https://extranet.who.int/countryplanningcycles/planning-cycle-files/health-sector-transformation-plan-ii-hstp-ii-202021-202425

Federal Ministry of Health of Ethiopia (FMoH). (2020). Annual performance report 2019/20. FMoH. https://www.scribd.com/document/518384802/Annual-Performance-Report-2012-2019-2020

Fracchia, M., Molina Millan, T., & Vicente, P. C. (2019). Incentivizing community health workers in Guinea-Bissau: experimental evidence on social status and intrinsic motivation. Paper presented at NOVAFRICA Seminar Series 2019– 2020. https://vida.org.pt/wp-content/uploads/2019/10/Incentivizing_CHWs_in_Guinea_Bissau.pdf

Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., et al. (2010). Health professionals for a new century:

Transforming education to strengthen health systems in an interdependent world. *The Lancet, 376*(9756), 1923–1958. https://doi.org/10.1016/S0140-6736(10)61854-5.

Gadsden, T., Mabunda, S. A., Palagyi, A., Maharani, A., Sujarwoto, S., Baddeley, M., & Jan, S. (2021). Performance-based incentives and community health workers' outputs, a systematic review. Bull World Health Organ, 99(11), 805-818. https://doi.org/10.2471/blt.20.285218

Haile Mariam, D., Tassew, B., Nega, A., Assefa, D., Siraw, D., Tebekaw, Y., Alemu, H., & Addisie, M. (2020). Expectations and satisfaction of urban health extension workers regarding their service delivery environment. Ethiopian Journal of Health

Development, 34(2). https://www.ajol.info/index.php/ejhd/article/view/198802

Hasnain, Z. (2020). How to increase compensation for health workers during COVID-19. World Bank Blogs. https://blogs.worldbank.org/en/governance/how-increase-compensation-health-workers-during-covid-19

Hill, Z., Dumbaugh, M., Benton, L., Kallander, K., Strachan, D., ten Asbroek, A., Tibenderana, J., Kirkwood, B., & Meek, S. (2014). Supervising community health workers in low-income countries–a review of impact and implementation issues.

Glob Health Action, 7, 24085. https://doi.org/10.3402/gha.v7.24085

Intergovernmental Authority on Development (IGAD). (2021). IGAD regional strategy for health security 2021–2025. IGAD Secretariat. https://igad.int/download/igad-regional-strategy-the-framework.

Javanparast, S., Baum, F., & Heihari, G. (2017). The contribution of community health workers to the implementation of comprehensive primary health care in rural settings, Iran. Revitalizing Health for All. Univeristy of Toronto Press.

Kebede, M., Adeba, E., & Chego, M. (2022). Availability of essential medicines and supplies in primary health care units in Oromia, Ethiopia: A cross-sectional study. BMJ Open, 12(3), e058123. https://doi.org/10.1136/bmjopen-2021-058123.

Kok, M. C., Kane, S. S., Tulloch, O., Ormel, H., Theobald, S., Dieleman, M., Taegtmeyer, M., Broerse, J. E., & de Koning, K. A. (2015). How does context influence performance of community health workers in low- and middle-income countries? Evidence from the literature. Health Res Policy Syst, 13, 13. https://link.springer.com/article/10.1186/s12961-015-0001-3

Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., Adeyi, O., Barker, P., Daelmans, B., Doubova, S. V., English, M., Elorrio, E. G., Guanais, F., Gureje, O., Hirschhorn, L. R., Jiang, L., Kelley, E., Lemango, E. T., Liljestrand, J., … Pate, M. (2018). High-quality health systems in the Sustainable Development Goals era: Time for a revolution in health systems

performance assessment. The Lancet Global Health, 6(11), e1196–e1252. https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(18)30386-3/fulltext?_hsenc=p2ANqtz-9j71i5H1n10wxx2NBq1u-t2hYmpqLOEIQX0LxCN_gMwn8mnEO34buRcJMq9R0YratlH91E

Lamba, S., Arora, N., Keraga, D. W., Kiflie, A., Jembere, B. M., Berhanu, D., Dubale, M., Marchant, T., Schellenberg, J., Umar, N., Estafinos, A. S., & Quaife, M. (2021). Stated job preferences of three health worker cadres in Ethiopia: a discrete choice experiment. https://doi.org/10.1093/heapol/czab081

Mc Kenna, P., Babughirana, G., Amponsah, M., Egoeh, S. G., Banura, E., Kanwagi, R., & Gray, B. (2019). Mobile training and support (MOTS) service-using technology to increase Ebola preparedness of remotely-located community health workers (CHWs) in Sierra Leone. Mhealth, 5, 35. https://doi.org/10.21037/mhealth.2019.09.03

Ministry of Health Uganda (MoH). (2021). Health sector performance report, financial year 2020/21. MoH. https://library.health.go.ug/sites/default/files/resources/Annual%20Health%20Sector%20Performance%20Report%202020-21-1.pdf

Mohammed, S., Tilahun, M., Kote, M., Mama, M., Tamiru, D. (2015). Validation of Health Extension Workers Job Motivation Scale in Gamo-Gofa Zone, Southern Ethiopia:

A Cross-Sectional Study. International Scholarly Research

Notices. https://doi.org/10.1155/2015/250610

Nsibande, D., Loveday, M., Daniels, K., Sanders, D., Doherty, T., & Zembe, W. (2018). Approaches and strategies used in the training and supervision of Health Extension Workers (HEWs) delivering integrated community case management (iCCM) of childhood illness in Ethiopia: a qualitative rapid appraisal. Afr Health Sci, 18(1), 188-197. https://www.ajol.info/index.php/ahs/article/view/169172

Orangi, S., Kairu, A., Ondera, J., Mbuthia, B., Koduah, A., Oyugi, B., Ravishankar, N., & Barasa, E. (2021). Examining the implementation of the Linda Mama free maternity program in Kenya. *The International journal of health planning and management*, *36*(6), 2277–2296. https://doi.org/10.1002/hpm.3298

O'Donovan, J., Bersin, A., & O'Donovan, C. (2015). The effectiveness of mobile health (mHealth) technologies to train healthcare professionals in developing countries: a review of the literature. BMJ Innovations, 1(1). https://innovations.bmj.com/content/1/1/33.short

O'Donovan, J., O'Donovan, C., Kuhn, I., Sachs, S. E., & Winters, N. (2018). Ongoing training of community health workers in lowincome andmiddle-income countries: a systematic scoping review of the literature. BMJ Open, 8(4), e021467. https://bmjopen.bmj.com/content/8/4/e021467.abstract

