



VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

Examining the role of social capital in the association between parental employment in childhood and food insecurity in adulthood: evidence from Ghana

This is the Published version of the following publication

Awuviry-Newton, Kofi, Acheampong, AO and Oteng, SA (2026) Examining the role of social capital in the association between parental employment in childhood and food insecurity in adulthood: evidence from Ghana. *Nutrition*, 150. p. 113272. ISSN 0899-9007 (In Press)

The publisher's official version can be found at
<https://doi.org/10.1016/j.nut.2026.113272>

Note that access to this version may require subscription.

Downloaded from VU Research Repository <https://vuir.vu.edu.au/50375/>



Applied nutritional investigation

Examining the role of social capital in the association between parental employment in childhood and food insecurity in adulthood: evidence from Ghana

Kofi Awuviry-Newton Ph.D. ^{a,b,c,*}, Alex O. Acheampong Ph.D. ^{d,e}, Samuel Ampadu Oteng Ph.D. ^{a,f}^a African Health and Ageing Research Centre, Winneba, Central Region, Ghana^b Department of Allied Health, College of Sport, Health and Engineering, Victoria University, Melbourne, Australia^c Institute of Health, Sports and Engineering, Victoria University, Melbourne, Australia^d Bond Business School, Bond University, Gold Coast, Australia^e Centre for Data Analytics, Bond University, Gold Coast, Australia^f School of Graduate Studies, Lignan University, Tuen Mun, New Territories, Hong Kong

ARTICLE INFO

Article History:

Received 20 November 2025

Received in revised form 27 April 2026

Accepted 28 April 2026

Keywords:

Food insecurity

Public health

Adverse childhood experiences

Childhood parental employment

Ghana

Social capital

ABSTRACT

Objectives: To examine the impact of exposure to childhood parental employment on food insecurity in adulthood in Ghana, using the three waves of the WHO SAGE longitudinal study.**Design:** Longitudinal study**Setting and Participants:** Study participants were selected from the three waves of the World Health Organization Study on global AGEing and adult health (WHO-SAGE) conducted in Ghana between 2007 and 2019.**Methods:** Longitudinal analytical models with logistic regression were used to examine the association between childhood parental employment and adulthood food insecurity, and mediation analysis to examine the mediating role of social capital on the association. Childhood parental employment was assessed from father and mother employment status during childhood. Food insecurity was measured from experience of hunger and food insufficiency over the last 12 mo.**Results:** Exposure to childhood parental employment significantly is associated with a reduction in hunger and food insufficiency in adulthood. The baseline estimates show that exposure to a mother's employment is associated with a decline in hunger and food insufficiency in adulthood by 14.7 and 16.2 percentage points, respectively. Also, exposure to a father's employment is associated with a reduced hunger and food insufficiency in adulthood by 16.4 and 17.6 percentage points, respectively. We also find evidence that the relationship between exposure to parental employment during childhood and food insecurity in adulthood is mediated by social capital.**Conclusion and Implications:** The study draws attention to early interventions that support employment security among individuals, particularly parents, in accumulating resources and the formation of substantial social capital.© 2026 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)

Introduction

Food insecurity – hunger and or food insufficiency as defined in this study – remains one of the most pressing global challenges of our time, with the United Nations estimating that between 638 and 720 million people faced hunger in 2024, making it difficult to achieve the Sustainable Development Goals Target 2.1 despite some significant progress [1]. Food insecurity is particularly acute

in sub-Saharan Africa as estimate shows that nearly 23%, 23.2% and 63.3% of the population are undernourished, severely and moderately food insecure, respectively in 2023 [1], which are often exacerbated by climate shocks, economic instability and rapid population growth [2,3]. Similarly in Ghana, the nation has made significant progress in reducing poverty and hunger since the 1990s; however, recent data show troubling reversals, with a high prevalence of food insecurity recorded across northern and southern Ghana in 2022 [4]. This deterioration has been attributed to a plethora of factors, including inflationary pressures, climate variability affecting agricultural production, and structural

*Corresponding author.

E-mail address: kofi.awuviry-newton@vu.edu.au (K. Awuviry-Newton).

unemployment [5,6]. Parental employment during childhood may determine the food security status of individuals in adulthood. For instance, a child or an adult will be food secure over time if their parents were employed during their childhood because being employed will be a protective factor – more income and wealth –, which will eventually increase one's food purchasing power when needed. Conversely, lack of formal parental employment during childhood – an adverse childhood experience – may eventually predispose individuals to the risk of food insecurity in adulthood. Understanding the longitudinal association of parental employment in childhood on food security in adulthood will aid in developing and implementing early intervention strategies to improve the living conditions of families with children and older adults.

The association between childhood socio-economic conditions, particularly parental employment status during childhood, and adult food security outcomes remains critically understudied globally, especially in African contexts where intergenerational poverty persists. Established evidence exists on parental employment and child development outcomes [7,8], parental employment and adverse childhood experiences (ACEs) [9], ACEs and elder abuse victimisation [10], and ACEs – food insecurity associations [11–13], with an unclear pathway through which childhood exposure to parental employment influences food insecurity in adulthood. This knowledge gap is particularly significant for Ghana, where informal employment – accounting for 85% of total employment – is characterised by precarity, such as a lack of insurance, and unsustainable income [14]. According to the International Labour Organisation [15], the informal sector comes in diverse forms including family-owned business, usually in form of self-employed and small size that do not operate within the frameworks that regulate formal employments. Informal workers often lose incomes, operate under unfavourable working environment, access limited social services and lower working hours following an outbreak such as the COVID-19 [16,17]. The informal employment in Ghana are not immune to the above challenges, as many older adults for instance, who worked in the informal sector before retirement face challenges in meeting their basic needs such as shelter, health and food [18–20]. The available literature on the associations between parental employment and food insecurity is cross-sectional, with some useful findings. For instance, parental employment enhances household food security through increased income [21], and time poverty, particularly among working mothers, negatively impacts children's nutritional outcomes [22,23]. Research examining the influence of childhood parental employment on food insecurity in adulthood, specifically among middle-aged and older adults, is limited. Existing evidence indicates that stable and high-quality employment throughout adulthood serves as a protective factor against food insecurity in later life [24]. This protective effect is largely attributed to the accumulation of financial assets, eligibility for pensions and higher lifetime earnings associated with sustained employment [25]. In contrast, individuals with interrupted or low-quality employment histories, often due to caregiving responsibilities or systemic labour market disadvantages, face an elevated risk of food insecurity as they age [24–26]. For example, a Canadian study found that households with a primary income earner aged 65 or older experienced lower rates of food insecurity (10%) compared to younger households, a trend attributed to more stable income sources such as pensions and accumulated assets from consistent employment [25].

Although longitudinal studies directly connecting childhood parental employment to adulthood food insecurity are scarce, the current body of research strongly suggests that stable and high-quality parental employment is associated with a decline in the risk of food insecurity and its long-term adverse effects [21,27].

