Effect of Women's Empowerment on Child Nutrititional Status in Selected Sub-Saharan African Countries

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Abstract

This research examines how women's empowerment influences child nutritional outcomes in selected Sub-Saharan African countries. Drawing on nationally representative Demographic and Health Survey (DHS) data from Ghana, Kenya, Burkina Faso, and Tanzania, the study applies a probit model to estimate the direct effect of empowerment on child nutritional outcomes. It uses the Alkire-Foster methodology to conceptualise the measurement of women's empowerment. Five domains of empowerment are employed to create a multidimensional empowerment index. The results demonstrate a consistent positive association: empowered women significantly increase the likelihood of children not being stunted, wasted, and underweight by approximately 3.0, 2.3, and 1.1 percentage points, respectively. This indicates that the empowered mothers are more likely to influence the nutritional status of their children. The study concludes that women's empowerment plays a crucial role in combating child malnutrition in the Sub-Saharan region. For policy recommendations, the study recommends that nutrition-sensitive policies must be intrinsically linked to women's empowerment initiatives, specifically targeting the enhancement of women's agency over household food resources and nutritional knowledge to achieve sustainable improvements in child health outcomes.

Keywords

Women's Empowerment, Child Nutritional Status, Alkire-Foster Methodology, Kabeer's Empowerment Theory

Introduction

Child malnutrition continues to constrain human development outcomes across Sub-Saharan Africa, particularly among children aged five, with long-term consequences for health, education, and productivity (AfDB, 2023). Recent estimates indicate that nearly one-third of children in this age category experience stunting or wasting, signalling both long-term nutritional deprivation and short-term dietary shocks (UNICEF, 2021). Beyond its immediate health consequences, malnutrition undermines the mental development of children, educational progress, and long-term economic participation. Children who experience undernutrition in early life face a higher risk of

chronic illness and reduced learning capacity in many years to come (Black et al., 2013). Child malnutrition remains widespread due to intertwined structural and social drivers: economic hardship, inadequate food and healthcare, deficient water and sanitation, and cultural practices that shape how children are cared for and fed.

Recent assessments by the African Development Bank Group highlight that persistent inequality, violent conflict, and accelerating climate-related shocks are key contributors to widespread child food deprivation across Sub-Saharan Africa (AfDB, 2023). The greatest burden falls on women and children, where these pressures deepen food insecurity and restrict consistent access to adequate diets. Disparities in wages, learning opportunities, and productive assets autonomy significantly limit the capabilities of women to ensure proper nutrition and access to health services for their children, as long-standing structural barriers limit their economic engagement and influence in household decisions. (AfDB, 2023). In addition, basic amenities, including education and health care, are severely disrupted due to conflict and political instability, displacing populations and damaging infrastructure. In such settings, acute malnutrition rises sharply as humanitarian responses are constrained by limited resources and the collapse of traditional coping strategies due to overreliance (FAO, 2022). Climate-related stresses further intensify these challenges, undermining agricultural production and food availability, especially in rural communities that depend solely on subsistence farming and have limited adaptive capacity (AfDB, 2023).

The interaction of these economic, social, and environmental forces perpetuates chronic child food poverty, leaving many children without sufficient nutrients to support healthy growth and development. Consequently, high levels of stunting, wasting, and micronutrient deficiencies persist across the region, with lasting effects on cognitive development, educational outcomes, and productivity in later life (UNICEF, 2023). Addressing child malnutrition under these conditions, therefore, demands integrated, multi-sectoral strategies that extend beyond food distribution to confront underlying inequalities and environmental risks, while strengthening the roles women play in household food security, caregiving, and health-related decision-making.

The study draws on Kabeer's view of empowerment, which emphasises expanding women's will to decide on significant life choices in cases where such options were initially denied. Within this framework, empowerment is seen as a multidimensional process involving agency, resource access, and outcomes (Kabeer, 2005). Over time, scholarly understanding of empowerment has evolved from a narrow focus on individual attributes to a broader, relational perspective that acknowledges the interaction of multiple domains. While debates persist regarding how empowerment should be assessed and which indicators align with specific outcomes, there is broad agreement that empowerment is inherently complex and context-dependent, particularly in relation to child nutrition (Novignon et al., 2019).

Empirical research highlights the strong association between women's empowerment and improvements in child nutrition. Studies such as those by (Essilfie et al., 2021; Yaya et al., 2020) reveal that women who possess greater autonomy are better positioned to make informed health-related choices, allocate household resources more effectively, and engage with healthcare services in ways that enhance child wellbeing. With all the available insights, much of the existing literature depends solely on relatively narrow indicators of empowerment, commonly education, employment, or participation in household decision-making. While these proxies provide useful information, they capture only selected dimensions of empowerment and fail to account for its broader and interconnected dimensions, including economic, social, psychological, legal, and health-related aspects (Malapit & Quisumbing, 2015).

