Female Labour Force Participation and Child Nutritional Outcomes in Cameroon: Evidence from the 2018 Demographic and Health Survey

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ABSTRACT

Background: Maternal employment may influence child nutrition through higher household resources, but it may also compete with time available for care. Evidence from Cameroon is mixed and sensitive to outcome definition, confounding, and instrumental-variable assumptions.

Methods: We analysed the 2018 Cameroon Demographic and Health Survey using the children's recode (KR) as the primary mother-child file, the women's recode (IR) to construct a cluster-level husband-employment instrument, and the household-member recode (PR) to validate anthropometric prevalence estimates. Standard WHO definitions were applied: height-for-age, weight-for-age, and weight-for-height z-scores below −2 SD defined stunting, underweight, and wasting. Outcome-specific analytic samples were 4,497, 4,537, and 4,477 children, respectively. Survey-weighted probit models adjusted for maternal education and age, child age and sex, residence, region, household wealth, birth order, number of young children, and distance to a health facility.

Results: Weighted prevalence was 29.1% for stunting, 11.2% for underweight, and 4.4% for wasting, closely matching independent PR-file estimates. Current maternal employment was not independently associated with stunting (adjusted marginal effect [AME] −0.01 percentage points; 95% CI −3.82 to 3.81; p = 0.998), underweight (AME −2.13 percentage points; 95% CI −4.70 to 0.44; p = 0.104), or wasting (AME 0.34 percentage points; 95% CI −1.45 to 2.13; p = 0.708). Logit models and an alternative last-12-month employment definition produced the same substantive conclusion. The proposed husband-employment instrument showed limited variation and weak first-stage strength (F approximately 1.4–1.6), so IV estimates were not used for primary causal inference. Conclusion: After applying conventional WHO thresholds and broader confounder adjustment, the data do not provide evidence that maternal labour-force participation itself is independently associated with child malnutrition in Cameroon. Employment conditions, caregiving support, and household context remain important areas for future longitudinal and policy research.

Keywords: Female Labour Force Participation; Maternal Employment; Child Nutrition; Cameroon; Demographic and Health Survey; Stunting; Underweight; Wasting

INTRODUCTION

Globally, children's health outcomes are critical indicators of a nation's development and the effectiveness of its health and economic systems. In low and middle-income countries (LMICs), particularly in sub-Saharan Africa, child malnutrition remains a significant public health challenge, with millions of children suffering from stunting, wasting, and underweight (UNICEF, 2023). In Cameroon, despite some improvements over the past two decades, child malnutrition persists at alarming levels. According to the 2018 Cameroon Demographic and Health Survey (DHS), 29% of children under five are stunted, indicating chronic malnutrition, 4% are wasted,

and 11% are underweight (INS & ICF, 2020). Moreover, under-five mortality remains high at 80 deaths per 1,000 live births, with notable disparities between urban and rural areas (INS & ICF, 2020). These poor child health outcomes have serious consequences: stunted children typically achieve lower educational attainment, have reduced productivity as adults, and face increased susceptibility to chronic diseases (UNICEF, 2024).

Women play a central role in children's health and welfare through decisions about food, healthcare, and day-to-day care (Black *et al.,* 2008; Ajayi *et al.,* 2022). At the same time, economic pressures, urbanisation, education, and changing social norms have increased women's engagement in paid and self-employed work across many low- and middle-income countries. In Cameroon, female labour-force participation is substantial, while a large share of women's employment remains informal, with implications for income security, maternity protection, and access to childcare support (Njang Che & Sundjo, 2018). These conditions make the balance between women's productive work and caregiving especially relevant to child nutrition.

From a health-economics perspective, women's participation in the labour market may influence household resource allocation, health-seeking behaviour, and investments in children's well-being (Grossman, 1972; Heckman, 2007). Becker's Household Production Theory (Becker, 1965) provides a useful framework for understanding this relationship. The income pathway suggests that maternal earnings can relax household budget constraints and improve access to food and healthcare, while the time-substitution pathway suggests that employment can reduce the time available for direct care and feeding. Empirical studies in low-resource settings show evidence consistent with both pathways, depending on the type and intensity of maternal work and the availability of alternative care (Ahmed *et al.,* 2022; Debela *et al.,* 2021; Oddo & Ickes, 2018).

