

Article

Do Cash Transfers Improve Dietary Diversity in Zambia?

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Abstract

This paper investigates whether participation in Zambia's social cash transfer programme (SCTP) improves household dietary diversity among ultra-poor rural households. While cash transfers are widely implemented across sub-Saharan Africa as social protection measures, empirical evidence regarding their impact on nutritional status remains mixed. This study focuses on dietary diversity, a proxy for nutrition quality, and uses data from the 2015 Rural Agricultural Livelihood Survey (RALS). The analysis employs propensity score matching to control for demographic differences between recipient and non-recipient households, followed by a regression analysis to examine the association between SCTP participation and dietary diversity scores. The findings reveal no statistically significant association between receiving social cash transfers and higher household dietary diversity. In contrast, positive predictors of dietary diversity included household remittances, own production of animal-source foods, and maize sales. Notably, households that relied on foraging exhibited significantly lower dietary diversity, suggesting foraging may be a coping strategy among food-insecure households. These results imply that while the SCTP may enhance household income stability, it does not necessarily translate into improved diet quality. This study contributes to the ongoing policy debate on the effectiveness of cash-based interventions in improving nutrition outcomes. It highlights the need to complement cash transfers with interventions that support food production and access, particularly in rural settings where market and infrastructure limitations persist.

Keywords: household dietary diversity; cash transfers; household incomes; household own food production; Zambia



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1. Introduction

Data from the World Bank's Food Prices for Nutrition datahub show that in 2022 over 2.8 billion people, or 35% of the global population could not afford a healthy diet. The cost of a healthy diet exceeds food poverty lines and in low-income countries 71.5% of the population could not afford a healthy diet. The health benefits of a more diversified diet are undisputed but its affordability, or not, is the outcome of food prices, and of incomes. The World Bank data express the cost of each food group relative to the cost of easily accessible starchy staples. The cost of vegetables relative to starchy staples was highest in high-income countries at over two times the cost, while animal-source foods were over two times the cost of starchy staples in low-income countries in 2022. In terms of incomes, the economic

recovery following the COVID pandemic meant that the prevalence of unaffordability fell in most regions, despite rising food prices, except for Sub-Saharan Africa, where the share of the population who could not afford a healthy diet rose from 69.3% to 70.3% [1].

This study is rooted in the food security model developed by Durao et al. [2]. The focus is specifically on how interventions that address access to food contribute to household dietary diversity. Such interventions include income- or employment-generating opportunities, coping strategies, social grants, food price policies and regulations, rural infrastructure development, and food or cash vouchers. The direct effects of these interventions include increased financial resources in the household, reduced food prices, increased social support and assistance (e.g., from family, neighbours, or the government), adequate food storage facilities, and affordable transport to food outlets and the existence of food outlets closer to where people live [2]. Many of these factors interact with one another; for example, having more money would enable the household to buy a refrigerator to store fresh food, being able to borrow money increases the money available to buy food, or the existence of adequate road infrastructure might lead to decreased food prices [2]. These direct effects lead to a common intermediate effect, which is the improved ability of households to acquire healthy and nutritious diverse foods [2].

This paper focuses specifically on cash transfers as an intervention. Cash transfers have the potential to improve economic access to nutritious foods, including animal-source foods, among low-income households that would otherwise rely on cheaper, less nutritious options [3]. However, given the fungibility of cash, the evidence linking transfers to improved dietary outcomes is mixed. Several reviews have been conducted on this topic. Manley and Slavchevska [4], in a review of 20 cash transfer programmes—12 of which were from sub-Saharan Africa—found that while household dietary intake often improved, gains in child health and nutritional status were inconsistent. They concluded that cash transfers show promise for improving diets, particularly when combined with complementary interventions such as nutrition education. Gentilini et al. [5] identified 962 cash transfer programmes in 203 countries; 672 were introduced during the COVID-19 pandemic and reached 17% of the world's population (1.36 billion) at the time. Despite this scope in terms of programmes, the authors noted that robust evidence on nutrition outcomes, including dietary diversity, remains limited. Durao et al. [2] conducted a Cochrane review of community-level interventions for improving access to food in low- and middle-income countries including 59 studies, mostly conducted in Africa and Latin America. The authors reported that unconditional cash transfers can improve food security, with low-certainty evidence that they may also increase dietary diversity.