This study's primary goal is to investigate the effect of women's empowerment on child nutritional status in selected Sub-Saharan African countries using a multidimensional approach to measure women's empowerment, recognising that its various domains may interact in distinct ways to shape child nutritional outcomes. The inclusion of diverse indicators such as agency, access to resources, income, leadership, and workload strengthens the analytical framework and responds to growing calls for context-sensitive and comprehensive approaches within gender and development research (Essilfie et al., 2021). This approach enables a more detailed understanding of how different dimensions of empowerment operate within specific socio-cultural contexts, thereby offering clearer guidance for policy and programme design.

For policy implications, this study provides insights that inform the design of nutrition-sensitive agricultural programs and social protection policies that place women's empowerment at the core, rather than treating it as a peripheral outcome. By producing evidence that is specific to the Sub-Saharan African context, the study adds to ongoing scholarly and policy discussions on gender-transformative approaches to enhancing child health and nutrition. In doing so, it also aligns with broader international development priorities, particularly the Sustainable Development Goals, Goal 2 on eliminating hunger, Goal 3 on ensuring health and wellbeing, and Goal 5 on advancing gender equality (Sorooshian, 2024).

Theoretical/Empirical Framework

Numerous studies and organisations have given differing perspectives on the concept of women's empowerment. Early policy approaches, such as those outlined by UNPN (1995), defined empowerment as the unrestricted participation of women in social and economic systems. Expanding this perspective, Kabeer (2005) conceptualises empowerment as an evolving process through which women progressively gain the ability to make significant choices in contexts where such agency was previously limited. At the core of this framework lies the interaction of three key dimensions: agency, resources and achievements.

Discussions of the concept are closely linked to feminist theory, focusing on equal political, economic, and social rights for women and men. Feminist thought has evolved through diverse strands that offer distinct explanations for gender inequality. Liberal feminism focuses on achieving equality through legal reform and institutional change, while radical feminism attributes women's oppression to patriarchal power structures and calls for fundamental social transformation. Socialist feminism highlights the intersection of capitalism and patriarchy in sustaining gender inequality, emphasising collective struggles for both economic and gender justice. Multicultural feminism, by contrast, challenges universal representations of women's experiences, drawing attention to the ways race, class, and culture shape empowerment processes (Turner & Maschi, 2015). These perspectives complement Kabeer's multidimensional understanding of empowerment as a process shaped by structural and relational factors.

Longwe (1991), on the other hand, defines empowerment as a progressive and transformative journey in which women enhance their capacity to influence their own lives and actively participate in development. Instead of treating empowerment as a fixed outcome, the framework portrays it as advancement across interconnected stages that signify growing gender equality and shifts in power relations.

The Logwe's framework adds analytical depth to the discussions of women's empowerment by complementing both feminist theories and Kabeer's multidimensional conceptualisation of empowerment. While Kabeer's

definition centres on the process through which women gain the ability to make meaningful decisions through the interaction of agency, resources and achievements, Longwe provides a more practical and progressive framework for understanding how empowerment unfolds within development contexts. The framework identifies stages of empowerment: welfare, access, conscientisation, participation and control, through which women move from passive beneficiaries to active decision-makers. This approach aligns with liberal feminism's emphasis on equal participation and institutional inclusion, radical feminism's focus on challenging patriarchal power structures, socialist feminism's concern with structural and economic inequalities, and multicultural feminism's recognition of the diverse and context-specific experiences of women.

The inclusion of Longwe's framework is particularly valuable because it translates broader feminist debates into measurable dimensions that can be applied to empirical research and development practice. Although these conceptualisations share a common concern with gender equality, they differ in emphasis: Kabeer focuses on agency and choice, Longwe emphasises progressive shifts in power relations, while feminist theories provide broader structural explanations for women's oppression and inequality. Rather than privileging a single perspective, integrating these frameworks allows for a more holistic understanding of empowerment that captures both individual agency and structural transformation. Such a combined approach is relevant in studies of women's participation, development, governance and peacebuilding where empowerment involves not only improving women's access to opportunities but also transforming the social and institutional systems that constrain their participation and decision-making power.

Here are some relevant empirical reviews:

The literature on the theoretical framework and conceptualisation of women's empowerment highlights two key themes. First, efforts to define empowerment as a multidimensional concept and to identify its domains have raised persistent measurement challenges. These challenges remain topical, as definitions and indicators of empowerment vary considerably across authors and are often shaped by differing social and contextual settings. Secondly, the studies reviewed demonstrate a consistent association between women's empowerment and child nutritional outcomes across diverse geographical and socio-economic contexts. Studies from Sub-Saharan Africa and South Asia converge on the finding that children of more empowered women are less likely to experience stunting, wasting, underweight, anaemia, and inadequate dietary diversity. The direction of these relationships varies depending on how empowerment is conceptualised and measured, as well as the contextual factors shaping household and community environments. Evidence suggests that empowerment domains related to decision-making autonomy, social independence, education, and asset ownership are more strongly and consistently linked to improved child nutrition than aggregate or purely economic measures of empowerment (Paudel & Adhikari 2025; Abdulai et al. 2024; Aboagye et al. 2024; Essilfie et al. 2024; Nikiema & Kponou 2024; Singh & Jha 2024; Wassie et al. 2024; Chatterjee and Dubey 2023; Christian et al. 2023; Folayan et al. 2023; Sindhuja & Venkata, 2023; Sey-Sawo et al., 2023). The study, therefore, hypothesises that children of empowered women are more likely to attain better nutritional outcomes. In addition, the research advances existing academic debate by adopting a composite index of women's empowerment instead of relying on single indicators. This multidimensional framework enables the examination of both the direct and indirect effects of women's empowerment, which may enhance household food security, strengthen caregiving practices, and improve engagement with health services. As such, the study offers a more comprehensive understanding of how different dimensions of empowerment function within diverse