Ormel, H., Kok, M., Kane, S., Ahmed, R., Chikaphupha, K., Rashid, S. F., Gemechu, D., Otiso, L., Sidat, M., Theobald,

S., Taegtmeyer, M., & de Koning, K. (2019). Salaried and voluntary community health workers: exploring how incentives and

expectation gaps influence motivation. Hum Resour Health, 17(1), 59. https://link.springer.com/article/10.1186/S12960-019-0387-Z

Pallas, S. W., Minhas, D., Perez-Escamilla, R., Taylor, L., Curry, L., & Bradley, E. H. (2013). Community health workers in low and middle-income countries: what do we know about scaling up and sustainability? Am J Public Health, 103(7), e74-82. https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2012.301102

Parties to the Nauru Agreement (PNA). (2022). The Vessel Day Scheme (VDS): A sustainable and profitable management system for tropical tuna fisheries in the Western and Central Pacific Ocean. PNA Office. https://www.econstor.eu/bitstream/10419/296809/1/adbi-wp1417.pdf

Prust, M. L., Kamanga, A., Ngosa, L., McKay, C., Muzongwe, C. M., Mukubani, M. T., Chihinga, R., Misapa, R., van den Broek, J. W., & Wilmink, N. (2019). Assessment of interventions to attract and retain health workers in rural Zambia: a discrete choice experiment. Hum Resour Health, 17(1), 26. https://link.springer.com/article/10.1186/s12960-019-0359-3

Rockers, P. C., Jaskiewicz, W., Kruk, M. E., Phathammavong, O., Vangkonevilay, P., Paphassarang, C., Phachanh, I. T., Wurts, L., & Tulenko, K. (2013). Differences in preferences for rural job postings between nursing students and practicing nurses: evidence from a discrete choice experiment in Lao People's Democratic Republic. Hum Resour Health, 11, 22. https://link.springer.com/article/10.1186/1478-4491-11-22

Schleiff, M. J., Aitken, I., Alam, M. A., Damtew, Z. A., & Perry, H. B. (2021). Community health workers at the dawn of a new era: 6. Recruitment, training, and continuing education. Health Res Policy Syst, 19(Suppl 3), 113. https://link.springer.com/article/10.1186/s12961-021-00757-3

Shiratori, S., Agyekum, E. O., Shibanuma, A., Oduro, A., Okawa, S., Enuameh, Y., Yasuoka, J., Kikuchi, K., Gyapong, M., Owusu-Agyei, S., Ansah, E., Hodgson, A., Jimba, M., & Team, E. I. R. (2016). Motivation and incentive preferences of community health officers in Ghana: an economic behavioral experiment approach. Hum Resour Health, 14(1), 53. https://link.springer.com/article/10.1186/s12960-016-0148-1

Stevenson, D., Kinyeki, C., & Wheeler, M. (2012). Evaluation of DFID support to healthcare workers salaries in SierraLeone. https://assets.publishing.service.gov.uk/media/5a7c12d6e

d915d1c30daa670/evaluation-support-healthcare-workers-salaries-Sierra-Leone.pdf

Tekle, M. G., Wolde, H. M., Medhin, G., Teklu, A. M., Alemayehu, Y. K., Gebre, E. G., Bekele, F., & Arora, N. (2022). Understanding the factors affecting attrition and intention to leave of health extension workers: a mixed methods study in Ethiopia. Hum Resour Health, 20(1), 20. https://link.springer.com/article/10.1186/s12960-022-00716-1

Teklu, A. M., Alemayehu, Y. K., Medhin, G. et al. (2020). National Assessment of the Ethiopian Health Extension Program: Final Abridged Report. AddisAbaba, Ethiopia: MERQ Consultancy PLC. https://www.ajol.info/index.php/ejhs/article/view/246278

UNICEF, World Health Organization, World Bank Group, & United Nations. (2013). Committing to child survival: A promise renewed report 2013. https://data.unicef.org/wp-content/uploads/2015/12/APR_Progress_Report_2013_9_Sept_2013_13.pdf

UNICEF. (2022). The state of the world's children 2022: South Sudan country profile. UNICEF. https://www.unicef.org/reports/state-of-worlds-children/2024

USAID. (2013). Developing and strengthening community health worker programs at scale. A reference guide for program managers and policymakers. https://chwcentral.org/wp-content/uploads/2018/02/pdf.usaid.gov_pdf_docs_pa00jxwd.pdf

Wang, H., Tesfaye, R., Ramanda, G. N. V., & Chekagn, C. T. (2016). Ethiopia Health Extension Program: An Institutionalized Community Approach for University Health Coverage. World Bank. Available at: https://www.cabidigitallibrary.org/doi/full/10.5555/20163305629

Westgate, C., Musoke, D., Crigler, L., & Perry, H. B. (2021). Community health workers at the dawn of a new era: 7. Recent advances in supervision. Health Res Policy Syst, 19(Suppl 3), 114. https://link.springer.com/article/10.1186/s12961-021-00754-6

Willis-Shattuck, M., Bidwell, P., Thomas, S., Wyness, L., Blaauw, D., & Ditlopo, P. (2008). Motivation and retention of health workers in developing countries: a systematic review. BMC Health Serv Res, 8, 247. https://link.springer.com/article/10.1186/1472-6963-8-247

Workie, N. W., & Ramanda, G. N. V. (2013). The Health Extension Program in Ethiopia. UNICO Studies Series. https://openknowledge.worldbank.org/entities/publication/93be0762-0693-56a5-a8f4-cb918a7bc646

World Bank. (2021). World development indicators. World Bank. https://databank.worldbank.org/source/world-development-indicators

World Bank. (2023). *Somali High Frequency Survey - Health Module*. Washington, DC. https://microdata.worldbank.org/index.php/catalog/4832.

World Bank. (2024). *Physicians (per 1,000 people)* (Global Health Workforce Statistics, World Health Organization). https://data.worldbank.org/indicator/SH.MED.PHYS.ZS

World Bank (2025). Somalia - Improving Healthcare Services in Somalia Project: Additional Financing and Restructuring (English). Washington, D.C.: World Bank Group. https://documents1.worldbank.org/curated/en/099093025011013862/pdf/P172031-3cf6f8d0-ac72-49e5-be0b-dfc6b0851aa8.pdf

World Health Organization (WHO). (1978). Declaration of Alma-Ata. WHO. https://www.who.int/publications/i/item/declaration-of-alma-ata

World Health Organization. (2010). Increasing access to health workers in remote and rural areas through improved retention. Global policy recommendations. https://www.who.int/publications/i/item/increasing-access-to-health-workers-in-remote-and-rural-areas-through-improved-retention

World Health Organization. (2016). *Global strategy on human resources for health: Workforce 2030*. Geneva: World Health Organization. https://apps.who.int/gb/ebwha/pdf_files/WHA75/A75_15-en.pdf

World Health Organization. (2018). WHO guideline on health policy and system support to optimize community health worker programmes. https://www.who.int/publications/i/item/9789241550369

World Health Organization. (2022a). Global health expenditure database. WHO. https://apps.who.int/nha/database.

