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ARTICLE

Impact of unconditional cash transfers on household livelihood outcomes in Nigeria

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Abstract

In 2018, Nigeria began the implementation of a cash transfer programme (CCT) for poor and vulnerable people. We evaluated the impact of cash transfer on household livelihood outcomes in Nigeria. Using multistage cluster sampling methodology, beneficiaries and non-beneficiaries within the same locality were randomly selected to participate in a survey to assess the impact of cash transfer on food security and food diversity.

When gender, marital status, educational status, and age were controlled, beneficiaries were about three times more likely than non-beneficiaries to report experiencing little or no hunger. Children 0–59 months of beneficiaries were twice likely to have at least three meals a day compared to children of non-beneficiaries. Difference in differences regression analysis showed that on the average, beneficiaries of the cash transfer significantly consumed more diverse food than non-beneficiaries. Beneficiaries of the CCT experienced fewer episodes of severe hunger, have more meal frequency, and higher household dietary diversity than non-beneficiaries. This shows that the CCT programme is effective and can directly mitigate adverse effects of malnutrition with its long-term negative impact on children and thus must be expanded to more vulnerable people across all states in Nigeria.

Keywords: cash transfer; food security; house dietary diversity; minimum dietary diversity; household huger score; impact evaluation

Background

Social protection interventions provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalised (Hagen-Zanken & Holmes, 2012). The main aim of such interventions is to reduce poverty, vulnerability, and risks, and can be carried out by state, non-governmental actors, or the private sector. Since social protection interventions reduce poverty, it has been intrinsically linked to improving other household livelihood outcomes such as health, nutrition, education, food security, gender inequality, and HIV/AIDS (Hagen-Zanker& Holmes, 2012).

Despite the global attention to social protection, 71% of the world's population still has no or partial access to comprehensive social protection system owing to demographic change, low economic growth, migration, conflict, and environmental problems (ILO, 2017). Social protection interventions are common in low- and middle-income countries such as Africa, Asia, Latin America, and the Caribbean; however, coverage is very limited and confined, with only 16% of children in Africa having access to social protection benefits (ILO, 2017).

Cash transfer programmes (CTP) are a form of social protection programmes that are non-contributory but provide monetary transfers to low-income households and seek to promote health and welfare decisions and outcomes through an 'income effect', thereby breaking the intergenerational cycle of poverty (Floate et al., 2019). There is evidence that cash transfer programmes have significant impact on both poverty and vulnerability, especially through social transfers that can reach the very poor household by bridging inequality gaps (Leroy, 2009). Cash transfer programmes are categorised into two groups: conditional cash transfers (beneficiaries are required to meet certain behavioural conditions) and unconditional cash transfers (no conditions are required to benefit from the programme) (Owusu-Addo et al., 2019). Cash transfer programmes typically involve numerous pathways and systems of implementation, some of which may be heterogenous and combine in-kind assistance, e.g. food vouchers. In addition, they are provided in a diverse range of settings to a diverse group of beneficiaries, thus the impact of CTPs is nuanced and complex. de Groot et al. (2017) proposed a framework that suggests additional finances from CTP can influence the underlying determinants of nutrition through the three pathways of food security, health, and care while Leroy et al. (2009) proposed a number of pathways that suggest additional financial resources can make it easier for a household to purchase higher quantities and quality of food (household food security).

Numerous studies have evaluated the impact of CTPs on nutrition outcomes with conflicting results; however, the strongest evidence of the nutrition-related effect of cash transfer is on food security (Arnold et al., 2011; Bastagli et al., 2016; de Groot et al., 2015; Fiszbien & Schady, 2009; Manley et al., 2013; Sibson et al., 2018). Studies of Progresa in Mexico, Bolsa in Brazil, Familias en Accion in Columbia, and CTP in Pakistan showed that beneficiary households had higher consumption of carbohydrates, animal proteins, and micro/macro nutrients (Hodddinott & Skoufias, 2004; Kronebusch & Damon, 2019), and there was negative impact on stunting among children of beneficiaries (Andersen et al., 2015; Basset, 2008; Soares et al., 2010; Santos et al., 2007; Behrman & Hoddinott, 2005; Attanasio et al., 2005;

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Fenn, 2016). However, the CTP in Pakistan reported that there was no significant difference in the risk of being wasted between those that received standard cash value and those that received fresh food voucher (Fenn, 2016). This study evaluated the impact of cash transfer on nutrition outcomes (food diversity and food security) among beneficiaries in Nigeria.