This paper adds to this evidence in the Zambian context. We use secondary data for a cross-section of households to estimate a regression model of household dietary diversity scores explained by a range of available predictors. The data comes from the Rural Agricultural Livelihood Survey of 2015 and focuses on ultra-poor rural beneficiaries of Zambia's social cash transfer programme. The dietary outcome of interest is household dietary diversity and gives a useful indication of a household's ability to not only provide enough food, but also a diverse range of foods for good nutrition. More than a third of recipient households had low dietary diversity (defined as household dietary diversity score below 5). The explanatory variable of interest is whether a household is a social cash transfer recipient or not. Other variables that are included as predictors of household dietary diversity focus on household sources of income and households producing their own food. To control for some of the unobserved heterogeneity in the cross-section, propensity score matching is used to select a sample of households that are similar in terms of several matched variables, specifically the gender of the main respondent, marital status,

and highest level of education. Half of the households in the sample are cash transfer recipients, and the other half are not.

The paper is structured as follows. Section 2 describes the Rural Agricultural Livelihood Survey (RALS) and the data used in the empirical analysis. Section 3 describes the results of the analysis. Section 4 discusses the results of the analysis. Section 5 presents the conclusions and recommendations for further research.

2. Methods

2.1. The Zambian Context

The 2024 Global Hunger Index (GHI) ranked Zambia 115th out of 127 qualifying countries, with a score of 30.7, signalling serious hunger levels [6]. The GHI ranks countries based on undernourishment, child mortality, child wasting (low weight for height), and child stunting (low height for age), all of which are outcomes of food insecurity and low dietary diversity. This situation recently became more alarming because Southern Africa experienced a severe drought in the 2023–2024 period—reportedly the worst on record in parts of Zambia—with devastating impacts on the population, who depend substantially on rainfed subsistence crop production and drought-sensitive water sources [6].

In Zambia, severe poverty among the population creates barriers to achieving sustainable food security and consuming a diverse diet [7]. The incidence of poverty was estimated at 60.0% in 2022 compared to 54.4% in 2015 [8]. This means 60 out of every 100 persons in Zambia were poor during the survey period, which signifies that extreme poverty reached 48.0% compared to 40.8% in 2015 [8]. Extreme poverty in rural areas was 65.1, and 22.4% in urban areas [8]. Between July and September 2021, around 1.3 million people in Zambia faced severe food insecurity due to high food prices and climate-related catastrophes [9]. A cross-sectional sample of approximately 1584 households in 30 districts across all 10 provinces of Zambia has shown low household incomes, averaging 1872 Zambian Kwacha (ZMW) (USD 93.74) in 2021, with the majority earning a monthly income of ZMW 1000 (USD 50.07) or below between 2020 and 2021 [10].

2.2. The Rural Agricultural Livelihood Survey (RALS)

The RALS questionnaire was designed to complement the Post-Harvest Surveys conducted by the Zambia Statistics Agency and the Crop Forecast Surveys conducted by the Ministry of Agriculture and Ministry of Fisheries and Livestock. The Indaba Agricultural Policy Research Institute (IAPRI), in collaboration with the Zambia Statistics Agency and the Ministries of Agriculture and Fisheries and Livestock, designed, implemented and analysed additional rural livelihood surveys to obtain a broader set of household livelihood activities and outcomes. The survey also contained information about the household's participation in the social cash transfer programme, including the amount of cash transferred during the year.