World Health Organization. (2022b). *WHO health workforce support and safeguards list, 2023*. https://www.who.int/publications/i/item/9789240069787

World Health Organization (2024). The National Health Workforce Accounts database, Geneva https://www.who.int/publications/b/70803

Whidden, C., Kayentao, K., Liu, J. X., Lee, S., Keita, Y., Diakité, D., Keita, A., Diarra, S., Edwards, J., Yembrick, A., Holeman, I., Samaké, S., Plea, B., Coumaré, M., & Johnson, A. D. (2018). Improving Community Health Worker performance by using a personalised feedback dashboard for supervision: a randomised controlled trial. *Journal of global health*, *8*(2), 020418. https://doi.org/10.7189/jogh.08.020418

Wurie, H. R., Samai, M., & Witter, S. (2016). Retention of health workers in rural Sierra Leone: findings from life histories. Human Resoure Health, 14, 3. https://link.springer.com/article/10.1186/s12960-016-0099-6

MALNUTRITION AMONG CHILDREN IN EASTERN AFRICA: A PUBLIC HEALTH CRISIS

Mohamed Barre IBRAHIM[1]

Melih Gaffar GÖZÜKARA[2]

Nimetcan Mehmet ORHUN[3]

1. INTRODUCTION

Child malnutrition is defined in various ways, but it's generally agreed that child malnutrition is a disorder caused by lack of or insufficient diet-intake. Child malnutrition constitutes the following: Undernutrition, which is the result of insufficient energy intake or essential nutrients. Over nutrition or obesity, which is caused by excessive intake of energy and nutrients. (Ge and Chang 2001). The initial type of malnutrition is associated with surrounding condition, such as limited food access, or inadequate diet intake, which leads to imbalance of body's nutritional needs and available nutrients. This has a great effect on the growth, development, and the general health of the person. On the other hand, disorders related to nutrition may become acute or chronic, coming from an imbalance energy caused by catabolism, low appetite, or loss of much energy of the body which all adversely affect health outcomes. (Prasadajudio et al. 2023). Micronutrients, like iron, calcium, zinc and vitamin A, are

[1] Postgraduate Student, Health Policy and Global Health Department, Public Health Institute, Ankara Yıldırım Beyazıt University, ORCID: 0009-0005-5900-9418.

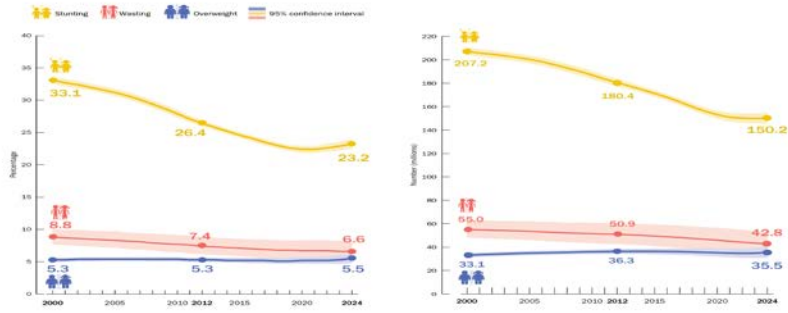
[2] Assist. Prof. Dr., Public Health Department, Faculty of Medicine, Ankara Yıldırım Beyazıt University, ORCID: 0000-0002-6147-4053.

[3] Assoc. Prof. Dr., Public Health Department, Faculty of Medicine, Ankara Yıldırım Beyazıt University, ORCID: 000-0002-7854-7044.

common deficiencies that are widely associated with malnutrition, this affects more than 2 billion children under the age of 5, however many developing countries are still struggling large morbidity and mortality. Though, there are wide efforts to reduce this. Malnutrition is still a common challenge and a huge public health, which causes 45% deaths of children. (Alaba et al. 2023) Severe malnutrition is diagnosed with weight-height comparison, which when the height is more than three standard deviations below the mean. Bilateral edema is a sign of kwashiorkor or MUAC below 11.5 cm in children older than 6 months. When immediately stopped breastfeeding, children are likely to develop kwashiorkor especially after their second birthday, though it can also emerge earlier too. On the other hand, Marasmus, is the result of chronic deficiency of calories, and protein which is considered to be caused by chronic hunger. It's common in the first year of a child when breastfeeding isn't practiced and is replaced with watered animal milk. Poverty, famine, lack of malnutrition knowledge and limited access of the mother. (Sunguya, Koola, and Atkinson 2006) Moreover, child malnutrition adversely effects the physical and intellectual growth. This continues into adulthood, having negative impact on body size, motor coordination, and learning ability and is also associated with high rates of school drop outs. (Takeuchi et al. 2022), More than 30% of all children can'taccess essential nutrients necessary for proper development. This commonly occurs in the first 1,000 days of the child, ranging from pregnancy to child's second birthday. And usually continues even after this time. Malnutrition still persist to avert many from reaching their full potential for healthy growth. (Keeley et al. 2019) In low income countries, undernutrition is very popular among children below five. With 1% to 10% of children experienced severe cases, and 20% to 40% prevalence of underweight. Child malnutrition is said to be the cause of 50% child deaths in these countries (Sunguya et al. 2006). In low income countries, child malnutrition

is a persistent public health problem, more so in Southern Asia in comparison to Latin America and North and West Africa. Worldwide, child malnutrition is among the top causes of children deaths. Around 1.9 billion living in Asia-Pacific countries don't have access to nourished food, showing how necessary it's improving food accessibility, especially for younger and population who are very vulnerable. (Prasadajudio et al. 2023) More than 30% of children below five live with noticeable malnutrition, such as stunting, wasting, or overwight worldwide. All these forms of child malnutrition cause millions of children not reaching their full development potential. Almost 200 million children experienced stunting, or wasting and at least 340 million were affected by invisible famine in 2018. Even though, child stunting saw a downfall in large number countries of the world apart from the African continent, the overweight prevalence has increased across all continents as well as the African continent. (Keeley et al. 2019) Malnutrition framework developed into double burden in recent years, characterizing the combination of undernutrition with overweight, or diet associated non-infectious diseases among individuals, households, communities, and throughout the lifespan. Before this idea came into existance, undernutrition and overnutrition were regarded to be different issues impacting different groups of people, with overnutrition viewed as a rich people problem as it's associated with high-energy diet intake whereas undernutrition was linked to poverty and lack or limited food access. (Takeuchi et al. 2022)

Figure 1. Prevalence (%) and number (millions) of children under five affected by stunting, wasting, and overweight globally, 2000–2024.