Social protection policy and programming in Nigeria

In 2019, 40% of Nigeria's estimated 200 million people were estimated to be living below the poverty line, and this was higher in rural (52%) compared to urban settings (18%) (NBS, 2020). At the federal government level, there are three main social protection programmes; (i) the COPE conditional cash transfer (CCT) programme, (ii) subsidised maternal and child health care (MCH) provision, and (iii) the Community-based Health Insurance Scheme (CBHIS). Other social assistance programmes are implemented in an adhoc manner, run by government ministries, departments, and agencies (MDAs) at state level (Hagen-Zanken & Holmes, 2012).

The National Social Safety Net Coordinating Office (NASSCO) oversees the social protection programme in Nigeria, and all states are eligible for the intervention. Given financial and capacity constraints, the roll-out of the unconditional cash transfer programme, which began in 2018, used a poverty map to gradually reach 30% of the poorest local governments area (LGA) first and aimed to expand to the next 50% of LGAs, and then the last 20% as a prioritisation mechanism to cover entire state over time.

Targeting and selection of beneficiaries for cash transfer in Nigeria

Geographic targeting

Selection of beneficiaries for the CTP in Nigeria began with the use of a state poverty map to identify and select poor local government areas (the lowest administrative unit of governance). For each selected LGA, communities were ranked using the community ranking tool (WFP, 2015; NASSCP, 2017), which ensured that the most deprived communities were prioritised first. It also ensured even and fair coverage of communities across all wards in the selected LGA.

Identification and selection of poor and vulnerable households (PVHHs)

In the absence of comprehensive and high-quality data on household welfare status, a community-based approach was used to identify households that were relatively poor or vulnerable. This process involved engagement of community members that established criteria for poverty and vulnerability, which were then used to identify poor and vulnerable households as potential beneficiaries for targeted interventions. The method helped to limit errors of inclusion and exclusion as community members were fully mobilised to participate in the community engagement.

The identification and selection of beneficiaries composed of pre-sensitisation, sensitisation and mobilisation, community engagement, and enumeration. The pre-sensitisation focused on community entry where the head of the community was

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engaged about the programme. Sensitisation and mobilisation were used to create awareness of the programme and to mobilise community members. During community engagement, members were arranged into homogeneous groups (elders, women, youth, people with disabilities, minorities/marginalised, or any other group as the case maybe) to identify the poor and vulnerable households in the community, based on agreed criteria from proxy means test, which is described in more detail in the next paragraph. A list of the poor and vulnerable households (PVHHs) was then generated by groups and reconciled into a harmonised list of poor and vulnerable households in the community. In addition, a grievance redress mechanism (GRM) system was set up to address complaints and grievances emanating from the community gathering and engagement process.

Proxy means testing and selection of beneficiaries

Proxy means test (PMT) allows for the estimate of household's income or consumption using assets when income statements are unavailable or difficult to obtain (Coady et al., 2004). In Nigeria, the PMT used housing characteristics such as toilet facility, source of drinking water, fuel, as well as demographics and socio-economic characteristics. The PMT ranked households based on their welfare status by assigning weights to observed characteristics of the households. The ranking of the households, ranged from decile 1–10, where households with the lowest PMT score occupied the lowest decile, thus attaining eligibility to receive the cash transfer and were designated as beneficiaries. Each household was given N5,000 ($14) monthly. Where a female spouse was identified in the household, she was designated as the beneficiary of the cash transfer irrespective of her employment status. Non-beneficiaries were eligible PVHHs who were not selected to receive cash transfer due to programme budget limit and were subsequently enrolled in the National Social Register.