The 2015 RALS was a combination of two samples: the 2012 RALS sample and 34 additional clusters from the provinces of Eastern, Muchinga and Lusaka. The first RALS was conducted in May to June of 2012, and a follow-up survey was conducted from June to July of 2015 in the same households and the 34 additional clusters. In total, 9520 households were sampled, which was nationally representative and expected to yield reliable estimates at both provincial and national levels.

2.3. The Study Sample and Data

The inclusion criteria were as follows:

1. Social cash transfer recipient households in the 2015 RALS dataset with complete survey responses were selected randomly.

2. Based on propensity score matching analysis, the study selected non-recipient households matching the cash transfer recipient households by gender, age, marital status, and the main respondent's highest level of education.

2.4. The Model

To examine the association between the social cash transfer programme and household dietary diversity using cross-sectional data essentially means statistical analysis of associations between variables. The study was not experimental in the sense that the cash transfer programme was a “treatment” being tested to achieve an outcome such as dietary diversity; however, we have constructed artificial cases and control groups using propensity score matching (PSM). As explained above, PSM matches each treated unit (households receiving the cash transfer) with a non-treated unit (households not receiving the cash transfer) with otherwise similar characteristics regarding the gender, age, marital status, and highest level of education of the household respondent in the survey. This technique allowed the analysis to focus on incomes and access to foods that might otherwise be related to socio-demographic differences. Demographic differences in terms of the gender and marital status of the head of the household, or their highest level of education, can be explanations of dietary outcomes but can also be an analytical “black box” when using secondary data. The PSM approach has two benefits. First, it improves the practical significance of the statistical results. Large samples can produce statistically significant results that are not practically significant if there are few observations of the variable of interest. In the 2015 RALS, there are only 147 households that received the social cash transfer and have complete survey records out of almost 3300 households. Limiting the analysis to the propensity score-matched households would yield more robust results. Second, matching by demographics controls for possible multicollinearity between gender, age, marital status, the highest level of education, and other predictors of household dietary diversity scores such as labour market income, other transfers, and household own food production.

The estimating equation is shown as Equation (1) below.

$$HDDS_i = \beta_0 + \beta_1 SCTP_i + \beta_2 Cashremit_i + \beta_3 Cashwages_i + \beta_4 Foodreceived_i + \beta_5 Ownlivestock_i + \beta_6 Ownfruitveg_i + \beta_7 Sellmaize_i + \beta_8 Sellcasava_i + \beta_9 Foraging_i + \varepsilon_i \quad (1)$$

These variables are described as follows:

- *HDDS*: The Household Dietary Diversity Score (HDDS) is a proxy measure used to assess the variety of foods consumed within a household over a reference period of 24 h, reflecting its economic ability to access a range of food groups and overall food security. The HDDS is calculated by asking about the consumption of 12 defined food groups (e.g., cereals, vegetables, fruits, meat, dairy, and legumes) and summing the number consumed, with the score's range from 0 (no diversity) to 12 (maximum observed diversity). Higher scores indicate greater dietary diversity, which is associated with improved nutritional and economic status [11].
- *SCTP*: Indicates households that are recipients of the social cash transfer. It is a dummy variable with a value = 1 if the household received the government social cash transfer.
- *Cashremit*: Mainly remittances received from non-resident family members. It is a dummy variable with a value = 1 if the household received cash remittances.
- *Cashwages*: Cash payment for work outside the household. It is a dummy variable with a value = 1 if the household received cash payments.
- *Foodreceived*: Food received as in-kind payment for work outside the household. It is a dummy variable with a value = 1 if the household received in-kind payment.

- *Ownlivestock*: Indicates whether the household engaged in food production for personal consumption, namely chicken, beef, or fish. It is a dummy variable with a value = 1 if the household produced food.
- *Ownfruitveg*: Indicates whether the household engaged in food production for personal consumption, namely fruit and vegetables. It is a dummy variable with a value = 1 if the household produced food.
- *Sellmaize*: Indicates households with sufficient production to sell or barter maize. It is a dummy variable with a value = 1 if the household sold or bartered maize.
- *Sellcassava*: Indicates households with sufficient production to sell or barter cassava. It is a dummy variable with a value = 1 if the household sold or bartered cassava.
- *Foraging*: Indicates households that collected wild food, specifically ants, caterpillars, wild fruits, honey, and animals and birds like rodents and game. It is a dummy variable with a value = 1 if the household collected wild food.