The relationship between maternal employment and child growth is therefore unlikely to be uniform. Employment may improve household purchasing power and food access, yet long or inflexible working hours can coexist with reduced supervision, breastfeeding opportunities, or meal preparation time, particularly where formal childcare and maternity protection are limited (Engle *et al.,* 1999; Waghode *et al.,* 2025). These mechanisms are theoretically plausible, but they should not be assumed from employment status alone because employment sector, work intensity, household resources, and substitute caregiving arrangements may modify the relationship.

Despite a growing literature, evidence on FLFP and child growth outcomes in Cameroon remains limited and mixed. A further methodological challenge is that maternal employment may be endogenous: unobserved preferences, household economic conditions, local labour market opportunities, and other characteristics may influence both employment and child growth. Cross-sectional associations may therefore be biased if these shared determinants are not adequately addressed. An instrumental-variable strategy can reduce some forms of endogeneity, but its interpretation depends critically on instrument relevance and the exclusion restriction.

This study therefore re-examines the association between female labour force participation (FLFP) and child nutritional outcomes in Cameroon using the 2018 Cameroon DHS. The analysis applies conventional WHO anthropometric cut-offs, uses an expanded set of maternal, child, household, and geographic covariates, incorporates the complex survey design, evaluates heterogeneity, and explicitly tests the identifying strength of the proposed husband-employment instrument before drawing any causal inference.

LITERATURE REVIEW

Theoretical Framework: Household Production Theory

The Household Production Theory, first proposed by Becker (1965) and further developed in his subsequent work (Becker, 1981), remains a foundational framework in health economics for understanding the intra-household allocation of time and resources. The theory conceptualizes the household as a decision-making unit that combines time, market goods, and labour to produce commodities that maximise family utility, including health, nutrition, and education. In this framework, households are viewed as both producers and consumers, allocating resources including time and money to produce "commodities" such as child health, which contribute to family welfare (Grossman, 1972; Heckman, 2007).

In the context of FLFP, the theory highlights two competing pathways through which maternal employment may be related to children's health outcomes. First, the income pathway implies that maternal earnings can increase household resources available for nutritious food, healthcare, and other child-related goods and services (Ahmed *et al.,* 2022; Debela *et al.,* 2021). Second, the time-substitution pathway suggests that labour market participation may reduce the time available for direct childcare and home-based health practices, especially when working hours are long or substitute care is limited (Engle *et al.,* 1999; Fang *et al.,* 2023). The relative strength of these pathways is likely to depend on job quality, household resources, and the availability of childcare.

The tension between income and caregiving time is especially relevant in Cameroon, where informal and agricultural work remain important and formal childcare systems are limited (Njang Che & Sundjo, 2018). Fang *et al., (2023)* reported poorer nutritional outcomes among children of employed mothers in Cameroon, with particularly adverse associations for agricultural work. In contrast, Ndah *et al., (2023)* reported a positive association between maternal labour force participation and a multidimensional child well-being index, with differences by maternal education. Taken together, these studies suggest that participation status alone may conceal important differences in employment conditions and household context.

The Household Production Theory is useful because it provides testable expectations about how maternal employment may be associated with child health under different income and caregiving conditions. It is also adaptable to DHS-based research using employment status and anthropometric data. Its policy relevance lies in highlighting why maternity protection, childcare support, and flexible working arrangements may help reduce conflicts between paid work and caregiving, although the present DHS analysis does not directly measure time use or childcare arrangements.

Empirical Evidence: FLFP and Child Nutritional Outcomes

Empirical evidence indicates that maternal employment is not uniformly associated with child wellbeing. Reported associations vary with the nature of women's work, the time demands associated with that work, and the presence or absence of institutional support such as childcare, maternity leave, and breastfeeding protection. Employment sector and working conditions may therefore help explain why maternal employment is associated with more favourable outcomes in some settings and less favourable outcomes in others.