Young individuals from households with unstable or limited parental employment are at greater risk of experiencing food insecurity [28]. For instance, Sheely [27] emphasises that the stability and quality of parental employment during childhood can have enduring impacts, as early-life food insecurity is associated with poorer health and socio-economic outcomes in adulthood. Stable, full-time parental employment is generally linked to reduced childhood food insecurity, which in turn correlates with improved adult outcomes [25,29]. Evidence from a Pakistan study further supports this, showing that both maternal and paternal paid employment significantly enhance household food security [21]. A Canadian study also found that a one-percentage-point increase in maternal employment was associated with a 1% reduction in the odds of severe food insecurity (adjusted odds ratio 0.99, 95% CI 0.98–1.00), suggesting that higher maternal employment rates may contribute to lower levels of severe food insecurity among children and young adults [30]. In the USA, for instance, a study that used data from the National Longitudinal Study of Adolescents to Adult Health reported that adverse childhood experience has an association with food insecurity in adulthood [12]. The explanatory variables of the adverse childhood experience and food insecurity in adulthood experience association include depressive symptoms, income and drug use [12]. Other studies established similar findings by reporting that adverse childhood experiences associated with food insecurity, such as lack of access to adequate and nutritious foods in childhood and adolescence [13,31]. A recent systematic review on food insecurity and adverse childhood experiences also confirms a significant positive association between food insecurity and adverse childhood experiences [32].

The association between parental employment in childhood and food insecurity in adulthood might be explained by social capital in adulthood. Social capital theory, therefore, offers a potentially transformative lens through which to examine these relationships. Social capital refers to the benefits that individuals or communities obtained from their social network, fostering trust, cooperation and shared norms that facilitate collective actions and support both individual and community well-being [33,34]. Based on social capital theory, social capital in the form of generalised trust, social networks and cooperation can enhance food distribution during crises and further improve access to food and enable food insecure individuals and households to overcome food insecurity challenges [33,35]. Evidence from the U.S. demonstrates that households in communities with high levels of social capital were 52% less likely to experience hunger compared to those in low-social-capital areas [36,37]. Similar findings have been reported in studies from China [38], the UK [39] and Indonesia [40]. Putnam [41]'s seminal work highlighted how social networks and trust facilitate access to resources, a dynamic particularly relevant in Ghanaian communities where mutual aid societies (“susu” groups) and extended family networks are dominant. Traditionally, due to the highly connected social structures within Ghanaian societies, such as extended family living in larger households, members of the extended family and friends checked up on one another which provided an opportunity for meeting individuals' food security needs. The mutual aid societies provided avenues for members of the society to readily support one another with financial and material support, which eventually provided food security buffers [42]. Recent evidence in Ghana shows that rapid urbanisation and economic transformation may be eroding these traditional support systems, potentially altering the intergenerational transmission of food security [43–45]. Evidence from other countries also shows that high social capital increases the chances of employment, as it facilitates job opportunities for individuals, including parents [46]. A similar association was noticed among college graduates [47]

and persons living with disabilities [48]. The above social capital – food insecurity and parental employment associations suggest a possible mediating role of social capital in the association between childhood parental employment and food insecurity in adulthood. The role of social capital mediating the effect of parental employment on food insecurity is also based on the ideal that parental employment supports formation of strong social, professional ties and cooperation as individuals become bonded with their local community [49]. Surprisingly, no studies have systematically examined whether and how social capital mediates the relationship between childhood parental employment and food insecurity in adulthood, despite theoretical reasons to expect such connections.

Therefore, this study aims to address these gaps by examining whether parental employment during childhood affects food insecurity in adulthood and whether social capital mediates this relationship. Using longitudinal data from the Study on global AGEing and adult health (SAGE) in Ghana, we examine the long-term effects of maternal and paternal employment on food insecurity, as measured by hunger and food insufficiency. We further explore whether access to general trust – key components of social capital – helps explain this relationship. Additionally, we assess potential variations across rural and urban settings, given the differing labour market structures and social support systems in these areas, as well as between young adults (18–59 y) and older adults (60 y and above). The findings have important policy implications, particularly in the context of Ghana's efforts to achieve Sustainable Development Goal 2 (Zero Hunger). If parental employment is found to have a lasting positive effect on food insecurity, policies that enhance job security and labour market access for parents – especially women, who often face greater employment precarity – could be prioritised. Conversely, if social capital emerges as a significant mediator, interventions that strengthen community-based support systems may be equally critical in ensuring long-term food security.

Methods and data

Participants

Participants were selected from the three waves of the World Health Organisation Study on global AGEing and adult health (WHO-SAGE) conducted in Ghana between 2007 and 2019. WHO SAGE is a longitudinal study conducted in Ghana, with the first, second, and third waves completed in 2010, 2015 and 2019, respectively [50]. SAGE is a nationally representative study that sampled participants from all regions and ethnicities present in the specific country [50,51]. Kowal, Chatterji [51] and Biritwum, Mensah [52] provided a thorough description of the sampling strategy employed by WHO SAGE in the six countries, including Ghana. Participants, aged 18 y and over, responded to individual and household questions on socio-demographic characteristics, health state, chronic conditions, healthcare utilisation, subjective well-being, quality of life and caregiving-related questions, as well as housing and household family support networks [50]. The total number of participants included in the current study was 14,273, including 5565 (wave 1; 2007/2010), 4735 (wave 2; 2014/2015) and 3973 (wave 3; 2018/2019). Participants were selected from all regions and ethnic groups of Ghana, making it a wide and representative study.

Procedure

The Study on global AGEing and adult health is a longitudinal study that used multistage cluster sampling techniques to explore

health and social care information of older adults (50+ y) and compared with a few samples of 18 to 49 y across Ghana [51]. The Department of Community Health at the University of Ghana provided ethics approval and supported WHO in the implementation of all Waves (1–3) in Ghana.

Variables and measures

Food insecurity: We used two separate items – hunger and food insufficiency – to measure the experience of food insecurity among participants aged 18 y and above. Unlike studies that reported food insecurity as a single measure [53–55], and like Awuviry-Newton, Amoah [18] study, measuring with two separate measures allow for an understanding of a unique contribution of the parental employment on the two distinct measures of food insecurity.

Hunger – a measure of food insecurity – was measured by WHO SAGE using a single self-reported question: “In the last 12 mo, were you ever hungry, but didn't eat because you couldn't afford enough food?”. This question was initially categorised into five responses, which were “every month” = 1; “almost every month” = 2; “some months, but not every month” = 3; “only in 1 or 2 months” = 4; and “never” = 5. We followed the previous publication by Awuviry-Newton, Amoah [18] to dichotomise these responses into food insecure (1–4) and ‘food secure’, when participants reported ‘never’ to the question.

Food insufficiency – a measure of food insecurity – was measured by a single item “In the last 12 mo, how often did you ever eat less than you felt you should because there wasn't enough food?”, with a five response categories including “every month” = 1; “almost every month” = 2; “some months, but not every month” = 3; “only in 1 or 2 months” = 4; and “never” = 5. Again, we followed a similar practice to [18] in categorising the five responses into two separate categories: food insecure (1–4) and food secure (5).

Parental employment – Mother and Father's employment: Parental employment – the independent variable – was measured based on the employment status of both parents during the participants' childhood. All three waves of the WHO SAGE study asked participants to recall and provide information related to their parents' employment during childhood. Specifically, participants were asked to respond to the question “was your mother ever employed when you were about 10 y old?”, with the response categories “1 = yes” and “2 = no”. Also, participants were asked to either respond “yes = 1” or “no = 2” to the “was your father ever employed when you were about 10 y old?”

Social capital: The general trust level was used as a proxy to measure the social capital available to participants. The question, “Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? With response categories “1, can be trusted” and “2, can't be too careful”. Social capital was considered to mediate the association between parental employment status and food insecurity based on previous evidence [36,56].