(WHO 2024)

The Sub-Saharan Africa is predicted to fall short in succeeding the SDG of eliminate hunger and all kinds of malnutrition by 2030. Globally, the prevalence of stunted children under five reached 161 million in 2020. While overweight or obesity turned out to be a great public health issue, leading to nearly 3.4 million deaths every year. Over the years, the issue in the African continent has worsened, the increasing number of children under five experiencing nutritional challenges is a proof to that, stunting among children saw in increase between 2000 to 2017 from 50.6 million to 58.7 million. Whereas overnutrition prevalence mounted from 6.6 million to 9.7 million in that period of time. Global figures stayed the same, in 2020, a year defined by the COVID-19 pandemic. More than 140 million children below five experienced stunting, 59 million with wasting, and 85 million identified as moderately or severely underweight. (Alaba et al. 2023)

Sub-Saharan Africa experiences the double burden of malnutrition (undernutrition and overnutrition). The combination of these two challenges demonstrate that the continent will not

achieve the SDG two by 2030. Various factors state that undernutrition prevalence in Africa is more compared to the rest of the World. Poor environmental sanitation which restrict getting important micronutrients is a significant factor. Socio-economic situations in the continent including occupation, educational, income, wealth and the location is linked to the persistent double burden of malnutrition. (Alaba et al. 2023) Hunger has been increasing since 2014 in Sub-Saharan Africa where the majority of undernourished people live. Especially in Eastern and Middle subregions whereas of 2019, 27% and 29% of the people were undernourished the situation is severe. However, undernutrition and micronutrient deficiencies are not the only nutritional issues; in 2016, Africa represented 24% of all overweight children under five worldwide. However, protein-energy malnutrition and mineral deficiencies are not the only nutritional challenge; The continent experienced 24% of all overweight children below five Worldwide. (Giancola et al. 2022) In the 2015 UN's SDGs target to eradicate all kinds of malnutrition by 2030 and increas stunting and wasting in children below five by 2025. In spite of some developments, undernutrition is still very common in developing countries, factors as such poverty, minimal education and health knowledge, food insecurity, lack of or limited healthcare access, environmental pollution, substantial communicable disease rates, and poor breastfeeding practices as the leading contributors. (Mao et al. 2024) Especially for children below five, malnutrition is still seen a great global health challenge. It was responsible for more than 50% of child deaths in low income countries in the 1990s according to a 2020 WHO report. More than half of children below five experienced iodine deficiency with vitamin A deficiency being very common in South Asia and Sub-Saharan Africa. (Mao et al. 2024) More than 60% of children experience iron deficiency and iron-deficiency anemia in majority Sub-Saharan Africa. Importantly, malnutrition contribute almost half of all childhood diseases and important micronutrients, doesn't

only impact child's growth and development however improves probability of catching different long term illnesses later in life. (Mao et al. 2024)

2. MAJOR DETERMINANTS OF CHILD MALNUTRITION IN EASTERN AFRICA

Low household socioeconomic status / poverty – Children under five in East Africa from poor households are more likely to experience chronic undernutrition (stunting).

Chronic undernutrition or stunting is more common in children below five from poor families in East African continent. (Tesema et al. 2021)

Low maternal and household education – Mother's education (lack) has a significant impact on her child's risk of malnutrition. (Riwa et al. 2025)

Child age (older age groups) –Undernutrition is more likely among children older than 24 months years old. (Riwa et al. 2025)

Child sex (male) – Under and overnutrition is more common among boys than girls. (Riwa et al. 2025)

Rural residence –Compared to urban children, rural children have higher numbers of undernutrition. (Tesema et al. 2021)

Birth order and size at birth –One of the significant risks of malnutrition is smaller size at birth and higher parity. (Tesema et al. 2021)

Infectious disease and recent illness (e.g., diarrhea) – Another risk of malnutrition is Diarrhea and other diseases. (Ricci et al. 2025)

Poor dietary diversity and feeding practices –In both younger children and school or preschool aged children lack of diet variety is also linked with undernutrition. (Kovalkovicová et al. 2000)

Poor sanitation and environmental factors –Poor access to clean drinking sources, sanitation and hygiene is also a significant risk of malnutrition. (Zeray et al. 2019)

3. UNDERLYING DRIVERS OF THE CRISIS

Conflict, drought & climate shocks

Higher food prices, economic instability, climate changes and persistent conflicts in the continent lead to food insecurity and malnutrition. (UNICEF 2025a)

Funding gaps threatening nutrition programs

Lack of or inadequate donor support for vital nutritional stuff, such as RUTF, risks millions of lives, with key regions to run out of supply by mid-2025.. (UNICEF 2025a)

Longer-Term Patterns & Regional Context

Severe food poverty

Approximately one-third of children in the continent rely on scarce diet variety, with many living in serious poverty. (UNICEF 2024)

Chronic malnutrition (stunting) remains stubbornly high

In Eastern Africa, undernutrition continuous to be high, many children in the continent experience chronic nutritional diseases that stop growth and cognitive development. (UNICEF 2023)

4. CONSEQUENCES OF CHILD MALNUTRITION IN EASTERN AFRICA

Higher child mortality (acute wasting → death)

During and after disease, wasting significantly increases the risk of mortality. Leading to high mortality in mortality among children in the continent. (Diallo et al. 2022)

Long-term cognitive impairment, poorer learning and lower school achievement

Chronic undernutrition (stunting) in the first 1,000 days is linked to lasting deficits in cognitive development, academic skills, and school performance.