socio-cultural settings.offers a more comprehensive understanding of how different dimensions of empowerment function within diverse socio-cultural settings.

Methodology/Research Design

The study's objective is to explore the effect of women's empowerment on child nutritional status in selected Sub-Saharan African countries. The study, therefore, extends our understanding of the dimension of empowerment and child nutritional status and how the concepts will be approached.

Data for the analysis come from the Demographic and Health Surveys dataset conducted in Ghana, Kenya, Tanzania, and Burkina Faso, covering mothers or female caregivers aged 15–49 and children aged 6–59 months (GSS & ICF, 2024; KNBS & ICF, 2023; NBS & ICF, 2023; INSD & ICF, 2023). This dataset was started in 1984 by the United States Agency for International Development. The pooled sample size for the four countries is 80,083 mother-child pairs. After applying the selection criteria, which require mothers to have living children below the age of five and valid responses for empowerment and nutrition variables, the study sample decreased by 47,266 mother-child pairs. This dataset was used because DHS surveys deliver nationally representative insights into household and individual characteristics central which is to the research objective.

The four countries were selected and used because they reflect the availability of recent surveys capturing all relevant variables. Data from the 2021 and 2022 DHS rounds offered complete and comparable measures, supporting consistent evaluation of women's empowerment and child nutrition.

Description and Measurement of Variables

Alkire-Foster Methodology for the Construction of Women's Empowerment Index

Estimation Procedure One

Empowerment is conceptualised as a multidimensional construct, recognising that an individual can experience empowerment in some indicators or domains while simultaneously experiencing disempowerment in others. The study employs five domains and fifteen indicators, which are collapsed into eleven indicators for the estimation procedure, as presented in Table 1. These five domains and corresponding indicators collectively form the study's conceptualisation of empowerment. The conceptualisation of the Women's Empowerment Index (WEI) applies the dual cut-off method proposed by Alkire & Foster (2011), which enables the identification of individuals as either empowered or disempowered. Although originally developed to measure multidimensional poverty, the method was later adapted in 2008 to allow its application to other phenomena Alkire & Santos, (2013). The Alkire–Foster approach provides researchers with considerable flexibility in determining key parameters and making analytical decisions. The methodology allows for choices regarding its purpose, analytical space, unit of analysis, dimensions, deprivation thresholds, weighting of indicators, and the overall poverty cut-off. Such adaptability makes it suitable for a wide range of applications. The methodology is adapted for the study because it allows for the inclusion and construction of an empowerment index where all relevant empowerment domains are captured.

Using the Alkire-Foster approach, equal weights are applied across the five domains that form the basis of the index and its indicators. Each woman receives a weighted deprivation score derived from her assigned deprivations. A score above 0.33 classifies her as poor, with overall deprivation values ranging between 0 and 1. The multidimensional index is calculated by combining two components: the headcount ratio (H), which reflects the proportion of women identified as disempowered under the dual cut-off method, and the intensity of disempowerment (A), which captures the average level of deprivation among those affected.

Table 1: Description and Measurement of Variables

Variables	Description/Measurement	Expected Outcome
Child Nutritional Status	Child Non-Stunting Child Non-Wasting Child Non-Underweight	
WEI	Women Empowerment Index will be created using the Alkire foster methodology	+
Age	Age of the woman in years	+
Marital Status	Marital Status of the woman	+
Education of the Woman	Educational level of the woman	+
Occupation of the Woman	Work of the woman	+/
Religion	Religion of the woman	+/-
Residence	Location of the woman	-
Health Status	Quality of health of the woman	+
Access to Information	Means of getting information	+
Health Access	Proximity of formal healthcare services	+
Age of the Child	Age of the child	+
Sex of the Child	Sex of the child	+
Minimum Dietary Diversity of the child	Quality of complementary feeding for young children	+
Household Size	Number of people living in the household	-
Sex of Household Head	Sex of household head	+
Partner's Education	Level of education of partner	+
Toilet Facility	Toilet facility used in the household	+
Water Source	Source of water used in the household	+

Table 2: Domains and Indicators for the Construction of the Women's Empowerment Index