Confounding/Control variables: We selected confounding variables based on previous studies that explored the associations between parental employment, adverse childhood experiences and food insecurity [12,57–59]. Socio-demographic variables included are age (continuous and categorical), sex (male = 1; female = 2), marital status (never married = 1; married/cohabiting = 2; separated/cohabiting = 3; widowed = 4), ever attended school (yes = 1; no = 2) and location of residence (urban = 1; rural = 2) and region of residence (Ashanti = 1; Brong Ahafo = 2;

Central = 3; Eastern = 4; Greater Accra= 5; Northern= 6; Upper East = 7; Upper West = 8; Volta= 9 and Western = 10), and wave year (Wave 1 = 1; wave 2 = 2 and Wave 3 = 3).

Empirical model and estimation approach

We estimated the effect of exposure to parental employment during childhood on food insecurity in adulthood using Equation (1).

$$FI_{it} = \alpha_0 + \beta_1 EPE_{it} + \sum_n \beta_j X_{it} + \rho_i + \epsilon_t + \varepsilon_{it} \quad (1)$$

where FI_{it} is the food insecurity indicator (hunger and food insufficiency). EPE_{it} represents exposure to parental employment. Vector X represents a set of control covariates, which include individual participants' characteristics in adulthood, such as marital status, education, age and sex. ρ_i represents regional fixed effects. ϵ_t denotes time (wave) fixed effect. α_0 is a constant parameter. β_1 represents the exposure to parental employment parameter to be estimated and β_j is the control covariates parameter.

We employed a two-stage approach, a method consistently used in the literature on mediation analysis [49], to investigate whether social capital mediates the relationship between parental employment during childhood and food insecurity in adulthood. In the first stage, as specified in Equation (2), there should be a significant correlation between parental employment and social capital before proceeding to the second stage. After fulfilling the first-stage condition, we proceed to the second stage, as specified in Equation (3), by including social capital, a potential mediator, as an additional variable in the regression model that links parental employment during childhood to food insecurity in adulthood. To conclude that social capital is a mediator, the coefficients of parental employment should become statistically insignificant, or the coefficients of parental employment should be reduced in size ($\delta_1 < \beta_1$) after controlling for the effect of social capital in Equation (3).

$$SC_{it} = \alpha_0 + \theta_1 EPE_{it} + \sum_n \beta_j X_{it} + \rho_i + \epsilon_t + \varepsilon_{it} \quad (2)$$

$$FI_{it} = \alpha_0 + \gamma_1 EPE_{it} + \delta_1 SC_{it} + \sum_n \beta_j X_{it} + \rho_i + \epsilon_t + \varepsilon_{it} \quad (3)$$

From Equations (2) and (3), SC_{it} is a social capital indicator, θ_1 is the coefficient of EPE_{it} on social capital. γ_1 of the coefficient of EPE_{it} on food insecurity after controlling for the effect of social capital and δ_1 is the social capital parameter. The definition for other notations is the same as that defined under Equation (1).

For the estimation strategy, we begin our analysis by estimating an Ordinary Least Squares (OLS) regression with robust standard errors, pooling all observations for the study period, which spans the three waves. Additionally, since the dependent variable (food insecurity) is a binary indicator, we employ the logistic model as an alternative estimation approach. Equations (4)–(6) provide the specification for the logistic model.

$$P(Y = 1|X_1, X_2, \dots, X_k) = F(\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k)}} \dots \dots \dots \quad (4)$$

$$\ln \left[\frac{P(Y = 1|X)}{1 - P(Y = 1|X)} \right] = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k \dots \dots \dots \quad (5)$$

$$\text{Logit}(P) = \ln \left[\frac{P}{1 - P} \right] = \alpha + \sum \beta_j X_j + \varepsilon \dots \dots \dots \quad (6)$$

Empirical results

Table 1 presents the characteristics of participants included in this study across the three waves. The mean age of the participants was 60 (Wave 1), 58 (Wave 2) and 59 (Wave 3). The majority of participants were females across all waves, except for Wave 1. For marital status, more than half of the participants were either married or cohabiting across all three waves. Most participants had never attended school across waves 2 and 3, except for wave 1. Across all three waves, most participants resided in rural areas of Ghana. Most participants were sampled from the Ashanti region of Ghana across the three waves. A consensus was observed in terms of social capital across the waves, with most participants responding affirmatively to general trust in people and their neighbours. Most participants reported that mothers and fathers were employed during their childhood across the three waves. The experience of hunger and food insufficiency among participants was significantly higher across the three waves.

Table 1
Descriptive statistics of participants (18 y+), by study wave

	Wave 1	Wave 2	Wave 3
	(N = 5565)	(N = 4 735)	(N = 3973)
Age Mean (SD)	60 (14.1)	57.6 (16.8)	58.9 (16.3)
Age group			
18–59 y	2722 (48.9)	2455 (51.9)	1898 (47.8)
60+ y	2841 (51.1)	2280 (48.2)	2074 (52.2)
Sex			
Male	2816 (50.6)	1948 (41.1)	1487 (37.4)
Female	2749 (49.4)	2787 (58.9)	2486 (62.6)
Marital status			
Never married	160 (2.89)	437 (9.23)	252 (6.35)
Married/cohabiting	3373 (61.0)	2693 (56.9)	2268 (57.1)
Separated/divorced	688 (12.4)	532 (11.2)	469 (11.8)
Widowed	1309 (23.7)	1073 (22.7)	982 (24.7)
Ever attended School			
Yes	2520 (49.5)	2739 (57.9)	2590 (65.2)
No	2576 (50.6)	1996 (42.2)	1380 (34.8)
Locality of residence			
Urban	2281 (40.9)	2449 (42.3)	2804 (47.7)
Rural	3290 (59.1)	3346 (57.7)	3081 (52.4)
Region			
Ashanti	847 (15.2)	1033 (17.8)	1096 (18.70)
Brong Ahafo	528 (9.48)	623 (10.8)	685 (11.7)
Central	566 (10.2)	665 (11.5)	726 (12.4)
Eastern	693 (12.4)	444 (7.66)	583 (9.95)
Greater Accra	636 (11.4)	666 (11.5)	917 (15.6)
Northern	497 (8.92)	542 (9.35)	560 (9.55)
Upper East	402 (7.22)	393 (6.78)	380 (6.48)
Upper West	197 (3.54)	290 (5.00)	270 (4.61)
Volta	561 (10.1)	449 (7.75)	60 (1.02)
Western	644 (11.6)	690 (11.9)	585 (9.98)
Social Capital – general trust			
Yes	3122 (61.7)	2355 (50.6)	2263 (57.1)
No	1937 (38.3)	2297 (49.4)	1700 (42.9)
Mother employment			
Yes	874 (95.5)	2581 (90.0)	1986 (50.6)
No	230 (4.51)	287 (10.0)	1940 (49.4)
Father employment			
Yes	4952 (97.2)	2640 (92.1)	2153 (55.2)
No	145 (2.84)	226 (7.89)	1751 (44.9)
Food insecurity - Hunger			
Yes	1534 (30.3)	853 (18.3)	1373 (34.7)
No	3528 (69.7)	3817 (81.7)	2590 (65.4)
Food insecurity - Insufficient food			
Yes	2196 (43.4)	1111 (23.8)	1560 (39.4)
No	2863 (56.6)	3560 (76.2)	2403 (60.6)

Baseline results

Table 2 reports the baseline association between exposure to parental employment and the experience of hunger and food insufficiency in adulthood, accounting for individual-level control variables as well as ethnic, regional and survey wave fixed effects. In Columns 1 to 3, we use hunger as the dependent variable, while in Columns 4 to 5, we use food insufficiency as the dependent variable. The results presented in Table 2 are consistent with theoretical expectations. In Columns 1 to 3, exposure to the mother's and father's employment is negatively related to the experience of hunger and is statistically significant at a 1% level. The results presented in Column 1 show that exposure to a mother's employment is associated with a 14.7 percentage point lower likelihood of experiencing hunger in adulthood. Additionally, Column 2 suggests that exposure to a father's employment is associated with a 16.4 percentage point lower likelihood of experiencing hunger in adulthood. When both the mother's and father's employment variables are included in the same model [see Column 4], exposure to the mother's and father's employment is associated with a 6.7 percentage point and a 10.9 percentage point lower likelihood of experiencing hunger in adulthood, respectively.