Stunting in the first 1,000 days is associated with long term negative impact on cognitive development, academic skills, and school performance. (Etc. 2019)

Increased infectious disease burden and slower recovery from illnesses

Frequent and severe infections, chronic diseases and higher mortality is associated with under nutrition that impair the immune system. (Müller et al. 2007)

Micronutrient deficiencies with specific functional consequences (e.g., anemia)

In Eastern and Southern African region, vitamin A, iron, zinc and other micronutrient deficiencies are very popular causing anemia, impaired growth, increased infection risk, and lack of progress. (UNICEF 2025b)

Long-term adult health risks (metabolic & reproductive) and intergenerational effects

Childhood malnutrition can impact the growth and birth results of the next generation, increasing the risk of long term health problems. (Gebremichael et al. 2025)

Large economic costs — lost productivity, lower GDP and education returns

Early malnutrition hinders productivity and earnings, with recorded GDP depletion at national and private-sector levels. (Nutrition 2025)

Social and educational impacts (school absenteeism, lower attainment)

Through poor academic performances, early dropouts, and constant absences as a result of childhood malnutrition increase poverty. (Dessie et al. 2025)

Key Consequences of Malnutrition in Eastern Africa

Increased child mortality, notably deaths among pre-school aged children as a result of malnutrition and weakened immune. (Moravec et al. 2001)

Delayed physical growth and cognitive development Causing unsuccessful school performances and undermined long term potentials. (Simwanza et al. 2023)

Higher susceptibility to infections because of incapacitated immune. (Mertens et al. 2023)

Long-term negative effects on human capital, output, and the wellness of the public. (Ahmad et al. 1985)

Continuing high burden of stunting, As a result of long term nutritional deficiency in children below five. (Kawachi et al. 1994)

5. PATTERNS OF MALNUTRITION

Anthropometric indicators are used by the World Health Organization (WHO) to evaluate and categorize nutritional status. Height-for-age, weight-for-height, and weight-for-age measurements assess stunting, wasting, and underweight, respectively. These measurements are expressed as standard deviation units, known as Z-scores, relative to the median of a reference population.

Stunting Among Children Under 5 Years of Age

A child is stunting when his height-for-age is more than two standard deviations under the median, protein energy deficiency as a result of poverty, poor maternal diet and health, poor feeding practices, and persistent diseases in early child's age. This issue is generally irreversible due to poor nutrition during the first 1.000 days of a child. (Mkhize and Sibanda 2020)

Stunted children worldwide are reported to be 144 million according to 2020 report by UNICEF, WHO and World Bank. Stunting prevalence has seen decrease in majority of the world, but unfortunately not in the African region, where the people experienced this issue increased from 49.7 million to 57.5 million between 2000 and 2019, among those were an increase of 100,000 from Southern Africa. (Clark et al. 2020)

Wasting in Children Under 5 Years

If a child's weight-for-height is more than two standard deviations below the medium, it's considered wasting. Expressing low weight for height and exemplifying ongoing nutritional situation. (Clark et al. 2020). Rapid weight loss as a result of insufficient diet intake and short term infections as such diarrhea, and moderate to severe cases significantly raise the risk of child's death is the main contributor to wasting. Poor WASH, poor nutrition, bad feeding practices, lack of access to clinical

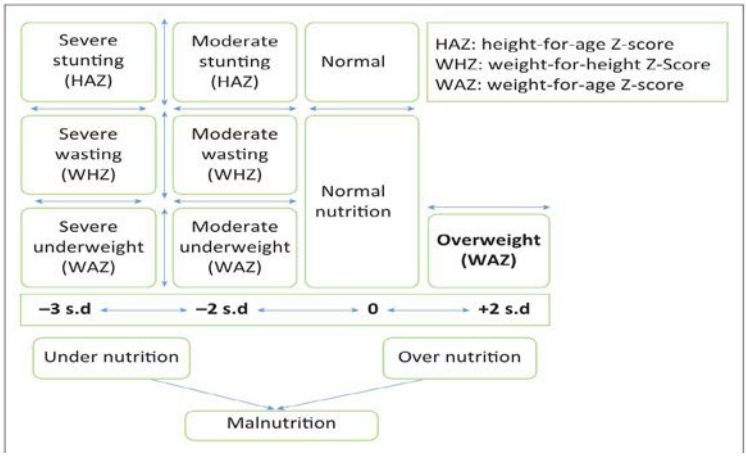
provision, food scarcity all contribute to wasting. Severe wasting worsens the immune, rises Susceptibility to chronic developmental issues, and significantly increases the risk of death. (Abate and Belachew 2019)

Underweight: If a child's weight-for-age is over two standard deviations below the median, this is seen as underweight. Which is a sign of presence of stunting, wasting or both of them. (van Zanten et al. 1982)

Overweight: When a child's weight-for-height is over two standard deviations compared to the WHO's median, it's considered overweight. This issue is one of the main types of malnutrition, over the past 20 years, the number of overweight people especially children below five mounted to tens of millions worldwide. Sedentary lifestyle and over eating are some of the main causes of this issue. (Kogan et al. 1995)

Severe Acute Malnutrition (SAM): If a child has a bilateral edema, MUAC <115 MM, and weight-for-height >3 standard deviations under WHO median. (Alvarez et al. 2018)

Figure 2. Pattern of malnutrition in children under the age of 5 years.



(Obasohan et al. 2020)

6. CAUSES OF MALNUTRITION IN EASTERN AFRICA.

Poverty and Socioeconomic Factors

The main contributor of child malnutrition in the region is poverty, as this leads to limited access to food. lack of healthcare services, poor water and sanitation, illiteracy are also among the contributors. (Bain et al. 2013)

Food Insecurity and Poor Dietary Intake

Inadequate dietary intake Limited dietary intake, limited food diversity, are also a great reason. (Tesema et al. 2021)

Low Maternal Education and Household Characteristics

Low maternal (and paternal)

Mothers' illiteracy about breast feeding lead to poor child feeding practices, and not attending healthcare sites regularly whenever necessary. And this increase the probability stunting, and underweight. Children from large families tend to be susceptible for malnutrition as the income is divided into many portions. (Tesema et al. 2021)

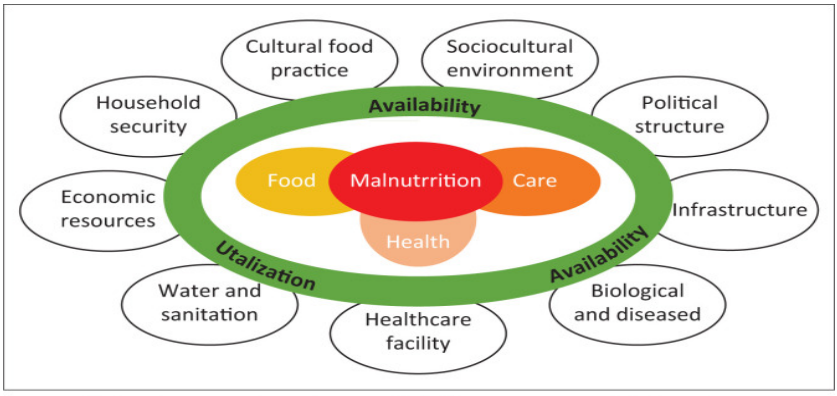
Child-Specific Biological and Health Factors

A child's biological and health characteristics have great influence on a child's development of malnutrition, low birth weight, male, and children from large families have a higher chance plus if the child has center health issue like a constant diarrhea also has great influence on a child's development of malnutrition. (Ricci et al. 2025)

Environmental and Sanitation Issues

Poor water and sanitation infrastructure Rises the chance of developing diarrheal diseases, which again raises the burden, leading to child malnutrition, poor growth in physical ad cognitive. (Akombi et al. 2017)

Figure 3. Theoretical Framework for the Causes of Malnutrition in Children Under 5 Years of Age.