Domains	Indicators
Agency	Decision to visit the community health facility
	Decision on large household purchases
	Perception of violence
Resources	Rate of literacy
	Number of visits for prenatal care
Income	Works for oneself or for someone
	Decision on spending earnings
Leadership	Ownership of the house
	Discuss family planning with the FP worker
Workload	Fuel type used for cooking
	Time used to fetch water for the home

$$H = \frac{\rho}{n} \quad (1)$$

The degree of disempowerment can also be quantified. It reflects the common dimensions of deprivation experienced by women and is expressed as the average weighted number of deprivations among those identified as multidimensionally disempowered. Formally, this can be represented as:

$$A = \frac{\sum_1^{\rho} C}{\rho} \quad (2)$$

C represents the overall weighted deprivation faced by a disempowered woman. The Women's Empowerment Index (WEI) is calculated by multiplying the headcount ratio of disempowered individuals by the average intensity of their deprivations, a measure commonly referred to as the adjusted headcount ratio.

$$M = HA \quad (3)$$

The adjusted ratio meets the criterion of dimensional monotonicity, since the value of A rises whenever a woman experiences deprivation in an additional domain. In line with Alkire et al. (2012), the Women's Empowerment Index (WEI) is calculated as follows:

$$5DE = H_{\mathrm{e}} + H_{\mathrm{p}}A_{\mathrm{e}} \quad (4)$$

Where H_{e} is the percentage (%) of empowered women.

H_{p} is the percentage (%) of women disempowered.

A_{e} is the mean absolute score of empowered women among those disempowered.

Therefore, equation (4) can be stated as

$$5PE = 1 - M_{\mathrm{o}} \quad (5)$$

We can then compute the contribution of the indicators to WEI as

$$Contribution\ of\ indictors\ to\ WEI = \frac{w_i CH_i}{WEI} \times 100 \quad (6)$$

Where w_i is the weight of the indicator, and CH_i is the censored headcount ratio of the ith indicator.

Estimation Procedure Two

The probit model is employed in analysing the effect of women's empowerment on child nutritional status. For a cross-sectional analysis with a binary outcome, the probit model is a well-established, efficient estimator when its core assumptions are met. Its results are easily interpretable through marginal effects, which show the change in the likelihood of the outcome for a one-unit change in a predictor, evaluated at the mean of all other variables (or averaged over the sample).

To specify the model, let the structural equation (second-stage) be:

$$Child\ Nutritional\ Status_i = \beta_o + \beta_1 Women's\ empowerment + X'_i\beta + \mu_i \quad (7)$$

$Child\ Nutritional\ status_i$: Represents the likelihood of a child having adequate nutritional status (e.g., not stunted, not wasted).

Therefore, the binary outcome $Child\ Nutritional\ Status = 1\ [Child\ Nutritional\ Status \geq -2]$ which equals 1 if the child is well-nourished and 0 otherwise.

$X'_i\ is\ the\ independent\ variables$

Result and Discussion

To construct the five empowerment domains, fifteen indicators were used, as detailed in Table 2. Kenya stood out with the largest share of responses across most indicators. In the agency domain, results from three countries, excluding Burkina Faso, suggest that household decisions are largely controlled by husbands, leaving women with limited independence. When asked about violence, most women disapproved of being beaten, yet some still considered it acceptable in particular situations. About the income domain, women generally have the freedom to work for themselves and decide how to use their income. Regarding house ownership, most women do not claim ownership; the majority indicate that their spouses own the house. This aligns with the theory regarding the non-ownership of land and homes by women in Sub-Saharan Africa. This could be due to cultural and social factors in these geographical areas. The results indicate that most women prefer not discussing family planning with healthcare providers. Again, this aligns with the theory where women in Sub-Saharan Africa majorly depend on their partner or household member to make decisions about their healthcare. Additionally, the majority of women do not have the confidence to discuss issues of their reproductive health with a family planning worker, primarily because of their beliefs and social factors. In the resource domain, responses are rotating between cannot read at all and can read. Kenya records the highest proportion of women who are unable to read, while Burkina Faso has the largest share of women who cannot read completely. All four countries have women who have never attended prenatal visits. Within the workload domain, findings show that many respondents spend over 30 minutes travelling to reach water sources. Most women in Kenya rely on charcoal as their main cooking fuel, whereas a larger proportion of women in Burkina Faso use gas or electricity. The disparity in cooking fuel use between Kenya and Burkina Faso may reflect broader differences in women's access to household resources and living conditions.

Access to cleaner cooking fuels such as gas and electricity is often linked to improved socio-economic welfare and women's empowerment, as it reduces domestic labour burdens and exposure to indoor air pollution. These conditions may indirectly enhance child nutritional outcomes by improving caregiving time, food preparation practices and household environments.