Additionally, the results in Columns 4 to 6 show that exposure to the mother's and father's employment is negatively related to the experience of food insufficiency and is statistically significant at the 1% level. Based on the estimates, Column 4 shows that exposure to a mother's employment is associated with a 16.2 percentage point lower likelihood of experiencing food insufficiency in adulthood. Additionally, Column 5 indicates that exposure to a father's employment is associated with a 17.6 percentage point lower likelihood of experiencing food insufficiency in adulthood. Additionally, in Column 6, when both the mother's and father's employment variables are included in the same model, exposure to the mother's and father's employment is associated with an 8.4 and 10.7 percentage point lower likelihood of experiencing food insufficiency in adulthood, respectively. These results demonstrate

that exposure to mothers' and fathers' employment during childhood significantly associate with a reduction in hunger and food insufficiency in adulthood.

Results based on logistic regression

We re-estimated our empirical models using the logit regression approach. Table 3 shows the logit regression results. As presented in Table 3, the logit regression results are consistent and qualitatively similar to the baseline results presented in Table 2. For instance, from Table 3, Column 1, the coefficient for exposure to the mother's employment is negative and statistically significant at the 1% level, suggesting that exposure to the mother's employment during childhood is associated with a lower likelihood of experiencing hunger in adulthood. Additionally, in Column 2, the coefficient for exposure to the father's employment is negative and statistically significant at the 1% level, indicating that exposure to the father's employment during childhood is associated with a lower likelihood of experiencing hunger in adulthood. Consistently, the effect of the mother's and father's employment variables on hunger remains significantly negative when both are included together in the model [see Column 3]. Also, from Table 3, Column 4, the coefficient for exposure to the mother's employment is negative and statistically significant at the 1% level, suggesting that exposure to the mother's employment during childhood is associated with a lower likelihood of experiencing food insufficiency in adulthood. Additionally, in Column 5, the coefficient for exposure to the father's employment is negative and statistically significant at the 1% level, suggesting that exposure to the father's employment during childhood is associated with a lower likelihood of experiencing food insufficiency in adulthood. Consistently, the effect of the mother's and father's employment variables on food insufficiency is negative and statistically significant at a 1% level when both are included together in the model [see Column 6]. Generally, these results provide support for the baseline results.

Table 2
Impact of parental employment on food insecurity

	(1)	(2)	(3)	(4)	(5)	(6)
	Hunger			Food insufficiency		
Mother employed	−0.147*** (0.012)		−0.067*** (0.020)	−0.162*** (0.013)		−0.084*** (0.021)
Father employed		−0.164*** (0.013)	−0.109*** (0.021)		−0.176*** (0.014)	−0.107*** (0.022)
Married/Co-habiting	−0.041* (0.021)	−0.039* (0.021)	−0.040* (0.021)	−0.025 (0.022)	−0.022 (0.022)	−0.024 (0.022)
Divorced/Separated	−0.004 (0.024)	−0.002 (0.024)	−0.003 (0.024)	0.003 (0.025)	0.006 (0.025)	0.005 (0.025)
Windowed	−0.012 (0.024)	−0.011 (0.024)	−0.012 (0.024)	0.005 (0.025)	0.006 (0.025)	0.006 (0.025)
Female	−0.013 (0.010)	−0.013 (0.010)	−0.013 (0.010)	−0.008 (0.011)	−0.008 (0.011)	−0.008 (0.011)
Age	0.000 (0.002)	0.000 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Age sq.	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
Educated	−0.039*** (0.010)	−0.037*** (0.010)	−0.038*** (0.010)	−0.028** (0.011)	−0.026** (0.011)	−0.027** (0.011)
Constant	0.555*** (0.051)	0.583*** (0.051)	0.590*** (0.051)	0.730*** (0.053)	0.756*** (0.054)	0.765*** (0.054)
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	10893	10893	10893	10891	10891	10891
R2	0.073	0.074	0.075	0.082	0.083	0.084

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3
Impact of parental employment on food insecurity

	(1)	(2)	(3)	(4)	(5)	(6)
Mother employed	Hunger −0.734*** (0.060)		−0.358*** (0.099)	Food insufficiency −0.744*** (0.059)		−0.397*** (0.095)
Father employed		−0.803*** (0.063)	−0.514*** (0.103)		−0.799*** (0.062)	−0.477*** (0.100)
Constant	0.430 (0.267)	0.565** (0.269)	0.608** (0.270)	1.092*** (0.253)	1.209*** (0.255)	1.256*** (0.256)
Control variables	YES	YES	YES	YES	YES	YES
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	10893	10893	10893	10891	10891	10891
Pseudo R2	0.063	0.064	0.065	0.066	0.066	0.068

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Analysis extension and robustness checks

Rural-urban heterogeneity

In this section, we examine locational heterogeneity by investigating the impact of parental employment exposure on food insecurity among rural and urban respondents. The urban locational results are presented in Table 4, and the rural locational results are shown in Table 5. In Table 4, the results suggest that for urban locations, exposure to a mother's employment has a negative and statistically significant effect on hunger and food insufficiency (except in Column 6). In Table 4, the results for urban locations also suggest that exposure to father's employment has a negative and statistically significant effect on hunger and food insufficiency [see Columns 2 to 3 and 5 to 6]. In Table 5, the results suggest that for rural locations, exposure to a mother's employment has a negative and statistically significant effect on hunger and food insufficiency. Additionally, as shown in Table 5, exposure to a father's employment has a statistically significant negative effect on hunger and food insufficiency. These results generally demonstrate that, irrespective of the locations, exposure to mothers' and fathers' employment during childhood significantly associate with a decline in hunger and food insufficiency in adulthood.

heterogeneity in respondents' age

In this section, we estimate the effect of exposure to parental employment on food insecurity, taking into account age heterogeneity. The results for individuals aged 60 y and above are presented in Table 6, and those for individuals aged below 60 y are presented in Table 7. In Table 6, the results indicate that for individuals aged 60 y and above, exposure to a mother's employment has a

statistically significant negative effect on hunger and food insufficiency. Similarly, in Table 6, the results based on individuals aged 60 y and above show that exposure to a father's employment has a negative and statistically significant effect on hunger and food insufficiency. In Table 7, for individuals aged below 60 y, exposure to a mother's employment has a negative and statistically significant effect on hunger and food insufficiency, and exposure to a father's employment has a negative and statistically significant effect on hunger and food insufficiency. These results generally suggest that, irrespective of the age group, exposure to mothers' and fathers' employment during childhood significantly associate with a decline in hunger and food insufficiency in adulthood, providing support for our earlier results.