In the Cameroonian context, Fang *et al.,* (2023), using the 2018 Cameroon DHS and a Heckman selection model on a weighted sample of 4,497 children under five, reported poorer nutritional outcomes among children of employed mothers, with particularly adverse associations for agricultural employment. The authors interpreted these patterns as consistent with constraints on childcare and feeding time, although those mechanisms were not directly measured. Medjo Obia and Asongu (2026), applying a multivariate decomposition to the same survey, found that children of employed mothers were more likely to be underweight, with a statistically significant prevalence gap of 0.0325. In contrast, Ndah *et al.,* (2023), using an instrumental-variable approach, reported that maternal labour force participation was positively associated with a multidimensional child well-being index, with the association varying by maternal education. Ndum Okwen *et al.,* (2022), in a retrospective survival analysis in Yaoundé, found that education and marital status were more important predictors of exclusive breastfeeding duration than employment status, suggesting that employment alone does not determine breastfeeding outcomes.

Across low- and middle-income countries, evidence points to the importance of employment sector, working conditions, and institutional support rather than participation status alone. Oddo and Ickes (2018), using data from fifty Demographic and Health Surveys, found that maternal employment was associated with some improved infant and young-child feeding indicators, while also highlighting the need for breastfeeding support. Lufuke *et al.,* (2023), reviewing evidence on women's empowerment, food security, and nutrition transition in Africa, found broad links between women's empowerment and food-security and nutrition domains, while noting methodological limitations in causal inference. In Kenya, Machio (2026) reported heterogeneity in the association between maternal employment and child stunting across occupational groups. At the macro level, Yeboah *et al.,* (2025), in a systematic review of 18 studies on national economic growth and maternal and child health in sub-Saharan Africa, found context-dependent and inconsistent relationships, underscoring that economic gains do not automatically translate into improved health outcomes.

Evidence from Ethiopia is also mixed as Ketema *et al.,* (2022) reported higher levels of stunting, underweight, and wasting among children of employed mothers, while Ahmed *et al.,* (2022), comparing 330 employed and 341 unemployed mothers in the Gurage Zone, found lower stunting prevalence among children of employed mothers (21.2%) than among those of unemployed mothers (28.8%). Melaku *et al.,* (2024) reported lower height-for-age and weight-for-age z-scores among children of women employed in the cut-flower industry and discussed reduced childcare time and lower consumption of animal-sourced foods as potential pathways. The importance of institutional support has also been tested experimentally: in Burkina Faso, Ajayi *et al.,* (2022) found that access to community-based childcare increased women's employment and financial outcomes and improved child development scores.

Comparable evidence from other low- and middle-income settings also points to heterogeneity. In Egypt, Rashad and Sharaf (2019), using a nationally representative sample of 12,888 children and comparing propensity-score matching, OLS, and instrumental-variable estimates, found that the IV estimates suggested a stronger association between maternal employment and poor child nutritional status than the non-IV models. In Tanzania, Debela *et al.,* (2021) developed a theoretical framework linking maternal employment to child nutrition through income, intrahousehold bargaining power, and time allocation and found a non-linear association between off-farm employment and child height-for-age. Waghode *et al.,* (2025), reviewing South Asian evidence, concluded that the relationship depends substantially on job security, remuneration, and compatibility with caregiving.

In Bangladesh, Jakaria *et al.,* (2022), instrumenting maternal employment with mothers' premarital labour-force participation, found that instrumental-variable estimates indicated lower child height-for-age associated with maternal employment, with larger adverse associations among some subgroups. In contrast, Ehsan and Biswas (2024) reported a positive association between maternal employment and children's nutritional diversity using causal-forest methods. Mim *et al.,* (2025) found that longer maternal working hours were associated with poorer nutritional outcomes, while grandparental care during working hours was protective. Across 26 developing countries, Amir-ud-Din *et al.,* (2022) found higher under-five mortality associated with maternal agricultural and blue-collar occupations. Xu & Xu (2024) reported that maternal work stress was related to children's health through several maternal and household pathways, while Andrade & Gil (2023) found an association between maternal employment and stunting in Ecuador but no significant association with wasting or underweight.

The empirical literature reviewed above reveals several broad patterns. Maternal employment does not have a single uniform relationship with child health; associations vary with the quality, type, and intensity of work. Adverse outcomes are more often reported in time-intensive, insecure, or physically demanding employment, while more favourable outcomes are more plausible where work is remunerative and compatible with caregiving. Cameroon-specific evidence remains limited and contradictory: Fang *et al.,* (2023) report adverse nutritional associations, whereas Ndah *et al.,* (2023) report positive aggregate associations with child well-being.