Methods

Study sites

To ensure national representation, one state from each of the six geopolitical zones in Nigeria was randomly selected out of the seventeen states currently enrolled in the cash transfer programme. States were deemed to be eligible if the cash transfer programme was older than 6 months to increase the likelihood of cash transfer impacting study outcomes. To allow for diversity, within each state, one local government area was selected from each of the three senatorial districts and subsequently, communities were then randomly selected for the study. The states selected included Anambra state in southeast, Cross River state in south, Ekiti state in southwest, Katsina in northwest, Kwara state in north central, and Taraba state in northeastern Nigeria.

Sample size

The formula to estimate difference in proportion between two groups was applied. Based on the 2018 Nigeria Demographic and Health Survey (National Population Council and ICF, 2019), which reported a minimum dietary diversity for rural

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women at 51%, we hypothesised that beneficiaries of the cash transfer programme would have a 10% improvement in dietary diversity compared to non-beneficiaries at 95% confidence interval, precision of 5%, and rejection rate of 15%. This resulted in a sample size of 289 as the minimum sample size desired per group. Thus, for both groups (beneficiaries and non-beneficiaries), the total sample size per state was set at 578.

Sampling design and recruitment

A multi-stage probability sampling procedure was used in the selection of the various clusters and the individuals finally sampled for the survey. The first stage was the sampling of six states (one from each geo-political zone) to be used for the survey. To achieve a probability proportional to size (PPS) in the sampling of state at the first stage, the list of beneficiaries in each zone was obtained and compiled to form a sampling domain for the respective zones. The second stage was the sampling of three LGAs, one from each of the three senatorial districts within a state using the same PPS as described above and to limit over-representation from any LGA. To obtain relatively homogeneous clusters for ease of survey implementation, the wards within the three sampled LGAs in a state were segmented into clusters of communities based on geographic proximity and access. Each cluster was coded and listed with the number of beneficiaries and non-beneficiaries therein as their measure of size. Using the same procedure explained in the earlier paragraphs, ten of these clusters were randomly selected in an LGA with probability proportional to their sizes. The list of beneficiaries and non-beneficiaries within the ten community clusters sampled for each LGA were obtained and thirteen of the beneficiaries and non-beneficiaries were selected using simple random sampling procedure. Thus, every beneficiary and non-beneficiary within a cluster had equal probability of inclusion in the survey.

Data collection and data management

Data were collected through a structured questionnaire. Standard questions developed for assessing household food security derived from FANTA 111 (Swindale & Bilinsky, 2006) were adapted for this study. To measure changes to consumption sources, we used twelve aggregate consumption groups: (i) cereals, (ii) vitamin A rich food, (iii) white tuber roots, (iv) dark green leafy vegetables, (v) other vegetables, (vi) vitamin A rich fruits, (vii) other fruits, (viii) organ meat, (ix) flesh meat, (x) eggs, (xi) legumes, nuts and seeds, and (xii) milk and milk products. Answers to these questions were used to assess (a) household dietary diversity, (b) minimum dietary diversity for women (MDD-W), (c) household hunger, and (d) household meal frequency.

Data on dietary diversity (which estimated the number of unique food groups consumed by households from the standard list of twelve food groups) were collected for two time points (at time of survey and 6 months prior to the cash transfer for beneficiaries; and at time of survey and 6 months prior to the study for non-beneficiaries) and the mean score was used to assess change in dietary diversity between the two time points. Higher scores indicate access to more food diversity

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and micronutrients. Household hunger score (Ballard et al., 2011; USAID, 1992) estimated hunger status of the household over a four-week period preceding the study. Households were classified as little or no hunger households; moderate hunger households, and severe hunger households. MDD-W was also estimated for women in the study. The MDD-W was a dichotomous variable (i.e. yes, if she consumed at least five different food groups during the previous day or night, and no otherwise) that assessed the proportion of women who consumed at least five of the ten possible food groups (same food groups as in dietary diversity excluding cereals) in the 24 hours preceding the survey (FAO & FHI, 2016; FAO, 2021). Data were collected on android tablets using CSPro and transferred to STATA 14™ for data cleaning and analysis.