Examining the mediating role of social capital

This section examines the mediating role of social capital in the relationship between exposure to parental employment and food insecurity in adulthood. The mediating results are provided in Table 8. The first-stage test presented in Columns 1 to 2 shows the effect of exposure to the mother's and father's employment on social capital, respectively. In Columns 1 to 2, we confirm that exposure to the mother's and father's employment has a positive and statistically significant effect on social capital at a 1% level. In the Second-stage test, social capital has a negative and statistically significant effect on hunger and food insecurity, demonstrating that social capital is important for reducing food insecurity. However, the inclusion of social capital in Columns 3 to 6 reduces the coefficients on exposure to mother and father employment in both the hunger and food insufficiency models. The mediation analysis

Table 4
Impact of parental employment on food insecurity in urban households.

	(1)	(2)	(3)	(4)	(5)	(6)
Mother employed	Hunger −0.775*** (0.090)		−0.261* (0.144)	Food insufficiency −0.627*** (0.086)		−0.210 (0.133)
Father employed		−0.942*** (0.095)	−0.734*** (0.150)		−0.771*** (0.092)	−0.604*** (0.142)
Constant	0.509 (0.400)	0.731* (0.402)	0.772* (0.404)	1.335*** (0.375)	1.522*** (0.375)	1.555*** (0.377)
Control variables	YES	YES	YES	YES	YES	YES
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	4725	4725	4725	4723	4723	4723
Pseudo R2	0.073	0.077	0.077	0.084	0.087	0.087

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5
Impact of parental employment on food insecurity in rural households

	(1)	(2)	(3)	(4)	(5)	(6)
	Hunger			Food insufficiency		
Mother employed	−0.711*** (0.082)		−0.502*** (0.142)	−0.865*** (0.083)		−0.623*** (0.141)
Father employed		−0.688*** (0.085)	−0.273* (0.147)		−0.831*** (0.085)	−0.316** (0.145)
Constant	0.524 (0.431)	0.549 (0.436)	0.604 (0.435)	1.056** (0.416)	1.079*** (0.418)	1.146*** (0.419)
Control variables	YES	YES	YES	YES	YES	YES
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	6168	6168	6168	6168	6168	6168
Pseudo R2	0.063	0.061	0.063	0.061	0.059	0.061

Standard errors in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ **Table 6**
Impact of parental employment on food insecurity among 60+ y

	(1)	(2)	(3)	(4)	(5)	(6)
	Hunger			Food insufficiency		
Mother employed	−0.812*** (0.087)		−0.398*** (0.148)	−0.808*** (0.085)		−0.496*** (0.140)
Father employed		−0.878*** (0.091)	−0.551*** (0.153)		−0.828*** (0.089)	−0.420*** (0.145)
Constant	0.916*** (0.342)	1.057*** (0.340)	1.103*** (0.344)	1.348*** (0.338)	1.440*** (0.336)	1.495*** (0.340)
Control variables	YES	YES	YES	YES	YES	YES
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	5707	5707	5707	5706	5706	5706
Pseudo R2	0.068	0.069	0.070	0.068	0.067	0.069

Standard errors in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

results support that social capital is an important channel through which exposure to parental employment influences food insecurity.

Discussion

This study is among the earlier studies to investigate the longitudinal relationship between parental employment during childhood and food insecurity in adulthood, considering social capital as a mediating factor in Ghana. The novelty of the current study is that it adds to an established relationship of adverse childhood adversity and food insecurity associations worldwide [11–13], by revealing that a significant association exist between parental

employment in childhood and food insecurity in adulthood using representative data from a developing country – Ghana. Exposure to parental employment in childhood is significantly associated with a reduction in food insecurity in adulthood (for both the 59-y-olds and below and the 60-y-olds and above groups), and social capital is identified as an essential channel through which parental employment in childhood is associated with food insecurity in adulthood. The results demonstrate that exposure to parental employment is associated with a reduction in hunger by 14.7 to 16.4 percentage points and food insufficiency by 16.2 to 17.6 percentage points. These estimates are economically significant given that, as of 2020, 12%, representing 3.6 million of Ghanaians, were food insecure, and even 49% of the people in the Upper East were

Table 7
Impact of parental employment on food insecurity among those less than 60 y

	(1)	(2)	(3)	(4)	(5)	(6)
	Hunger			Food insufficiency		
Mother employed	−0.683*** (0.085)		−0.333** (0.136)	−0.713*** (0.083)		−0.327** (0.131)
Father employed		−0.757*** (0.089)	−0.493*** (0.142)		−0.805*** (0.088)	−0.544*** (0.139)
Constant	0.335 (0.243)	0.499** (0.251)	0.541** (0.251)	1.144*** (0.237)	1.331*** (0.245)	1.370*** (0.246)
Control variables	YES	YES	YES	YES	YES	YES
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	5186	5186	5186	5185	5185	5185
Pseudo R2	0.064	0.065	0.066	0.068	0.069	0.070

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8
The role of social capital on the association between childhood parental employment and food insecurity in adulthood

	(1)	(2)	(3)	(4)	(5)	(6)
	Social Capital		Hunger		Food insufficiency	
Social capital			−0.035*** (0.009)	−0.037*** (0.009)	−0.051*** (0.009)	−0.053*** (0.009)
Mother employed	0.083*** (0.013)		−0.144*** (0.012)		−0.157*** (0.013)	
Father employed		0.064*** (0.014)		−0.162*** (0.013)		−0.172*** (0.014)
Constant	0.348*** (0.055)	0.361*** (0.055)	0.567*** (0.051)	0.596*** (0.051)	0.748*** (0.053)	0.775*** (0.053)
Control variables	YES	YES	YES	YES	YES	YES
Ethnic group effect	YES	YES	YES	YES	YES	YES
Regional effect	YES	YES	YES	YES	YES	YES
Wave effect	YES	YES	YES	YES	YES	YES
Observations	11509	11509	10868	10868	10865	10865
R2	0.074	0.072	0.074	0.075	0.085	0.086
Panel B: Baseline coefficient for comparison						
Mother employed			−0.147*** (0.012)		−0.162*** (0.013)	
Father employed				−0.164*** (0.013)		−0.176*** (0.014)

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Note: The baseline coefficients are extracted from Table 2.

experiencing food insecurity. Our results demonstrate that addressing unemployment situations faced by parents could potentially help mitigate the rising food insecurity situation in Ghana. The findings highlight the relevance of implementing early intervention strategies to support families in acquiring and maintaining employment, thereby enabling them to meet their food-related needs.

To unpack the above findings, we noticed that it requires either parents to be employed to reduce hunger or food insufficiency in adulthood; however, when both parents are employed in childhood, hunger or food insufficiency is further reduced in adulthood. Even though no study has specifically studied the relationship between exposure to parental employment and food insecurity in adulthood, a systematic review [32] and empirical studies on adverse childhood experiences and food insecurity confirm this association [12,31]. Closely related studies from South Korea, The United States of America and Pakistan explored the effect of precarious employment [60], and the quality of parental employment [21,25,27] on food insecurity, with all suggesting that parental employment and quality of or stable employment reduce food insecurity in adulthood. The current findings also support Jackson and Vaughn [58] research, which explored the association between parental history of disruptive life events and household food insecurity. The study reported that in households where either or both parents had experienced a disruptive event, individuals had a high probability of experiencing food insecurity in adulthood [58]. The finding can be interpreted in the sense that if both or any of the parents work during childhood, they are able to amass income through savings, which will eventually increase the purchasing power of individuals during adulthood, eventually making food available in quantity and quality. Individuals who worked during their childhood will then be food secure in adulthood or during their old age. Interestingly, in Ghana, most people work in the informal sector, characterised by self-employment, with a few working in stable employment where working conditions are favourable – insurance, worker compensation, pension contributions –, and this situation cast doubt on the quality or stability of parental employment in most households. This finding reinforces the need for the state to implement policies and welfare services to increase parental employment to increase the family's savings.