Data and Methods

Data Sources and Analytic Sample

The study used the 2018 Cameroon Demographic and Health Survey (CDHS), a nationally representative cross-sectional survey implemented by the National Institute of Statistics with technical assistance from ICF (INS & ICF, 2020). The survey used a two-stage stratified cluster design. Enumeration areas were selected within sampling strata and households were then sampled systematically. The present analysis used the DHS sampling weight (V005), primary sampling unit (V021), and sampling strata (V022).

The children's recode file (CMKR71FL) was the primary analytic file because it links births in the five years preceding the survey to maternal characteristics, employment variables, and child anthropometry. The KR file contains 9,733 child records. Valid new-WHO anthropometric measures were available for 4,497 children for height-for-age, 4,537 for weight-for-age, and 4,477 for weight-for-height after excluding DHS special codes for flagged, implausible, or missing measurements. A common complete anthropometric sample contained 4,445 children, but outcome-specific samples were retained to avoid unnecessary loss of information.

The women's individual recode file (CMIR71FL) was used only to construct the proposed cluster-level husband-employment instrument. It contains 14,677 interviewed women across 429 clusters, including 8,030 women with valid husband/partner occupation information. For a separate data-quality check, the household-member recode file (CMPR71FL) was used to independently reproduce standard under-five anthropometric prevalence estimates. The birth, couple, fieldworker, and men's recode files were not required for the primary mother-child models because the necessary exposure, outcome, and covariate information was already available in the KR file.

Measures

Child nutritional outcomes were defined using the WHO Child Growth Standards. Height-for-age (HAZ), weight-for-age (WAZ), and weight-for-height (WHZ) z-scores were taken from DHS variables HW70, HW71, and HW72 and divided by 100. DHS special values at or above 9000 were treated as missing. Stunting was defined as HAZ < −2 SD, underweight as WAZ < −2 SD, and wasting as WHZ < −2 SD (WHO, 2006; WHO & UNICEF, 2019). These thresholds permit direct comparison with the published Cameroon DHS prevalence estimates.

The primary exposure was current maternal labour force participation, defined as V714=1 (respondent currently working). This definition aligns the exposure most closely with anthropometry measured at the survey. As a robustness check, a broader employment measure was created from V731 and coded 1 when the respondent had worked during the preceding 12 months, was currently working, or had a job but was temporarily on leave. Employment sector was derived from V717 and grouped into not working, agriculture, and non-agriculture for subgroup analysis.

The adjusted models included covariates identified a priori from the literature: maternal education (V106), maternal age (V012, with a quadratic term), child age in months (B19, with a quadratic term), child sex (B4), urban-rural residence (V025), region (V024), household wealth quintile (V190), birth order (BORD), number of children aged five or younger in the household (V137), and whether distance to a health facility was reported as a major problem (V467D). These variables capture maternal human capital, child demographic risk, household resources, geographic context, fertility structure, caregiving demands, and healthcare access.

Statistical Analysis

Descriptive prevalence estimates were weighted using V005/1,000,000. Primary associations were estimated with survey-weighted probit regression. Variance estimation used a Taylor-style sandwich estimator formed from weighted score contributions aggregated at the PSU level and centred within the DHS sampling strata. This approach incorporates the principal elements of the complex CDHS design rather than treating observations as a simple random sample.

For each outcome, the adjusted model was specified as $\Pr(Y_i=1) = \Phi(\beta_0+\beta_1 FLFP_i+\beta_2 X_i)$, where X contains the covariates listed above. Because FLFP is binary, the main effect measure is the average discrete marginal effect: the survey-weighted mean difference in predicted outcome probability when FLFP is set to 1 versus 0 while all other observed covariates are held at their observed values. Ninety-five percent confidence intervals were obtained using the delta method with the survey covariance matrix.

Robustness checks used survey-weighted logistic regression and the broader last-12-month employment definition. Heterogeneity was assessed with interaction terms FLFP and residence, maternal education, household wealth, and child age group (0–5, 6–23, and 24–59 months). Employment-sector models compared agricultural and non-agricultural employment with non-employment. Because multiple subgroup tests were conducted, isolated nominal p-values were interpreted cautiously and emphasis was placed on consistent patterns across outcomes.