Table 3: Country distributions of the indicators used in the Women's Empowerment Index

Domain/Indicators	**Burkina Faso**	**Proportion (%)**	**Ghana**	**Proportion (%)**	**Kenya**	**Proportion (%)**	**Tanzania**	**Proportion (%)**
Agency								
Decision on respondent healthcare								
Joint/Alone	3,193	30.5	5,337	70.4	11,815	80.3	5,925	72.9
Partner Alone	7,274	69.5	2,245	29.6	2,903	19.7	2,205	27.1
Decision on large household Purchases								
Joint/Alone	1,986	19	4,611	60.8	10,733	72.9	4,929	60.6
Partner Alone	8,481	81	2,971	39.2	3,985	27.1	3,201	39.4
Beating is accepted if the wife leaves home without informing the husband								
No	7,663	69.8	7,411	84.4	14,152	79.6	6,582	67.6
Yes	3,310	30.2	1,369	15.6	3,626	20.4	3,153	32.4
Beating is accepted if the wife neglects the children								
No	7,704	70.2	7,148	81.4	12,351	69.5	6,062	62.3
Yes	3,269	29.8	1,632	18.6	5,427	30.5	3,673	37.7
Beating is accepted if the wife argues with the husband								
No	6,874	62.6	7,390	84.2	13,404	75.4	6,406	65.8
Yes	4,099	37.4	1,390	15.8	4,374	24.6	3,329	34.2
Beating is accepted if the wife declines to have sex with the husband								
No	8,082	73.7	7,755	88.3	14,076	79.2	7,287	74.9
Yes	2,891	26.3	1,025	11.7	3,702	20.8	2,448	25.1
Beating is accepted if the wife burns food								
No	9,667	88.1	8,255	94	15,944	89.7	8,548	12.2
Yes	1,306	11.9	525	6	1,834	10.3	1,187	44.5
Income/Assets								
Respondent works for themselves or someone else								
Self	3,613	49.7	4,871	66	4,945	54	2,898	44.5
Someone else	3,661	50.3	2,506	34	4,219	46	3,611	55.5
Decision to spend the respondent's earnings								
Joint/Alone	2,457	87.8	4,496	92.5	5,323	94.9	2,931	90.3
Partner Alone	340	12.2	363	7.5	286	5.1	315	9.7

Leadership								
Ownership of House								
Joint/Alone	2,196	20	1,633	18.6	7,694	43.3	4,152	9.7
Does not own	8,777	80	7,147	81.4	10,084	56.7	5,583	42.7
Discuss family planning								
Discussed	3,767	46.3	3,587	51.5	3,529	48.9	3,531	5.3
Not discussed	4,377	53.7	3,379	48.5	3,688	51.1	4,358	44.8
Resources								
Literacy								
Can least read/write	2,956	26.9	3,824	43.6	12,941	72.8	7,310	75.1
Can't read at all	8,017	73.1	4,956	56.4	4,837	27.2	2,425	24.9
Prenatal Visits								
Visited	2,763	25.2	2,554	29.1	5,371	30.2	2,786	28.6
Never Visited	8,210	74.8	6,226	70.9	12,407	69.8	6,949	71.4
Time/Work-load								
Time to reach water								
Less than 30 minutes	4,666	42.5	1,742	19.8	6,094	34.3	2,440	25.1
More than 30 minutes	6,307	57.5	7,038	80.2	11,684	65.7	7,295	74.9
Type of cooking fuel								
Gas/electricity	9,925	90.4	7,575	86.3	65	0.4	9,169	94.2
Charcoal	1,048	9.6	1,205	13.7	17,713	99.6	566	5.8

Table 3 shows how empowerment is distributed across different variables. It reveals that in Ghana, Burkina Faso, Kenya and Tanzania, women within the 20-24 to 45-49 age brackets are disempowered. The result is somewhat counterintuitive, given that women within such an age group are usually regarded as greatly empowered, reflecting higher educational levels and broader social exposure linked with maturity. Again, in all three stages of education (primary, secondary and higher), the majority of women are still disempowered as compared to women who have had no experience of formal education. This suggests that education alone does not constitute a sufficient condition for empowerment; rather, other critical factors, such as agency, access to resources, ownership, and leadership, must also contribute to women achieving greater empowerment. The findings further indicate that the majority of unmarried women are disempowered, which could be due to the absence of a partner, which is accompanied by being unmarried. Married women tend to receive both emotional and financial support, which contributes to their empowerment status. Across all wealth groups, from the poorest to the richest, many women remain disempowered. This shows that household wealth alone does not guarantee empowerment.

Limited access to safe water and sanitation also contributes to disempowerment, highlighting the importance of these basic resources in strengthening women's agency.

Table 4: Distribution of Empowerment between Socioeconomic Factors

Variable	Disempowered	Empowered	Total	Proportion (%)
Women's Age Range				
15-19	45	11	56	1.6
20-24	337	140	477	13.9
25-29	642	308	950	27.6
30-34	700	269	969	28.1
35-39	486	214	700	20.3
40-44	142	101	243	7.1
45-49	39	1	48	1.4
Women's Educational Level				
No education	711	175	886	25.7
Primary	382	291	673	19.5
Secondary	653	410	1,063	30.9
Higher	645	176	821	23.8
Marital Status of the Woman				
Married	479	214	693	20.1
Unmarried	1,912	838	2,750	79.9
Wealth Status of the Woman				
Poorest	247	109	356	10.3
Poorer	273	119	392	11.4
Middle	358	230	588	17.1
Richer	560	270	830	24.1
Richest	953	324	1,277	37.1
Water Source				
Unimproved Water	561	237	798	23.2
Improved Water	1,830	815	2,645	76.8
Toilet Facility				
Unimproved Toilet	584	266	850	25
Improved Toilet	1,792	759	2,551	75
Woman's Occupation				
Services	929	355	1,284	37.4
Manual Work	85	26	111	3.2
Agriculture	1,371	671	2,042	59.4