Source: Black MM, Lutter CK, Trude ACB. All children surviving and thriving: Re-envisioning UNICEF's conceptual framework of malnutrition. Lancet Glob Heal. 2020;8(6):e766–e777. https://doi.org/10.1016/S2214-109X(20)30122-4

Clinical Symptoms & Signs of Malnutrition in Children: Growth Faltering (Anthropometric Indicators)**,** Here are key clinical signs to diagnose child malnutrition, Severe weight loss (wasting)**,** Stunting (shorter than his/her age), Underweight. (Akombi et al. 2017)

Systemic & Physical Signs of Severe Malnutrition: Wasting fat and muscle**,** Bilateral edema

Stomach distress**,** Loose stools and emesis**,** Pyrexia and simultaneous infections. (Bavurhe et al. 2024)

Systemic Impact & Associated Signs

Malfunctioning immune system →leads to infection development (e.g., pneumonia, diarrhea) and longer illness. (Akombi et al. 2017)

Anemia and micronutrient deficiencies

Hindered motor and IQ development (less visible but common in chronic undernutrition). (Akombi et al. 2017)

Multisectoral Nutrition Policy Initiatives in Eastern Africa

Countries in the Eastern Africa, are now simultaneously enforcing multisectoral strategies to combat child malnutrition regarding, health, agriculture, education, social protection, food security, and WASH, after successful incomes of these strategies in other regions of the world. (Razakamanana et al. 2024)

National Policy Examples in Eastern African Countries

Many nations in Eastern Africa have **formal national nutrition policies and strategies**, often tied to public health plans and social protection frameworks.

Countries in the Eastern region of the continent such as Ethiopia, Kenya, Uganda and Tanzania are engaging on nutrition-sensitive policies that incorporate food systems, and health to prevent child malnutrition and malnutrition at all. But these issue still continue to exist. (Hodge et al. 2015)

Evidence on Policy Implementation and Nutrition Outcomes

It’s recommended that direct nutritional policies regarding, mother and child health and education should be incorporated with food and agricultural policies, to efficiently slower malnutrition in the region. Lack of this incorporation, this issue may get stronger. (Davidson et al. 2000)

Treatment of Child Malnutrition

The goal of child malnutrition is to recover the nutritional status, treating clinical symtoms and prevention of death.

Therapeutic feeding, clinical treatment and provision of micronutrients are good strategies of managing SAM and MAM. (Lenters et al. 2013)

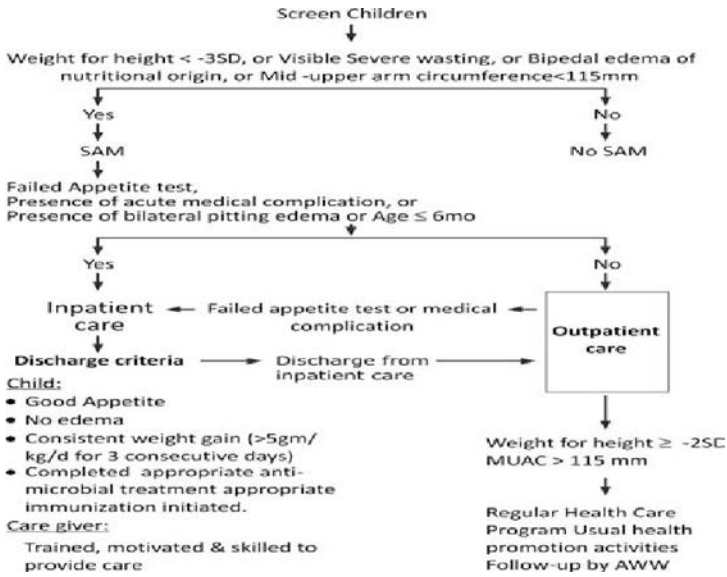
WHO Protocols and Therapeutic Feeding

There are two necessary phases of treatment for SAM patients.

Stabilization stage: Provision of F75 therapeutically milk – gives significant signigicant nutritional supplements. (Filippi et al. 2016)

Recovery stage: when the child's situation gets into a stable stage, give F100 therapeutic milk and Ready-to-Use-Therapeutic Food (RUTF). High-energy, nutrient-rich foods designed to support rapid weight gain, whether at home or in clinical settings. Abundant energy, and nutrition rich diet to achieve quick weight gain. (Filippi et al. 2016)

Figure 4. Identification and management of children with severe acute malnutrition (SAM).



(WHO 2009)

Recommendation to lower child malnutrition in Eastern Africa.

Public health strategies targeting risk groups:

Factors such as poor maternal education, low income, lack of accessibility to healthcare, are the major consequences to Malnutrition in the region. (Tesema et al. 2021)

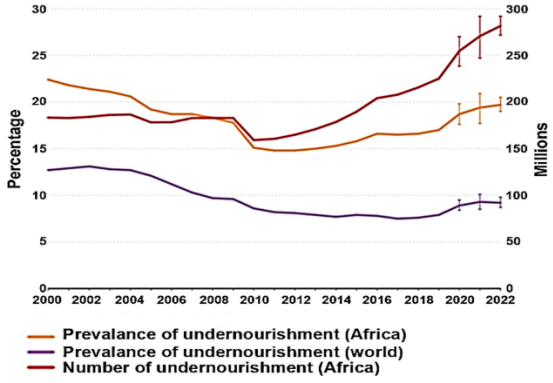
Impriving health services and developing growth monitoring.

Access to healthcare services, treatment of the condition. And constant growth monitoring support address malnutrition and other infections. (Roveta et al. 1984)

Promote ideal IYCF practices. Implementation of breastfeeding as early as possible. Exclusive breastfeeding in the early 6 months of the child. Initiation of complementary feeding that's safe, adequate and timely. (Jawaldeh et al. 2020)

Initiation of water and sanitation (WASH): Without access to clean drinking water and poor sanitation deteriorates child nutrition and enhances illness. To break this cycle, WASH should be developed. (Goudet et al. 2019)

Figure 5. Prevalence of undernourishment in Africa, the world, and the number of undernourished people in Africa.