The proposed instrumental variable was constructed conservatively. Using the IR file, a cluster-level proportion of working husbands/partners was calculated from valid husband occupation reports, and a leave-one-out value was assigned to each mother-child observation so that the focal mother's own partner did not mechanically

determine her instrument. The instrument could plausibly reflect local labour market networks relevant to maternal employment; however, the exclusion restriction is not guaranteed because local labour market conditions may also influence household income, food security, and healthcare access directly. Instrument relevance was therefore examined before IV estimation using a survey-weighted linear first-stage model. Because the first-stage F statistics were well below conventional weak-instrument benchmarks, IV/control-function estimates were treated only as sensitivity analyses and were not used to make causal claims.

RESULTS

Sample Construction and Anthropometric Prevalence

The standard WHO definitions produce internal consistency between the analytic data and the national DHS figures. In the KR mother-child file, weighted prevalence was 29.1% for stunting, 11.2% for underweight, and 4.4% for wasting. An independent check using the PR household-member file produced 28.7%, 10.9%, and 4.3%, respectively. The close agreement indicates that the outcome coding is consistent with the underlying DHS anthropometric data.

Table 1. Standard WHO anthropometric outcomes and independent DHS-file validation

Outcome	WHO definition	KR valid N	KR weighted prevalence	PR validation N	PR weighted prevalence
Stunting	HAZ < −2 SD	4,497	29.1%	5,253	28.7%
Underweight	WAZ < −2 SD	4,537	11.2%	5,296	10.9%
Wasting	WHZ < −2 SD	4,477	4.4%	5,228	4.3%

Note. KR = children's recode; PR = household-member recode; HAZ = height-for-age z-score; WAZ = weight-for-age z-score; WHZ = weight-for-height z-score. Weighted using DHS sample weights.

Source: Authors' analysis of the 2018 Cameroon DHS.

In the common complete anthropometric sample (N = 4,445), 68.9% of mothers were currently working. The weighted mean child age was 28.2 months, 48.7% of children were female, 44.9% lived in urban areas, and 42.0% of mothers reported distance to a health facility as a major problem. Maternal education was 26.8% no education, 33.0% primary, 34.9% secondary, and 5.3% higher education.

Adjusted Association between FLFP and Child Nutritional Outcomes

After adjustment for maternal education and age, child age and sex, residence, region, wealth, birth order, number of young children, and distance to a health facility, current maternal employment was not statistically associated with any of the three anthropometric outcomes. The estimated marginal effect for stunting was essentially zero. The estimate for underweight was negative (−2.13 percentage points) but its 95% confidence interval crossed zero. The estimate for wasting was small and positive (0.34 percentage points) and also imprecise.

Table 2. Survey-weighted adjusted probit estimates for current maternal employment

Outcome	N	Weighted prevalence	Probit coefficient (SE)	p-value	Adjusted marginal effect, pp (95% CI)	AME p-value
Stunting	4,497	29.1%	−0.0002 (0.0623)	0.998	−0.01 (−3.82, 3.81)	0.998
Underweight	4,537	11.2%	−0.1307 (0.0823)	0.112	−2.13 (−4.70, 0.44)	0.104
Wasting	4,477	4.4%	0.0399 (0.1051)	0.704	0.34 (−1.45, 2.13)	0.708

Note. pp = percentage points; AME = average discrete marginal effect. Models adjust for maternal education, maternal age and age squared, child age and age squared, child sex, residence, region, wealth quintile, birth order, number of children aged five or younger, and distance-to-facility barrier. DHS weights, PSUs, and strata are incorporated in estimation.

Source: Authors' analysis of the 2018 Cameroon DHS.

Instrument Diagnostics and Endogeneity Assessment

The leave-one-out cluster proportion of working husbands had a weighted mean of approximately 0.969 and a weighted standard deviation of approximately 0.053 in each anthropometric analysis sample. This indicates that the instrument has limited identifying variation. In survey-weighted first-stage linear probability models with the full adjustment set, the instrument coefficient was positive but statistically insignificant, and the first-stage F statistic ranged from 1.42 to 1.55. These values are substantially below conventional thresholds used to identify weak instruments.

Table 3. First-stage diagnostics for the leave-one-out cluster husband-employment instrument

Outcome sample	Instrument mean (SD)	First-stage coefficient	SE	F statistic	p-value
Stunting	0.969 (0.053)	0.275	0.229	1.45	0.229
Underweight	0.969 (0.053)	0.272	0.228	1.42	0.233
Wasting	0.969 (0.053)	0.284	0.228	1.55	0.213

Note. First-stage outcome is current maternal employment. Models include the same covariates as Table 2 and use DHS weights with PSU- and strata-adjusted sandwich variance. The low F statistics indicate weak instrument relevance.