The finding also highlights the need for further research to understand the effects of precarious or quality of employment in childhood on food insecurity in adulthood for African population, particularly in Ghana.

Interestingly, the current study revealed no location influence or disparity on the association between parental employment in childhood and food insecurity in adulthood. Simply put, whether mother or father worked in the rural or urban areas in Ghana, the association would be a reduction in food insecurity – hunger and food insufficiency – in adulthood. This finding can be interpreted by considering job availability and the cost of living in urban and rural areas of Ghana. Most people in the rural areas are self-employed and usually sell their produce to urban dwellers, and rural areas are characterised by low cost of living – reduced rent, prices of goods and services – and therefore individuals can accumulate income for adulthood, which will subsequently lead to food security. The urban areas in Ghana, on the other hand, secure high-paying jobs with favourable conditions such as compensation insurance, and other benefits and incentives, which increase income and eventually lead to food security in adulthood, all things being equal. This finding calls for early intervention strategies that can support families in maintaining employment irrespective of the location of residence, and reduce spending, which will eventually increase savings from incomes to support food security in adulthood, especially for older adults when they are incapable of working.

We did not find age variations in the association between parental employment in childhood and food insecurity in adulthood. For 18 to 59 y and 60+ y, the results suggested that mother or fathers' employment was associated with a reduced experience of food insecurity for both hunger and food insecurity. Irrespective of this finding, there is one conclusion, which is that parental employment will contribute to a reduction in food insecurity for all year levels in adulthood – 18 y and older. For middle-aged and older adults, this finding implies that an understanding of cumulative advantage or disadvantage theory should underpin policies or practice interventions to maximise the amount of income while growing old. Ghanaian literature has established a high prevalence of functional disability among older adults [61,62], and as their ages advance, there is a possible occurrence of chronic conditions,

multimorbidity and frailty, which will increase health and social care needs [53,63–65]. For older adults in the informal sector in Ghana, this can be a challenge as the perceived instability of employment would imply inadequate or absence of income, which will subsequently increase food hunger or insufficiency during periods of frailty, multimorbidity or ill health. Several interventions should target young families to enable women to maintain work during their reproductive years, and to target adults who are already food insecure to meet their food needs in a sustained and long-term.

According to Parcel and Menaghan [46], a high social capital – linking capital, for instance – creates job opportunities for individuals, including parents, which might increase their chances of being employed. In China, Chile, the UK and Indonesia, evidence shows that households in communities with high levels of social capital were less likely to experience food insecurity – hunger and food insufficiency [37–40,66]. Leddy, Whittle [36]’s study reported that women, for instance, often use bridging – connections between diverse groups –, bonding and linking social capital to access food or reduce food insecurity. Our current study contributes to existing evidence by establishing that social capital is an important medium through which exposure to parental employment in childhood influences food insecurity in adulthood in Ghana. In Ghana, there are high levels of social capital within communities; however, recently, rapid urbanisation and economic transformation have eroded these traditional support systems, which might alter the intergenerational transmission of food security [43]. Irrespective of the decline in traditional support systems, Ghana is a politically stable nation with a high personal and community sense of trust for others, and strong, socially cohesive neighbourhoods, which often reduce psychological distress and functional disability [62,67]. The finding from our study implies that higher levels of social capital will provide employment opportunities, which will cumulatively reduce food insecurity experience in adulthood or later life. The study draws attention to social care and public health interventions to promote and sustain personal and community trust, which can serve as resource for adults to care for their food security needs.

Conclusion and policy implications

The current study has unravelled an essential role of social capital – general trust for others – in the association between parental employment in childhood and food insecurity in adulthood – hunger and food insufficiency. Parental employment was negatively associated with food insecurity, and this association was unchanged after subgroup analysis for the aged group (18–59 y and 60–115 y), and location of residence (rural/urban). The findings draw attention to the need for Ghana to adopt and implement a life course preventative measure to support young couples to maintain employment, enabling them to save for future needs for food security. Middle-aged and older adults need to be supported with social, material and financial support to address any experience of hunger or food insufficiency. The significant role of social capital draws attention to the country to preserve personal and community trust as well as social connections, as these could serve as a protective factor against food insecurity among middle-aged and older adults. Policy and practice should be underpinned by the theory of cumulative advantage or disadvantage and devoted to adopting a preventative measure to provide food security in adulthood.

Given that parental employment has a long-term impact on reducing food insecurity that their children face in their adulthood, it demonstrates the need for policymakers to prioritise investment

in job-related skills training that would support employment growth, especially for low-income families. Unemployment is a significant economic problem in Ghana. This is driven by the fact that most of the working-age population sees the government as the leading provider of employment and always looks up to the government for job placement. However, budget constraints that Ghana’s government faced make it challenging to employ most of the working-age population, even fresh University graduates. Therefore, policy measures that support skills development and entrepreneurship would contribute to reducing the unemployment rate and further contribute to addressing the long-term adverse socio-economic implications that children might face in their adulthood when they are exposed to unemployed parents.

In addition, given that children with unemployed parents face a lot of challenges, such as school dropout, poor health, poor social connections and engagement in social vices, policymakers need to design and implement early welfare development interventions, such as integrated service models, provision of scholarships to those in need, etc., that could improve the well-being as well as human capital development of these children. Such intervention could work to mitigate the adversity that these children face in their adulthood. Also, designing and implementing job guarantees and public works relating to farming and agribusiness, and seasonal employment support would ensure households’ income stability and enhance access to food resources. Also, building and formalising community institutions through farmers’ cooperatives would improve farmers’ access to critical agricultural and financial resources to improve resilience in food production and supply. From a social capital perspective, strengthening local leadership, community networks and the use of community-based targeting to identify vulnerable households would enable social safety-net interventions targeting food insecurity to reach the needed and targeted households and individuals.

The current study has some strengths and limitations. The strength of the study lies in the longitudinal design to understand the role of social capital in the association between parental employment in childhood and food insecurity in adulthood, using data from a developing country like Ghana. The limitation of the study is that not all participants could be followed up with, and at waves 2 and 3, replacement participants were recruited. Since social capital is broad in its conceptualisation – bonding, linking and bridging – our current study only explored the role of trust and therefore is limited in examining the diversity in social capital and their roles in the association between parental employment in childhood and food insecurity in adulthood.

Also, our results should be interpreted with caution since the dataset used in this study might not be free from recall bias, a topical issue in survey data. Also, our measure of trust focused on a single trust item, which is a generalised trust item that focuses on whether people trust other people, and does not consider the extent of trust in governments and public institutions. Also, given that our findings are based on a dataset from Ghana with distinct structural and cultural characteristics, our findings and conclusions might not apply in every country; hence, future studies could replicate this study focusing on countries that are structurally and culturally different from Ghana. Our study relies on panel data approach. However, the number of survey participants/ respondents has not been consistent across different waves used in this study, reflecting the attrition problem. Attrition is a genuine issue in longitudinal survey data collection since some of the survey participants may lose interest over time and drop out, or enumerators may find it challenging to track previous respondents due to migration or a change in the survey respondent’s contact details. The findings further draw attention to the need for more research

to understand the effects of parental employment quality on food insecurity experience, since the majority of the Ghanaian population is self-employed, characterised by precarities.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Kofi Awuviry-Newton: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Alex O. Acheampong:** Writing – review & editing, Methodology, Formal analysis, Conceptualization. **Samuel Ampadu Oteng:** Writing – review & editing, Writing – original draft.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.nut.2026.113272.