It is important to acknowledge that the analysis is limited by the availability of data. The dietary diversity score lacks the detail of data from repeated 24 h recall questionnaires or a quantitative food frequency questionnaire. The right-hand side of the equation lacks measures of access to markets, own production inputs, local variations in food prices, or rainfall. In addition, amounts or values of incomes were captured for very few households. There is no data on the frequency of consumption of own production.

Ethical approval for this study was obtained from the North-West University Health Research Ethics Committee (NWU-HREC) with the approval number NWU-00003-24-A1.

3. Results

The first step of the analysis was to describe the data. Table 1 shows the number and percentage distribution of low, medium, and high household dietary diversity scores between recipient and non-recipient households. Table 1 shows counts and row percentages. At the highest level of dietary diversity, we find the same number of recipient and non-recipient households. The larger share of households fall in the middle category. Of the recipient households, more households have a very low level of dietary diversity.

Table 1. Distribution of Household Dietary Diversity categories in recipient and non-recipient social cash transfer households.

Social Cash Transfers	Household Dietary Diversity Score Categories ¹		
	n (%)		
	Low (0–4)	Medium (5–8)	High (9–12)
Non-recipient households (n = 147)	47 (32.0)	82 (55.8)	18 (12.2)
Recipient households (n = 147)	57 (38.8)	72 (49.0)	18 (12.2)
Total (n = 294)	104 (35.4)	154 (52.4)	36 (12.2)

¹ Household Dietary Diversity Score categories—Low 0–4, Medium 5–8, High 9–12 (IAPRI, 2015:104).

Table 2 shows the differences between recipients and non-recipient households in terms of the predictors of the household dietary diversity score. Recipient households are more likely to receive cash remittances and food, and less likely to receive cash wages. They are less likely to produce their own fruits or vegetables and to sell or barter maize. They are more likely to forage for food.

Table 2. Distribution of independent variables by recipients and non-recipients of social cash transfer.

Independent Variables	Social Cash Transfer Received	
	Non-Recipient Households (%)	Recipient Households (%)
Cash remittance received	18.4	27.2
Cash wages received *	29.3	25.9
Food received	17.0	23.1
Own food production (livestock) ***	78.2	76.2
Own food production (fruits and vegetables) *	75.2	66.0
Household sells/barters maize **	40.1	31.3
Household sells/barters cassava	10.5	9.5
Foraging	76.9	82.3

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The results of a Mann–Whitney U test confirm differences in the means and variations in household dietary diversity scores across the examined variables, which justify their inclusion in the regression model. The significant differences are indicated in the table above.

The regression results reported below are from a model applying the household dietary diversity score as the dependent variable and the available independent variables described above. The aim was to test the hypothesis that a weak positive association exists between the social cash transfer programme and the household dietary diversity of recipient households in Zambia. Table 3 shows the results of the estimation of an OLS model with robust standard errors.

Table 3. Regression results estimating the predictors of household dietary diversity.

	Coefficients		Level of Significance	Collinearity Statistics	
	B	S.E.	(<i>p</i>)	Tolerance	VIF
(Constant)	4.6	0.393	<0.001		
SCTP recipient	0.142	0.237	0.550	0.961	1.041
Cash remittance received *	0.479	0.285	0.093	0.944	1.059
Cash wages received	0.416	0.262	0.113	0.985	1.015
Food received	−0.243	0.299	0.418	0.936	1.069
Own food production: chicken, beef, and fish **	0.578	0.284	0.043	0.950	1.052
Own food production: fruit and vegetables	0.324	0.261	0.216	0.952	1.050
Sell/barter maize ***	0.692	0.249	0.006	0.942	1.061
Sell/barter cassava	0.338	0.394	0.392	0.975	1.025
Foraging for wild food **	−0.650	0.296	0.029	0.946	1.057

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, Adj R-squared = 0.058.