Source: Authors' analysis of the 2018 Cameroon DHS KR and IR files.

Because relevance is weak and the exclusion restriction cannot be verified in an exactly identified specification, this study does not use the IV model as the preferred estimator and does not describe the results as causal effects. Two-stage residual-inclusion sensitivity models were also statistically imprecise and did not change the substantive conclusion, but those estimates are not emphasised because weak-instrument bias can be severe in nonlinear IV settings.

Robustness Checks and Heterogeneity

The lack of a statistically robust FLFP association was unchanged in survey-weighted logistic models. The adjusted odds ratio was 0.99 for stunting, 0.80 for underweight, and 1.09 for wasting, with all confidence intervals including 1. Using the broader last-12-month employment definition also produced statistically insignificant marginal effects for all three outcomes.

Table 4. Robustness checks

Outcome	Adjusted logit OR (95% CI)	Logit p-value	Last-12-month employment AME, pp (95% CI)	AME p-value
Stunting	0.994 (0.807, 1.224)	0.955	−1.23 (−4.96, 2.50)	0.518
Underweight	0.797 (0.582, 1.092)	0.158	−1.91 (−4.53, 0.71)	0.153
Wasting	1.087 (0.686, 1.721)	0.723	0.73 (−1.23, 2.68)	0.466

Note. Models use the same adjustment set and survey design correction as the primary probit models. The alternative exposure is derived from V731 and includes women who worked during the preceding 12 months, were currently working, or had a job but were temporarily on leave.

Formal interaction tests did not show evidence that the FLFP association differed by urban-rural residence, maternal education, household wealth, or child age group. All joint interaction p-values exceeded 0.10. Sector analysis likewise showed no consistent pattern across outcomes. Agricultural employment, compared with non-employment, was nominally associated with a 3.37 percentage-point lower probability of underweight (p = 0.036), but there was no corresponding stunting or wasting association and the result should be interpreted cautiously because multiple subgroup comparisons were performed.

Table 5. Heterogeneity tests for the FLFP association

Modifier / contrast	Stunting p / AME	Underweight p / AME	Wasting p / AME
FLFP × residence (joint p)	0.876	0.368	0.980
FLFP × maternal education (joint p)	0.688	0.714	0.773
FLFP × wealth quintile (joint p)	0.935	0.934	0.777
FLFP × child age group (joint p)	0.142	0.109	0.271
Agriculture vs not working (AME, pp; p)	−1.17; 0.615	−3.37; 0.036	0.10; 0.923
Non-agriculture vs not working (AME, pp; p)	1.04; 0.636	−0.66; 0.643	0.58; 0.563

Note. Age groups were 0–5, 6–23, and 24–59 months. Sector contrasts are adjusted average marginal effects in percentage points. The isolated p = 0.036 result was not adjusted for multiple testing and is not interpreted as a definitive sector effect.

DISCUSSION

Principal Findings

This analysis does not find evidence that maternal labour force participation, considered as a binary employment status, is independently associated with stunting, underweight, or wasting among children under five in Cameroon after standard WHO outcome definitions, broader confounder adjustment, and survey-design correction. The adjusted stunting estimate was effectively null, the underweight estimate suggested a modest protective direction but remained statistically uncertain, and the wasting estimate was small and imprecise. The same conclusion was obtained with logistic regression and a broader employment definition.

These findings suggest that employment status alone is too uneven a measure to explain child nutritional outcomes in this setting. Any influence of maternal work on child nutrition is more likely to operate through the conditions of that work than through participation itself.

Comparison with Previous Evidence

The absence of a uniform adjusted association is consistent with the broader literature showing substantial heterogeneity in maternal-employment findings. Fang *et al.,* (2023) reported adverse nutritional associations for some forms of maternal employment in Cameroon, whereas Ndah *et al.,* (2023) reported a positive association with a multidimensional child well-being index. Across other low- and middle-income settings, studies have likewise reported beneficial, harmful, and null associations depending on occupational sector, work intensity, household income, and availability of substitute care (Ahmed *et al.,* 2022; Debela *et al.,* 2021; Oddo & Ickes, 2018; Waghode *et al.,* 2025). The present study supports the interpretation that the conditions of employment may matter more than a binary participation indicator.