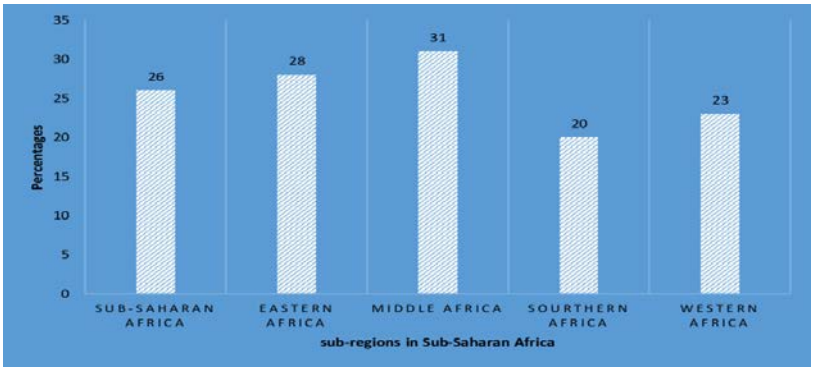


(FAO et al. 2024)

Diet and feeding practices related to food insecurity

In the Sub-Saharan Africa region, merely 25.3% of children get minimum diet variety, where as 41.2% get the minimum meal, with a big difference between countries. (Aboagye et al. 2024) The prevalence of minimum meal frequency differed across sub-regions, with Southern Africa generally higher (around 50.7%) and the West and Central regions lower (approximately 35–36%). The number of people with the minimal meal frequency vary across the region, with Southern Africa usually tend to have higher (around 50.7%) and the West and Central regions (about 35-36%). (Tebeje et al. 2024)

Figure 6. Prevalence of child food insecurity across sub-regions in Sub-Saharan Africa



(FAO et al. 2024)

7. CONCLUSION

Child malnutrition is still a main public health problem, especially in developing countries with low and middle income, while Sub-Saharan African carries a disproportionate burden. Undernutrition stunting, wasting, low weight for height, and micronutrient deficiencies have a great impact on the growth and development of children and their future potential productivity. Malnourished children have incomplete development, physically

and cognitively wise and do poorly in school, ear less as adult compared to their peers, and are also very vulnerable to infectious diseases and they are said to have weaker immune.

Although there is some progress, existing realities in East Africa, such as food insecurity, chronic poverty, constant conflicts, lack of or limited healthcare service, and climate change, make the situation even worse. To reduce child malnutrition in the region, several approaches are necessary to be take such as nutrition specific programs, child feeding programs in schools, helping poor families with cash, with agricultural and animal means. Improving region level food productions, educating mothers about childhood malnutrition, enhancing water, sanitation and hygiene, and also making the most out of the immunization programs. Investing in food production infrastructures, encouraging local farmers and animal keepers and building a long term and sustainable strategic roadmaps to achieve all these goals.

REFERENCES

Aboagye et al. 2024. "Prevalence and Predictors of Infant and Young Child Feeding Practices in Sub-Saharan Africa." *International Health* 16(1):68–82. doi:10.1093/inthealth/ihad022.

Ahmad et al. 1985. "Bronchoalveolar Lavage." *Cleveland Clinic Quarterly* 52(4):549–51. doi:10.3949/ccjm.52.4.549.

Akombi et al. 2017. "Stunting, Wasting and Underweight in Sub-Saharan Africa: A Systematic Review." *International Journal of Environmental Research and Public Health* 14(8). doi:10.3390/ijerph14080863.

Alvarez et al. 2018. "Mid-Upper Arm Circumference (MUAC) Shows Strong Geographical Variations in Children with Edema: Results from 2277 Surveys in 55 Countries." *Archives of Public Health = Archives Belges de Sante Publique* 76:58. doi:10.1186/s13690-018-0290-4.

Bain et al. 2013. "Malnutrition in Sub-Saharan Africa: Burden, Causes and Prospects." *The Pan African Medical Journal* 15:120. doi:10.11604/pamj.2013.15.120.2535.

Bavurhe et al. 2024. "Epidemiology and Clinical Characteristics of Acute Malnutrition among Under-5 Children Attending a Rural Hospital in the Democratic Republic of Congo: A Cross-Sectional Study." *Annals of Medicine & Surgery* 86(8):4402–9. doi:10.1097/MS9.0000000000002264.

Clark et al. 2020. "A Future for the World's Children? A WHO–UNICEF–Lancet Commission." *The Lancet* 395(10224):605–58. doi:10.1016/S0140-6736(19)32540-1.

Davidson et al. 2000. "Effects of Continuous Estrogen and Estrogen-Progestin Replacement Regimens on Cardiovascular Risk Markers in Postmenopausal

Women." *Archives of Internal Medicine* 160(21):3315–25. doi:10.1001/archinte.160.21.3315.

Dessie et al. 2025. "Child Stunting, Thinness, and Their Academic Performance in Ethiopia: A Longitudinal Study." *Social Science and Medicine* 373(September 2024):118050. doi:10.1016/j.socscimed.2025.118050.

Diallo et al. 2022. "Childhood Mortality during and after Acute Illness in Africa and South Asia: A Prospective Cohort Study." *The Lancet Global Health* 10(5):e673–84. doi:10.1016/S2214-109X(22)00118-8.

Etc, Monica C. Serra. 2019. "乳鼠心肌提取 HHS Public Access." *Physiology & Behavior* 176(3):139–48. doi:10.1053/j.gastro.2019.03.013.Mechanical.

FAO et al., 2024. 2024. *The State of Food Security and Nutrition in the World 2024: Building Resilience for Food and Nutrition Security*.

Filippi et al. 2016. "Levels and Causes of Maternal Mortality and Morbidity." *Disease Control Priorities, Third Edition (Volume 2): Reproductive, Maternal, Newborn, and Child Health* 51–70. doi:10.1596/978-1-4648-0348-2_ch3.

Gebremichael et al. 2025. "Double Burden of Malnutrition among Under-Five Children in Eastern and Southern African Countries." *Scientific Reports* 15(1):1–11. doi:10.1038/s41598-025-87144-y.

Goudet et al. 2019. "Nutritional Interventions for Preventing Stunting in Children (Birth to 59 Months) Living in Urban Slums in Low- and Middle-Income Countries (LMIC)." *The Cochrane Database of Systematic Reviews* 6(6):CD011695. doi:10.1002/14651858.CD011695.pub2.