The results show a significant positive relationship between the household dietary diversity scores and whether a household received cash remittances (at the 10% level), engaged in their own production of chicken, beef, or fish, and sold or bartered maize (both at the 5% level). The coefficients must be interpreted as a proportion of a standard deviation improvement in the household dietary diversity scores. In all three cases, such an improvement will individually not be sufficient to improve the dietary score by one unit. The collinearity statistics show that the model does not suffer from multicollinearity. The model overall explains 6% of the variance in dietary diversity. It may be that incomes

and a household's own production matter for food security, but that dietary diversity is explained by other household characteristics.

The results also show a negative and significant relationship between households foraging for wild food and household dietary diversity. It is important to keep in mind that this is not necessarily a causal relationship in the sense that foraging reduces household dietary diversity scores. It may well be that households with low household dietary diversity need to forage to supplement their diets.

The other variables show an insignificant relationship with household dietary diversity scores. There is a positive relationship between cash wages received, production of fruit and vegetables, and selling or bartering cassava and household dietary diversity. Receiving food as in-kind payment has a negative and insignificant relationship with household dietary diversity scores. This result is similar to that of foraging. Receiving food as in-kind payment does not necessarily reduce household dietary diversity, but a plausible alternative explanation for the direction of the association could be that households with low household dietary diversity scores will accept food as in-kind payment.

4. Discussion

This study set out to examine whether Zambia's social cash transfer programme (SCTP) improves household dietary diversity among rural, ultra-poor households. While cash transfers are designed to improve household welfare by increasing financial access to a broader range of foods, the results from the 2015 Rural Agricultural Livelihood Survey (RALS) do not support a strong positive association between participation in the SCTP and improved household dietary diversity.

The discussion begins by presenting the findings of previous studies conducted in sub-Saharan Africa and Zambia. We then explain that the cash-to-diet pathway is moderated by context and the design of the programme. It concludes by reconciling evidence from the literature with the findings of this paper.

4.1. Link Between Cash Transfers and Improved Nutrition Outcomes: The Evidence from Sub-Saharan Countries

Several sub-Saharan African countries are implementing unconditional cash transfer programmes, and the evaluations of these programmes have reported varying results regarding their influence on food security and dietary diversity. For example, in a cross-country comparative analysis of the impact of cash transfer programmes on food security and nutrition in Zambia, Lesotho, Ghana, and Kenya, Tiwari et al. [12] reported large variations in the impact of cash transfers on food security in these countries. The Child Grant model of the social cash transfer programme in Zambia has significantly impacted food security and nutrition outcomes and a broad range of other outcomes. In Ghana, the Livelihood Empowerment Against Poverty Programme had no impact on food consumption and dietary diversity but impacted a range of non-food expenditures. In Kenya, a baseline survey conducted in mid-2007, with follow-ups 24 months and 48 months after baseline, demonstrated that the Cash Transfers for Orphaned and Vulnerable Children significantly and positively impacted food security and nutrition. The Child Grant programme in Lesotho had no impact on per capita food expenditure although there was a statistically significant shift from the consumption of fruits and vegetables to pulses and legumes. Collectively, the authors concluded that a larger, regular, predictable cash transfer led to increases in both food quantity and quality and reduce the prevalence of food insecurity.

In Kenya, beneficiaries of the unconditional cash transfer programme, the Hunger Safety Net Programme, were reported to have increased their expenditure on milk and milk

products, sugar, roots, and tubers. However, this increase in spending did not translate into statistically significant increases in consumption volumes for most food categories, except sugar. Nevertheless, the programme led to measurable improvements in the intake of specific nutrients—for example, fat intake increased by approximately 25% after 24 months, vitamin B12 by 36.6%, and calcium by 34.9% after 12 months [13].