Effect of Women's Empowerment on Child Nutritional Status

As presented in Table 5, women's empowerment is strongly linked to better child nutrition. Across measures of stunting, wasting, and underweight, the relationship is consistently positive. Children of empowered women are 9.9 percentage points less likely to be stunted, 2.3 percentage points less likely to be wasted, and 1.1 percentage points less likely to be underweight.

Across the three measures, results suggest that women's empowerment is marginally associated with non-stunting and non-underweight, with a stronger, significant relationship observed for non-wasting. This suggests that empowered women play a role in mitigating both long-term nutritional deficits and short-term shocks that affect their children's health. This aligns strongly with theoretical frameworks, such as the household bargaining model, which posits that empowered women allocate resources more favourably toward child welfare (Doss, 2013). These findings corroborate those of Sindhuja and Venkata (2023) and Salawu et al. (2022), who identified women's empowerment status as a key driver of nutritional improvement.

The results indicate that female children have a significantly higher probability of achieving satisfactory nutritional status across all three indicators compared to male children: non-stunting (4.7 percentage points), non-wasting (1.1 percentage points), and non-underweight (2.8 percentage points). This pattern suggests that male children are prone to infections and diseases compared to their female counterparts. This finding is consistent with Essilfie (2024), who reported that female children experience lower rates of wasting than their male counterparts. Furthermore, the analysis reveals that the probability of not being stunted increases significantly with age, rising by approximately 5 percentage points as a child grows older. This is expected for stunting, as it is a cumulative, chronic condition, and its HAZ scores are relative to age, and this may reflect recovery or catch-up growth in some children as they age.

Compared with unmarried women (including those who have never married, as well as widowed, divorced, or separated women), being married is associated with a statistically significant increase in the likelihood of a child attaining satisfactory nutritional status, that is, not being stunted, wasted, or underweight. This finding is consistent with several theoretical frameworks and may be explained through a combination of socioeconomic, psychosocial, and practical mechanisms (Singh & Jha, 2024). In particular, two-adult households generally benefit from higher and more stable aggregate income compared with single-parent households, especially in settings where women's opportunities for independent income generation are constrained. This greater economic capacity facilitates consistent access to sufficient quantities of diverse, nutritious foods, quality healthcare, and improved sanitation facilities, all critical determinants of child nutrition. Married couples are better equipped to withstand economic or agricultural shocks (e.g., drought, job loss, illness). The ability to pool risks and resources provides a buffer that can protect children from acute periods of food insecurity that lead to wasting and underweight. A spouse can share the immense physical and time burdens of childcare. This allows the mother more time for dedicated child feeding, food preparation, and seeking healthcare when the child is sick. In single-mother households, the mother may be forced to trade off childcare for income-generating activities, potentially to the detriment of the child's care. Marriage can provide emotional support, reducing maternal stress. A less stressed mother may be more psychologically available to provide responsive feeding and care. Furthermore, having a partner to consult can lead to more informed and timely decisions regarding a child's health and diet.

Essilfie et al. (2024) and Salawu et al. (2022) report that maternal education improves child nutrition outcomes, particularly increasing non- wasting and non-underweight. The present study confirms this pattern: primary, secondary, and higher education raise the probability of children avoiding wasting by 2.6, 3.7, and 3.5 percentage points, and underweight by 2, 2.6, and 3.2 percentage points, respectively, compared with mothers lacking formal schooling. In contrast, maternal education shows a negative association with non-stunting, with probabilities declining by 3, 2.4, and 1.3 percentage points across the three education levels. These findings confirm that education serves as a powerful tool for improving child nutrition, likely through enhanced knowledge, improved childcare practices, and higher socioeconomic status. The influence of education on child non-stunting may stem from the growing responsibilities parents and guardians assume as they advance educationally. As these responsibilities increase, they tend to consume more of their time. Consequently, parents and guardians may have limited time to engage with their children and monitor their health, potentially exposing the children to various health risks. Household wealth is positively associated with child nutrition, especially non-wasting and non-underweight. Children from middle, richer, and richest households are 1.3, 4.1, and 2.6 percentage points more likely to avoid wasting, and also show higher probabilities of not being underweight by 4.5, 7.0, and 5.5 percentage points, respectively, compared with those from the poorest households. This finding aligns with expectations, as greater household wealth enhances access to higher-quality food and healthcare services. Results corroborate Essilfie et al. (2024) who found that household wealth improves child healthcare provision. Rural residence is negatively associated with child nutrition, lowering probabilities of non-stunting, non-wasting, and non-underweight by 3.5, 1.6, and 12.2 percentage points, respectively. These outcomes likely reflect structural disadvantages such as poor healthcare access, reduced income, sanitation challenges, and limited dietary diversity. Additionally, household size is inversely related to children's likelihood of avoiding wasting and underweight; specifically, each additional household member decreases this probability by approximately 0.5 percentage points. This finding supports the "resource dilution" theory, which suggests that as the number of household members grows, limited food and resources are spread more thinly, disproportionately affecting the nutritional well-being of young children. Conversely, adequate dietary diversity significantly improves child nutrition outcomes, increasing the likelihood of not being stunted, wasted, and underweight by 0.1, 0.2, and 0.4 percentage points, respectively. This highlights the importance of a varied diet in meeting children's nutritional needs and promoting healthy growth.