References

- [1] FAO. The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms. Food and Agriculture Organisation, Rome; 2024. Available at: <https://doi.org/10.4060/cd1254en>
- [2] Baptista DMS, Farid M, Fayad D, Kemoe L, Lanci L, Mitra P, et al. Climate change and chronic food insecurity in sub-Saharan Africa. International Monetary Fund, Switzerland; 2022. Available at: <https://file:///C:/Users/e9401546/Downloads/087-article-A000-en.pdf>
- [3] Wudil AH, Usman M, Rosak-Szyrocka J, Pilar L, Boye, M. Reversing years for global food security: A review of the food security situation in Sub-Saharan Africa (SSA). *Int J Environment Res Pub Health* 2022;19(22):14836.
- [4] Peprah PT. Food Insecurity is Concentrated in the Five Regions in the Northern part of Ghana. 2022 [Accessed August 26, 2025]; Available at: <https://stats-ghana.gov.gh/infobankdetails.php?infobank=MTg3Mzc5MDg0Ni43MzE1/info-desk/20q928qr2p>.
- [5] Dinko DH. Climate change and changing food security risk in Ghana. *African J Agricult Food Security* 2017;5(3):186–92.
- [6] Wossen T, Berger T. Climate variability, food security and poverty: Agent-based assessment of policy options for farm households in Northern Ghana. *Environment Sci Policy* 2015;47:95–107.
- [7] Hsin A, Felfe C. When does time matter? Maternal employment, children's time with parents, and child development. *Demography* 2014;51(5):1867–94.
- [8] Bliznashka L, Jeong J, Jaacks LM. Maternal and paternal employment in agriculture and early childhood development: a cross-sectional analysis of Demographic and Health Survey data. *PLOS Glob Pub Health* 2023;3(1):e0001116.
- [9] Judd N, Hughes K, Bellies MA, Hardcastle K, Amos R. Is parental unemployment associated with increased risk of adverse childhood experiences? A systematic review and meta-analysis. *J Pub Health* 2023;45(4):829–39.
- [10] Awuviry-Newton K, Saunders B, Asiamah N, Abekah-Carter K, Doh D. Adverse childhood experiences and elder abuse victimization nexus: a systematic review and meta-analysis. *PloS One* 2025;20(2):e0316902.
- [11] Larson N, Mason SM, Bruening M, Laska MN, Neumark-Sztainer D. Adverse childhood experiences and food insecurity in emerging adulthood: findings from the EAT 2010–2018 study. *Pub Health Nutr* 2023;26(11):2343–54.
- [12] Testa A, Jackson DB. Adverse childhood experiences and food insecurity in adulthood: evidence from the national longitudinal study of adolescent to adult health. *J Adolescent Health* 2020;67(2):218–24.
- [13] Jackson DB, Chilton M, Johnson KR, Vaughn MG. Adverse childhood experiences and household food insecurity: findings from the 2016 National Survey of Children's Health. *Am J Prevent Med* 2019;57(5):667–74.
- [14] Joy Business. Informal sector makes up 80% of Ghana's workforce; its contribution to GDP only 27.4%. 2025 [Accessed September 20, 2025]; Available at: <https://www.myjoyonline.com/informal-sector-makes-up-80-of-ghanas-workforce-its-contribution-to-gdp-only-27-4/>.
- [15] International Labour Organisation. World employment and social outlook: trends 2015. International Labour Organization, Geneva; 2015. Available at: https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40dgreports/%40dcomm/%40publ/documents/publication/wcms_337069.pdf
- [16] ILO Monitor. COVID-19 and the world of work. Third edition, updated estimates and analysis. International Labour Organisation, Switzerland; 2020. Available at: <https://www.assiv.it/wp-content/uploads/2020/04/ILO.pdf>
- [17] Oteng SA, Manful E, Nkansah JO. Digital literacy in the informal economy of Ghana: life-long learning and extending working lives of older persons in post-COVID-19 era. *J Cross-Cultural Gerontol* 2024;39(4):375–95.
- [18] Awuviry-Newton K, Amoah D, Tevener M, Afram AA, Dintrans PV, Byles J, et al. Food insecurity and functional disability among older adults in Ghana: the role of sex and physical activity. *J Am Med Directors Association* 2022;23(8):1432.e1–7.
- [19] Oteng SA. Deconstructing ageism and quality of life among older informal workers: a mixed-methods study in Ghana. Lingnan University, Hong Kong; 2024. Available at: <https://commons.ln.edu.hk/otd/219/>
- [20] Oteng SA, Manful E, Akuoko KO. Retiring in the informal economy: implications for social policy intervention for ageing workers in Ghana. *Ageing Int* 2022;47(3):415–32.
- [21] Akbar M, Amjad M, Iqbal Z. Impact of parental education and employment on households' food security in Pakistan: application of Bayesian logistic framework. 2020.
- [22] Liu J, Zhang X, Mao X. How mothers' work affects children's nutritional intake and health outcomes? *Appl Econom* 2025;57(8):868–81.
- [23] Rashad AS, Sharaf MF. Does maternal employment affect child nutrition status? New evidence from Egypt. *Oxford Develop Stud* 2019;47(1):48–62.
- [24] Leung CW, Wolfson JA. Food insecurity among older adults: 10-year national trends and associations with diet quality. *J Am Geriatr Soc* 2021;69(4):964–71.
- [25] Uppal S. Food insecurity among Canadian families. Statistics Canada = Statistique Canada 2023.
- [26] Berning J, Cleary R, Bonanno A. Food insecurity and time use in elderly vs. non-elderly: an exploratory analysis. *Appl Econom Perspect Policy* 2023;45(1):280–99.
- [27] Sheely A. More than money? Job quality and food insecurity among employed lone mother households in the United States. *Social Policy and Society* 2024;23(1):35–52.
- [28] Bhawra J, Kirkpatrick SI, Hammond D. Food insecurity among Canadian youth and young adults: insights from the Canada Food Study. *Canadian J Pub Health* 2021;112(4):663–75.
- [29] Jessee VF. Fatherhood and food: food insecurity and paternal role associations with father and child diet quality. University of Connecticut, Storrs; 2015 https://digitalcommons.lib.uconn.edu/cgi/viewcontent.cgi?article=1851&context=gs_theses.
- [30] Men F, Elgar FJ, Tarasuk V. Food insecurity is associated with mental health problems among Canadian youth. *J Epidemiol Community Health* 2021;75(8):741–8.
- [31] Chilton MM, Rabinowich JR, Woolf NH. Very low food security in the USA is linked with exposure to violence. *Pub Health Nutr* 2014;17(1):73–82.
- [32] Royer MF, Ojinnaka CO, Zhang X, Thornton AG, Blackhorse K, Bruening M. Food insecurity and adverse childhood experiences: a systematic review. *Nutr Rev* 2022;80(10):2089–99.
- [33] Monteza-Quiroz D, Silva A, Sactic MI. The effect of social capital on food insecurity: Insights from a household survey. *Glob Food Security* 2025;46:100882.
- [34] Grootaert C, Van Bastelaer T. Understanding and measuring social capital: A multidisciplinary tool for practitioners, 1. World Bank Publications, Washington; 2002.
- [35] Silva A, Sactic MI, Monteza-Quiroz D, Rivera XS. Social ties and food insecurity in woman-headed households. *Sustainable Development* 2025;33(1):836–46.
- [36] Leddy AM, Whittle HJ, Shieh J, Ramirez C, Ofotokun I, Weiser. S.D. Exploring the role of social capital in managing food insecurity among older women in the United States. *Social Sci Med* 2020;265:113492.
- [37] Lee H-Y, Song IH, Kawachi I. Maternal and child social support and food availability in relation to child growth in four low-and middle-income countries. *Scientific Rep* 2022;12(1):5910.
- [38] Han G, Zhai Y. The association between food insecurity and social capital under the lockdowns in COVID-hit Shanghai. *Urban Studies* 2024;61(1):130–47.
- [39] Wills W, Dickinson A. Vulnerability to food insecurity among older people: the role of social capital. *Sociolog Res Online* 2023;28(4):946–63.
- [40] Nugroho TW, Hanani N, Toiba H, Sujarwo S, et al. Does social capital improve food security? Evidence from the Indonesian family life survey. *Asian J Agricult Rural Develop* 2022;12(2):138–47.
- [41] Putnam RD. Bowling alone: the collapse and revival of American community. Simon and schuster, New York; 2000.
- [42] Amanor KS. Family values, land sales and agricultural commodification in South-Eastern Ghana. *Africa* 2010;80(1):104–25.
- [43] Bawakyillenuo S, Yaro JA, Teye J. Exploring the autonomous adaptation strategies to climate change and climate variability in selected villages in the rural northern savannah zone of Ghana. *Local Environment* 2016;21(3):361–82.
- [44] Amos PM, Antwi T, Darko R, Linda G, Aquaye NA, Apambilla PA, et al. Challenges and strengths of Ghanaian families in contemporary society: a counselling perspective. *Family J* 2025. <https://doi.org/10.1177/10664807251348213>.
- [45] Ofori-Dua K. Extended family support and elderly care in Bamang, Ashanti region of Ghana. University of Ghana, Accra; 2014 <http://197.255.68.203/handle/123456789/7320>.