More recently, the National Information Platform for Food Security and Nutrition conducted a research series on the effect of cash transfers on the food expenditure, dietary diversity, and nutrition status of beneficiary households. In this comprehensive analysis, it was found that receiving cash transfers from the National Safety Net Programme (of which the Hunger Safety Net programme is only one of four cash transfer programmes) were negatively associated with food expenditure or household dietary diversity in Kenya [14]. However, when considering adequacy of the transfer (in terms of being an amount sufficient to meet the food poverty line), cash had a positive impact, and it was concluded that cash transfers only improve dietary diversity when the benefit amount is large enough.

In South Africa, Mthethwa and Wale [15] observed that the beneficiaries of the South African Social Grant Programme remained vulnerable to food insecurity. Chronic food insecurity prevails in rural-dominated provinces, while urban-dominated provinces primarily experience transient food insecurity.

An impact evaluation in Malawi indicated that the social cash transfer scheme significantly improved diet quantity during the lean season; however, little to no improvement in diet quality was found [16].

In Zimbabwe, cash transfers alone were reported to be insufficient to improve dietary diversity of regular access to food for urban households receiving cash transfers [17]. The study participants consumed small quantities of food, bypassed meals, and demonstrated poor dietary diversity despite receiving cash transfers. Low transfer value, irregular disbursements, weak targeting, and poor communication were listed as implementation issues that undermined the effectiveness of the programme.

A number of studies have been conducted in Zambia. In 2016, a cluster randomised controlled trial evaluating the Child Grant Social Cash Transfer Programme—an unconditional cash transfer to poor households in Zambia—demonstrated positive impacts on both food security and dietary diversity [18]. In 2018, a similarly designed trial conducted a 3 year follow-up on both the Child Grant Programme and the Multiple Category Targeted Programme in two districts. The MTCP targeted vulnerable households, those with a female or elderly head keeping orphans, or a household with a disabled member. While the evidence showed that unconditional cash transfers sustainably raised living standards, improving food security and consumption while also enabling investments in livelihoods; dietary diversity was not reported as a separate index, as in the first study. One study failed to identify a significant improvement in food consumption and expenditure. Manley and Slavchevska [4] commented that the Monze district social cash transfer was similar in design and targeting to the Child Grant Programme and the Social Cash Transfer—Multiple-Category Targeting Programme in Zambia. However, the findings were not conclusive as it was reported that the expenditure data were not detailed enough.

4.2. Explanations of Why Impacts Differ

Evaluations across sub-Saharan Africa report heterogeneous impacts of cash transfers on diet quality because the cash-to-diet pathway is strongly moderated by context and design.

First, programme design matters—unconditional vs. conditional transfers, targeting rules (e.g., to the ultra-poor or caregivers), payment regularity, and transfer size relative to

a basic food basket all shift how much of the grant is available for food after competing priorities (debt, school fees, and healthcare) are met.

Second, market conditions such as the local availability of nutrient-dense foods, travel costs, and food price inflation, govern how far a transfer of Kwacha/Rand/Shilling stretches; where markets are thin or prices high, cash mainly protects calories, not diversity.

Third, complements to the transfer, for example, nutrition counselling, agricultural input support, or linkages to savings groups, can tilt spending toward more diverse diets; without these, effects often settle on quantity rather than quality. See Kipruto et al. [14].

Fourth, household production possibilities and seasonality matter—where households produce animal-source foods or have marketable staples, cash and food production reinforce each other—and during lean seasons or shocks (drought), cash may simply smooth consumption. See Manley & Slavchevska [4].

Finally, measurement choices (household vs. individual HDDS, recall windows, and whether dietary diversity is an explicit outcome) also contribute to mixed findings. See Handa et al. [18], Brugh et al. [16], Kolliesuah et al. [19], and Kipruto et al. [14].