Water source and access to information shows a positive relationship with child non-wasting and non-underweight for the source of water of the household and non-stunting and non-wasting for access to information. This indicates that when the household has access to improved source of drinking water and information then the likelihood of the child being stunted, wasted and underweight reduces.

Improved maternal access to healthcare enhances child nutritional outcomes, such as child non-stunting, non-wasting and non-underweight. Children of mothers with better access to healthcare services have a 2.3 percentage point higher likelihood of not being wasted. This highlights the importance of timely medical care in preventing or treating infections that contribute to acute malnutrition.

The table presents results on the model classification test for the probit model. The results show that the model's predictions matched the true labels for 91.56%, 94.97% and 93.79% for all cases for non-stunting, non-wasting and non-underweight.

Table 5: Probit Model on the Effect of Women's Empowerment on Child Nutritional Status in Selected Sub-Saharan African Countries

Variables	Non-Stunting		Non-Wasting		Non-Underweight	
	Coefficients	ME	Coefficients	ME	Coefficients	ME
Women's Empow-	0.250*	0.099*	0.284**	0.023**	0.111*	0.011*
erment	(0.008)	(0.003)	(0.114)	(0.009)	(0.097)	(0.010)
Age of the Woman (ref:15-19)						
20-24	-0.843**	-0.079***	0.039*	0.003*	-0.066	-0.006
	(0.433)	(0.022)	(0.317)	(0.025)	(0.315)	(0.028)
25-29	-0.660*	-0.052***	0.062*	0.004*	-0.020	-0.001
	(0.431)	(0.019)	(0.309)	(0.024)	(0.308)	(0.027)
30-34	-0.620*	-0.047***	-0.012*	0.001*	-0.148	-0.014
	(0.432)	(0.019)	(0.319)	(0.025)	(0.309)	(0.027)
35-39	-0.766*	-0.067***	0.061*	0.004	-0.091	-0.008
	(0.434)	(0.021)	(0.317)	(0.025)	(0.315)	(0.028)
40-44	-0.965**	-0.102***	-0.443*	-0.052*	-0.544*	-0.074**
	(0.446)	(0.031)	(0.334)	(0.034)	(0.329)	(0.037)
45-49	-0.524***	-0.063*	0.784*	-0.121*	-0.253	-0.027
	(0.179)	(0.025)	(0.457)	(0.087)	(0.495)	(0.058)
Marital Status (ref: Unmarried)						
Married	0.048*	0.006*	0.321***	0.031***	0.234**	0.027**
	(0.093)	(0.013)	(0.104)	(0.011)	(0.098)	(0.012)
Education of the Woman (ref: No education)						
Primary	-0.028*	-0.003*	0.258*	0.026*	0.168*	0.020*
	(0.122)	(0.015)	(0.140)	(0.014)	(0.130)	(0.015)
Secondary	-0.178*	-0.024*	0.403***	0.037***	0.227*	0.026*
	(0.115)	(0.015)	(0.135)	(0.013)	(0.124)	(0.015)
Higher	-0.101*	-0.013*	0.374**	0.035**	0.287**	0.032*
	(0.134)	(0.017)	(0.155)	(0.014)	(0.146)	(0.016)
Wealth of the Household (ref: Poorest)						
Poorer	0.033	0.004	0.083*	0.009*	0.158	0.025
	(0.152)	(0.022)	(0.173)	(0.020)	(0.155)	(0.025)
Middle	0.111	0.015	0.123*	0.013*	0.316**	0.045*
	(0.153)	(0.022)	(0.175)	(0.020)	(0.160)	(0.026)
Richer	-0.077	-0.012	0.503**	0.041**	0.578***	0.070**
	(0.161)	(0.024)	(0.205)	(0.020)	(0.183)	(0.027)