Hodge et al. 2015. "Is There an Enabling Environment for Nutrition-Sensitive Agriculture in East Africa? Stakeholder Perspectives From Ethiopia, Kenya, and Uganda." *Food and Nutrition Bulletin* 36(4):503–19. doi:10.1177/0379572115611289.

Jawaldeh et al. 2020. "Tackling Childhood Stunting in the Eastern Mediterranean Region in the Context of COVID-19." *Children (Basel, Switzerland)* 7(11). doi:10.3390/children7110239.

Kawachi et al. 1994. "Burkitt Type Leukaemia Associated with Multiple Myeloma." *British Journal of Haematology* 87(3):617–20. doi:10.1111/j.1365-2141.1994.tb08323.x.

Keeley et al. 2019. *Children , Food and Nutrition -UNICEF SOWC Report*.

Kogan et al. 1995. "Long-Term Glutamate Desensitization in Locus Coeruleus Neurons and Its Role in Opiate Withdrawal." *Brain Research* 689(1):111–21. doi:10.1016/0006-8993(95)00545-2.

Kovalkovicová et al. 2000. "The Importance of Lymphocyte Micronucleus Test for the Detection of Genotoxic Events." *Central European Journal of Public Health* 8(4):221–26.

Lenters et al. 2013. "Treatment of Severe and Moderate Acute Malnutrition in Low- and Middle-Income Settings: A Systematic Review, Meta-Analysis and Delphi Process." *BMC Public Health* 13 Suppl 3(Suppl 3):S23. doi:10.1186/1471-2458-13-S3-S23.

Mertens et al. 2023. "Child Wasting and Concurrent Stunting in Low- and Middle-Income Countries." *Nature* 621(7979):558–67. doi:10.1038/s41586-023-06480-z.

Moravec et al. 2001. "Syngnathinema Californiense n. Gen., n. Sp. (Nematoda: Dracunculoidea) from the Circulatory System of the Bay Pipefish Syngnathus Leptorhynchus in California." *The Journal of Parasitology* 87(6):1429–32. doi:10.1645/0022-3395(2001)087[1429:SCNGNS]2.0.CO;2.

Müller et al. 2007. "Malnutrition, Zinc Deficiency, and Malaria in Africa." *Lancet* 369(9580):2155–56. doi:10.1016/S0140-6736(07)61001-0.

Nutrition, Scaling Up. 2025. "Cost of Hunger Study Ethiopia: Ethiopia Loses around 16.5 per Cent of Its GDP Each Year to the Long-Term Effects of Child Malnutrition." https://scalingupnutrition.org/news/cost-hunger-study-ethiopia.

Obasohan et al. 2020. "A Scoping Review of the Risk Factors Associated with Anaemia among Children under Five Years in Sub-Saharan African Countries." *International Journal of Environmental Research and Public Health* 17(23):1–20. doi:10.3390/ijerph17238829.

Razakamanana et al. 2024. "Nutrition Policy or Price Stabilisation Policy: Which Policy Is More Effective for Nutrition Outcomes?" *BMC Nutrition* 10(1):72. doi:10.1186/s40795-024-00882-6.

Ricci et al. 2025. "Factors Associated With Childhood Undernutrition in Sub-Saharan Africa: A Systematic Review and Meta-Analysis." *Maternal & Child Nutrition* e70083. doi:10.1111/mcn.70083.

Riwa et al. 2025. "The Prevalence and Determinants of Undernutrition Among Infants and Children Aged 6 Months to 5 Years in Sub-Saharan African Countries: A

Systematic Scoping Review." *Nutrition Reviews* 83(7):e1896–1916. doi:10.1093/nutrit/nuae189.

Roveta et al. 1984. "Intraperitoneal Transplantation of Yoshida Ascites Hepatoma Cells after Fine Needle Aspiration from Tumor Bearing Rats Organs." *Bollettino Della Societa Italiana Di Biologia Sperimentale* 60(6):1277–81.

Simwanza et al. 2023. "Exploring the Risk Factors of Child Malnutrition in Sub-Sahara Africa: A Scoping Review." *Nutrition and Health* 29(1):61–69. doi:10.1177/02601060221090699.

Tebeje et al. 2024. "Minimum Meal Frequency and Associated Factors among Children Aged 6-23 Months in Sub-Saharan Africa: A Multilevel Analysis of the Demographic and Health Survey Data." *Frontiers in Public Health* 12:1468701. doi:10.3389/fpubh.2024.1468701.

Tesema et al. 2021. "Pooled Prevalence and Associated Factors of Chronic Undernutrition among Under-Five Children in East Africa: A Multilevel Analysis." *PloS One* 16(3):e0248637. doi:10.1371/journal.pone.0248637.

UNICEF. 2023. "East Africa. Ensuring Survival." https://www.unicef.ch/en/annual-report-2023/east-africa-ensuring-survival?utm_source=chatgpt.com.

UNICEF. 2024. "1 in 3 Children in Africa Live in Severe Child Food Poverty Due to Inequity, Conflict, and Climate Crises."

UNICEF. 2025a. "13 Million Children Malnourished in Eastern and Southern Africa in 2025."

UNICEF. 2025b. "Nutrition – Supporting the Nutrition of Children to Enable Them to Reach Their Full Potential." https://www.unicef.org/esa/nutrition?utm_.

WHO. 2009. "WHO Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children : Joint Statement by the World Health Organization and the United Nations Children's Fund. World Health Organization." https://iris.who.int/handle/10665/44129.

WHO. 2024. "Joint Child Malnutrition Estimates." https://www.who.int/data/gho/data/themes/topics/joint-child-malnutrition-estimates-unicef-who-wb.

van Zanten et al. 1982. "[Marjolin's Scar Cancer]." *Nederlands Tijdschrift Voor Geneeskunde* 126(43):1965–67.

Zeray et al. 2019. "Prevalence and Associated Factors of Undernutrition among Under-Five Children from Model and Non-Model Households in East Gojjam Zone, Northwest Ethiopia: A Comparative Cross-Sectional Study." *BMC Nutrition* 5(1):1–10. doi:10.1186/s40795-019-0290-y.

CRITICAL PUBLIC HEALTH CHALLENGES IN EASTERN AFRICA

yaz
yayınları

YAZ Yayınları
M.İhtisas OSB Mah. 4A Cad. No:3/3
İscehisar / AFYONKARAHİSAR
Tel : (0 531) 880 92 99
yazyayinlari@gmail.com • www.yazyayinlari.com

ISBN: 978-625-8996-25-8