Together, these moderators explain why some SSA programmes show clear gains in dietary diversity while others find mainly improvements in food security or non-food expenditures.

4.3. Reconciliation with the Findings in This Paper

Our regression isolates several income/production channels that are positively associated with household dietary diversity, namely remittances, own-production of animal-source foods, and maize sales, while the SCTP indicator is null. We believe that this can be reconciled through the moderating pathway described above as follows:

- Transfer adequacy and fungibility. Remittances are often larger, lumpier, and less uncertain than social transfers, enabling purchases of costlier food groups (meat and dairy) after fixed obligations. By contrast, the SCTP amounts are small. According to the Jesuit Centre for Theological Reflections (JCTR) [20], in 2022 the basic needs and nutrition basket of a household of five members required about ZMW 3744.83 (USD 136.18) per month. This translates into ZMW 748.97 (USD 27.23) per person per month, which is almost USD 1 per person per day. Hence, the current Zambian social cash transfer value of ZMW 200 (USD 7.27) per month, which is USD 0.05 per person per day, is likely to be too little to achieve adequate dietary diversity. This would also have been the case in 2015 when the transfer value was ZMW 70 per month, and the exchange rate was around ZMW 10.
- Household food production and proximity to nutrient-dense foods. Households producing chicken, beef, or fish effectively lower their shadow price of animal-source foods, directly raising HDDS. Cash is not a perfect substitute for that physical availability in thin rural markets.
- Market power via staples. Selling/bartering maize signals surplus production and liquidity; such households can trade into diversity even when cash transfers are modest.
- Coping vs. choice. The negative association with foraging is consistent as a distress signal: households with constrained access diversify into wild foods as a coping strategy, and this coincides with lower overall HDDS.
- Taken together, the significant predictors capture channels with either bigger purchasing power (remittances), direct food availability (own production), or tradable surplus (maize sales). The SCTP, as implemented in this setting and year, likely protected consumption levels but did not shift the relative prices or availability of diverse foods enough to move HDDS. This reconciles the apparent contradiction and aligns with SSA evidence that cash improves diet quality only when (i) transfers are adequate

and regular, and/or (ii) markets and complements allow for the conversion of cash into diversity.

5. Conclusions

The regression analysis, using a matched sample of SCTP recipients and non-recipients, revealed that receiving a social cash transfer was not a statistically significant predictor of higher household dietary diversity scores. Instead, higher dietary diversity was more strongly associated with household engagement in the production of animal-source foods (chicken, beef, or fish), the ability to sell or barter maize, and receiving cash remittances. Conversely, households that engaged in foraging had significantly lower dietary diversity scores.

These findings suggest that cash alone may be insufficient to ensure dietary improvements, especially in rural contexts where market access, food prices, and transfer adequacy are critical limiting factors. Households may use cash transfers to meet urgent non-food needs, or the value of the transfer may not be enough to afford more diverse foods, particularly nutrient-rich options such as animal-source products and fresh produce.

Based on these findings, there are a number of recommendations for future research that may also inform Zambian policymakers.

Further analysis will require access to the 2019 RALS. A longitudinal study can exploit variation in cash transfer amounts, seasonal variation and regional differences, as well to allow for fixed-effects estimators that control for household unobserved heterogeneity.

It is doubtful that the Zambian government will find additional resources to increase the value of the cash transfers. It may be more useful to consider how other current programmes can support meaningful dietary changes. Complementary interventions can include agricultural extension support to encourage home production of diverse foods. Current nutrition education can focus on food choices.

Overall, while social cash transfers play an important role in poverty alleviation, a more holistic approach is required to achieve sustained improvements in dietary diversity and nutrition security.

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Abbreviations

The following abbreviations are used in this manuscript:

GHI	Global Hunger Index
HDDS	Household Dietary Diversity Score
RALS	Rural Agricultural Livelihood Survey
PSM	Propensity Score Matching
SCTP	Social Cash Transfer Programme
ZMW	Zambian Kwacha

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