Richest	0.124	0.017	0.263*	0.026*	0.411**	0.055*
	(0.180)	(0.025)	(0.211)	(0.023)	(0.193)	(0.029)
Sex of Child (ref: Male)						
Female	0.337***	0.047***	0.142*	0.011*	0.265***	0.028***
	(0.077)	(0.010)	(0.091)	(0.007)	(0.085)	(0.008)
Residence(ref: Urban)						
Rural	-0.255***	-0.035***	-0.204*	-0.016*	-0.018*	-0.122***
	(0.093)	(0.013)	(0.120)	(0.009)	(0.108)	(0.040)
Age of Child	0.359***	0.050***	-0.076	-0.006	-0.018	-0.001
	(0.088)	(0.012)	(0.101)	(0.008)	(0.092)	(0.009)
Dietary Diversity of the Child	0.008*	0.001*	0.031*	0.002*	0.046*	0.004*
	(0.024)	(0.003)	(0.028)	(0.002)	(0.026)	(0.002)
Household Size	0.005	0.000	-0.067***	-0.005***	-0.049***	-0.005***
	(0.011)	(0.001)	(0.019)	(0.001)	(0.016)	(0.001)
Water Source(ref: Unimproved)						
Improved	0.008	0.001	0.080*	0.006*	0.109*	0.012*
	(0.094)	(0.013)	(0.111)	(0.009)	(0.101)	(0.011)
Toilet Facility(ref: Unimproved)						
Improved	0.060	0.008	-0.007	-0.000	-0.032	-0.003
	(0.107)	(0.015)	(0.129)	(0.010)	(0.119)	(0.012)
Access to Information	0.227**	0.031**	0.129*	0.010*	0.102	0.010
	(0.117)	(0.016)	(0.149)	(0.012)	(0.135)	(0.014)
Health Status	-0.019	-0.002	-0.009	-0.000	-0.022	-0.0024
	(0.052)	(0.007)	(0.065)	(0.005)	(0.058)	(0.006)
Healthcare Access	0.104	0.014	0.282**	0.023**	0.116	0.012
	(0.100)	(0.013)	(0.109)	(0.008)	(0.103)	(0.010)
Constant	2.18***		0.022**		0.546*	
	(0.513)		(0.458)		(0.430)	
LR chi2(25)	82.66***		86.06***		71.76***	
Correctly Classified	91.56%		94.97%		93.79%	
Observations	2,463	2,463	2,463	2,463	2,463	2,463

$^{***}p < 0.01$, $^{**}p < 0.05$ $^{*}p < 0.1$; Standard errors in parentheses

Conclusion

To understand the effect of women's empowerment on child nutritional status in selected Sub-Saharan African countries, the study examined the five dimensions (agency, resources, leadership, workload and income) of women's empowerment, creating a women's empowerment index using the Alkire-Foster methodology. The findings of the study consistently reveal that empowering women by enhancing their agency, resources, income and leadership enables them to secure a more dynamic and nutrient-rich diet for their children. Policies aimed at improving child nutritional status must be fundamentally integrated with efforts to promote the empowerment of women, with a specific attention on enhancing their capacity to influence household food choices and access.

In view of these empirical insights, many actionable policy recommendations are proposed to promote women's empowerment in the selected Sub-Saharan African countries. First of all, social protection programmes in the selected Sub-Saharan African countries (Ghana, Burkina Faso, Kenya and Tanzania) should prioritise single mothers and their children to reduce economic and social vulnerabilities, while public health initiatives must remain inclusive of all family structures, ensuring unmarried women have access to nutritional education and support.

Secondly, effective policies should integrate women's empowerment, promoting education, economic opportunities, and access to health and sanitation services. Government efforts to strengthen healthcare systems and improve sanitation should be complemented by economic empowerment programmes that link income generation with nutritional awareness, including improving dietary diversity and feeding practices in children.

Additionally, both government and private institutions should mainstream women's empowerment into nutrition-specific interventions, combining nutritional education with training in financial literacy, decision-making, and negotiation skills. Government and private institutions should focus on programmes that enhance households' access to, and knowledge of, diverse food groups. This could include agricultural programmes promoting backyard gardens with a variety of crops, and nutrition education campaigns. Programme success should extend beyond traditional anthropometric indicators to include aspects of women's empowerment, including autonomy over income and participation in household choices, as key performance metrics reflecting broader impacts on child health.

Finally, sustained support from government and civil society organisations through women's savings groups and micro-enterprises can enhance women's financial independence and enable investments in nutrition-sensitive ventures like poultry farming or market gardening. Engaging men and community leaders as partners in challenging harmful gender norms and promoting shared childcare responsibilities is also crucial. To deepen understanding, future research should complement quantitative analyses with qualitative studies exploring how empowered women navigate household dynamics, social expectations, and resource constraints to achieve improved child nutritional outcomes.

Some limitations were observed in the process of the research work. These included secondary data, which excels at measuring observable outcomes (e.g., who makes a decision) but is fundamentally limited in capturing the process and quality of empowerment. We cannot discern from the data whether a woman's reported decision-making is genuine, reluctant, or the result of coercive delegation.

The emotional and relational dynamics of intra-household bargaining, which are central to empowerment, remain invisible. Secondly, the empowerment-nutrition pathway inherently involves intra-household dynamics, yet men's characteristics, attitudes, and behaviours are only captured indirectly through women's reports or are absent.

Conflict of Interests

No conflict of interests to declare.

Acknowledgements

I wish to thank Prof Samuel Sekyi, Prof Nicky Pouw, and Dr Courtney Vegelin for their valuable insights that shaped this work.

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