The nominal underweight association for agricultural employment should not be overinterpreted. It was one finding among several subgroup tests, was not replicated for stunting or wasting, and runs against some prior Cameroon evidence on time-intensive agricultural work. Replication with richer measures of hours worked, seasonal labour, earnings, and childcare arrangements would be necessary before drawing a substantive conclusion from this subgroup result.

Instrument Validity and Causal Interpretation

The data do not support the proposed instrument. Even after constructing the cluster husband-employment measure from the larger IR sample and applying a leave-one-out procedure, the instrument remained highly concentrated near one and the first-stage F statistics were approximately 1.4–1.6. This is insufficient identifying strength for credible causal IV inference. Moreover, the exclusion restriction remains debatable because cluster labour market conditions may affect child nutrition through channels other than maternal employment. This study therefore treats the evidence as adjusted association rather than causal effect and uses the IV exercise primarily to document why causal claims are not warranted with this instrument.

Strengths and Limitations

The study has several strengths. It uses nationally representative DHS data; applies conventional WHO anthropometric definitions; independently validates prevalence estimates with the PR file; adjusts for a substantially broader set of maternal, child, household, and geographic covariates; incorporates sampling weights, PSUs, and strata; and reports robustness and heterogeneity analyses. The explicit weak-instrument diagnostic also prevents overstatement of causal identification.

Several limitations remain. The CDHS is cross-sectional, so temporal ordering and residual confounding cannot be eliminated. Employment is measured primarily as current participation and does not capture hours, wages, job security, seasonality, work location, maternity protection, or childcare arrangements. Breastfeeding, meal preparation, maternal time use, and substitute caregiving are not modelled as mechanisms and should not be inferred from the employment coefficient. Anthropometry is available for a subsample, yielding outcome-specific sample sizes. The husband-employment instrument is weak and cannot support causal estimation. Finally, heterogeneity analyses involve multiple comparisons and some occupational groups are small, limiting precision.

CONCLUSION AND POLICY IMPLICATIONS

Conclusion

Using the appropriate 2018 Cameroon DHS mother-child data and conventional WHO definitions, this study finds no statistically robust independent association between current maternal labour-force participation and child stunting, underweight, or wasting after adjustment for key confounders and the survey design. The data therefore do not support an income-caregiving trade-off operating through employment status alone. The available data instead indicates that a binary measure of whether a mother works is insufficient to explain child nutritional outcomes.

Future research should focus on employment quality, working hours, earnings, informal versus formal work, seasonal agricultural labour, maternity protection, breastfeeding support, and the availability and quality of substitute childcare. Longitudinal data or stronger quasi-experimental designs are needed before attributing causal child-health effects to maternal employment in Cameroon.

Policy Implications

These results do not justify policies that discourage women's employment on child-nutrition grounds, nor do they show that employment alone protects children from malnutrition. Policy should instead address the conditions that allow women to combine economic participation with adequate care. This is consistent with the wider evidence base, even though the present study does not identify those mechanisms directly.

- Expand access to affordable, safe, and locally appropriate childcare, including community-based options that can serve women in informal and agricultural employment.
- Strengthen maternity protection, breastfeeding breaks, and practical workplace support where formal employment arrangements permit.
- Integrate maternal employment considerations into nutrition-sensitive social protection and community nutrition programmes, particularly for households facing healthcare-access barriers.
- Promote women's education, secure livelihoods, and household decision-making power while maintaining strong maternal and child health services.
- Improve routine and survey data collection on working hours, earnings, childcare arrangements, breastfeeding, and substitute caregiving so that future policy can target the employment conditions that actually influence child nutrition.

These recommendations are compatible with Cameroon's National Development Strategy 2020–2030 (Ministry of Economy, Planning and Regional Development, 2020), National Gender Policy 2022–2030 (Ministry of Women's Empowerment and the Family, 2022), Health Sector Strategy 2016–2027 (Ministry of Public Health, 2016), and the Sustainable Development Goals on health, gender equality, and decent work. They should be understood as policy priorities supported by the broader evidence base rather than as causal effects established by this cross-sectional study.

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