- [46] Parcel TL, Menaghan EG. Early parental work, family social capital, and early childhood outcomes. *Am J Sociol* 1994;99(4):972–1009.
- [47] Fengqiao Y, Dan M. The impact of social capital on the employment of college graduates. *Chin Educat Soc* 2015;48(1):59–75.
- [48] Potts B. Disability and employment: Considering the importance of social capital. *J Rehabil* 2005;71(3):20.
- [49] Phan DH, Churchill SA, Smyth R, Trinh T. Cycles of adversity: Parental joblessness in childhood and energy poverty in adulthood. *Energy Res Social Sci* 2025;122:104011.
- [50] World Health Organisation. SAGE Waves 0, 1, 2 & 3 [Accessed August 26, 2025]; Available at: <https://www.who.int/data/data-collection-tools/study-on-global-ageing-and-adult-health/sage-waves>.
- [51] Kowal P, Chatterji S, Naidoo N, Biritwum R, Fan W, Ridaura RL, et al. Data resource profile: the World Health Organization Study on global AGEing and adult health (SAGE). *Int J Epidemiol* 2012;41(6):1639–49.
- [52] Biritwum RB, Mensah G, Minicuci N, Yawson AE, Naidoo N, Chatterji S, et al. Household characteristics for older adults and study background from SAGE Ghana Wave 1. *Glob Health Action* 2013;6(1):20096.
- [53] Awuviry-Newton K, Abekah-Carter K, Ofori-Dua K, Gyasi RM, Newton CN, Agyemang-Duah W, et al. Housing conditions and long-term care needs of older adults in Ghana: Evidence from the WHO SAGE Ghana Wave 1. *PLOS Glob Pub Health* 2022;2:e0000863.
- [54] Gyasi RM, Abass K, Frempong F, Obodai J, Asamoah E, Obeng B, et al. Food insecurity and geriatric functional limitations: Observational analysis from the AgeHeaPsyWel–HeaSeeB survey. *Experiment Gerontol* 2022;160:111707.
- [55] Gyasi RM, Asamoah E, Gyasi-Boadu N, Zomu O, Gershim A, Philips DR, et al. Food insecurity and sleep quality among older adults: Findings from a population-based study in Ghana. *Maturitas* 2022;157:27–33.
- [56] Choi S, Kiriya J, Jimba A. Mediating role of social capital in the association between socioeconomic status and childcare practices in rural Malawi: a cross-sectional study. *BMJ open* 2022;12(5):e054134.
- [57] Nguyen HT, Frongillo EA, Blake CE, Shapiro CJ, Frith AL. Earlier and concurrent food insecurity are associated with suboptimal parenting in early childhood. *J Nutr* 2020;150(6):1590–9.
- [58] Jackson DB, Vaughn MG. Parental history of disruptive life events and household food insecurity. *J Nutr Educat Behav* 2017;49(7):554–560.e1.
- [59] Omidvar N, Ghazi-Tabatabaie M, Sadeghi R, Mohammadi F, abbasi-shavazi MJ. Food insecurity and its sociodemographic correlates among Afghan immigrants in Iran. *J Health, Populat Nutr* 2013;31(3):356.
- [60] Baek S-U, Yoon J-H. Association between precarious employment and emergence of food insecurity in Korean adults: a population-based longitudinal analysis (2008–2022). *Social Sci Med* 2024;362:117448.
- [61] Awuviry-Newton K, Ofori-Dua K, Deku CS, Awortwe V, Oti GO. Prevalence and determinants of care needs among older people in Ghana. *PLoS One* 2022;17(2):e0263965.
- [62] Awuviry-Newton K, Amoah D, Doh D, Agyemang-Duah W, Ofori-Dua K, et al. Perceived neighborhood social cohesion and functional disability among older adults: the moderating roles of sex, physical activity, and multi-morbidity. *PLoS One* 2024;19(1):e0293016.
- [63] Ferrari AJ, Santomauro DF, Aali A, Abate YH, Abbafati C, Abbastabar H, et al. Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in 204 countries and territories and 811 subnational locations, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021. *The Lancet* 2024;403(10440):2133–61.
- [64] Awuviry-Newton K, Abekah-Carter K, Nkansah JO, Asamoah B, Umar AR. Exploring care experiences and satisfaction: a descriptive qualitative study of hospitalised older adults. *Int J Care Caring* 2025;9(2):283–96.
- [65] Awuviry-Newton K. Needing, providing and supporting care: a mixed methods study of older adults' functional abilities and care needs, caregivers' lived experiences, and social workers' contributions in the lives of older adults in Ghana. *Open Research Newcastle, Newcastle*; 2025. Available at: <https://hdl.handle.net/1959.13/1429188>
- [66] Monteza-Quiroz D, Silva A, Sactic MI. The effect of social capital on food insecurity: Insights from a household survey. *Glob Food Security* 2025;46:100882.
- [67] Kushitor MK, Peterson MB, Asante PY, Dodoo ND, Boatemaa S, Awuah RB, et al. Community and individual sense of trust and psychological distress among the urban poor in Accra, Ghana. *PLoS One* 2018;13(9):e0202818.