Statistical analysis

Analysis included descriptive statistics with 95% confidence interval. Categorical variables were calculated as proportions while continuous variables were calculated as median with inter-quartile range. Difference in Difference analysis (a frequently used method for demonstrating impact from non-experimental designs by comparing intervention outcomes "before and after" for each study group (Fredriksson & De Olivera, 2019)) was then used to estimate the effects of cash transfers on dietary diversity between beneficiary and non-beneficiary groups. Binary logistic regression was used to compare differences in meal frequency and MDD-W between non-beneficiaries and those who received cash transfers.

Results

Socio-economic and demographic characteristics

A total of 3,672 respondents were interviewed across the six states surveyed (Table 1). Overall, more females (67.1%) than males (32.9%) were interviewed, and majority of the respondents were aged 35 years and above with those aged 35–50 years being the largest with 36.1%. About a third of households were headed by females across both beneficiary and non-beneficiary groups. More than half (55.2%) of the study population had no education and 27% had only primary education. Majority of respondents (63.1%) were married or co-habiting with a sexual partner and this was higher in the beneficiary group (69% vs. 57.2%). About one-third (32.2%) were separated, divorced, or widowed. Data on household composition showed that households across all states visited had young persons between the ages of 0 and 19 years comprising half (50%) of the entire household (data not shown).

Comparison of sociodemographics between the groups showed that while there were more women among the beneficiaries compared to non-beneficiaries (83% vs. 52%), the proportion of female headed household was similar for both groups (34%). More beneficiaries compared to non-beneficiaries were married/co-habiting (69% vs. 57%), had larger household sizes with more than five persons (69% vs. 57%) and had younger persons less than 35 years (19% vs. 13%). For education, those with primary/no education was slightly higher among non-beneficiaries compared to beneficiaries (83% vs. 82%).

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Table 1. Socio demographic characteristics of respondents

	Beneficiaries	Non-beneficiaries	Total
	% (*N*)	% (*N*)	% (*N*)
State			
Anambra	18.0 (327)	17.2 (319)	17.6 (646)
Cross-River	16.4 (299)	16.2 (300)	16.3 (599)
Ekiti	17.0 (309)	16.3 (301)	16.6 (610)
Katsina	15.9 (290)	16.8 (310)	16.3 (600)
Kwara	17.4 (316)	16.2 (300)	16.8 (616)
Taraba	15.4 (280)	17.3 (321)	16.4 (601)
*Sex of respondent**			
Male	17.0 (310)	48.5 (897)	32.9 (1,207)
Female	83.0 (1,511)	51.5 (954)	67.1 (2,465)
*Age group of respondents**			
16–24 years	4.2 (76)	3.7 (68)	3.9 (144)
25–34 years	15.1 (274)	9.5 (175)	12.2 (449)
35–50 years	42.4 (772)	29.8 (552)	36.1 (1,324)
51–65 years	23.6 (429)	23.8 (440)	23.7 (869)
>65 years	14.8 (270)	33.3 (616)	24.1 (886)
Gender of household head			
Male	66.0 (1,201)	65.8 (1,218)	65.9 (2,419)
Female	34.0 (620)	34.2 (633)	34.1 (1,253)
*Educational status**			
None	53.4 (973)	57.0 (1,055)	55.2 (2,028)
Primary	28.9 (526)	26.3 (487)	27.6 (1,013)
Secondary	15.9 (289)	13.0 (241)	14.4 (530)
Tertiary	1.8 (33)	3.7 (68)	2.8 (101)
*Marital status**			
Single	3.5 (63)	6.1 (113)	4.8 (176)
Married/co-habiting	69.0 (1,257)	57.2 (1,059)	63.1 (2,316)
Separated/divorced/widowed	27.5 (1,001)	36.7 (679)	32.2 (1,180)
Household size			
1–5 persons	31.5 (573)	43.1 (798)	37.3 (1,371)
6–10 persons	52.9 (963)	41.8 (774)	47.3 (1,737)
>10 persons	15.7 (285)	15.1 (279)	15.4 (564)
Total	49.6 (1,821)	50.4 (1,851)	3,672

*Significant differences between beneficiary and non-beneficiaries using Chi Square ($p < 0.05$).

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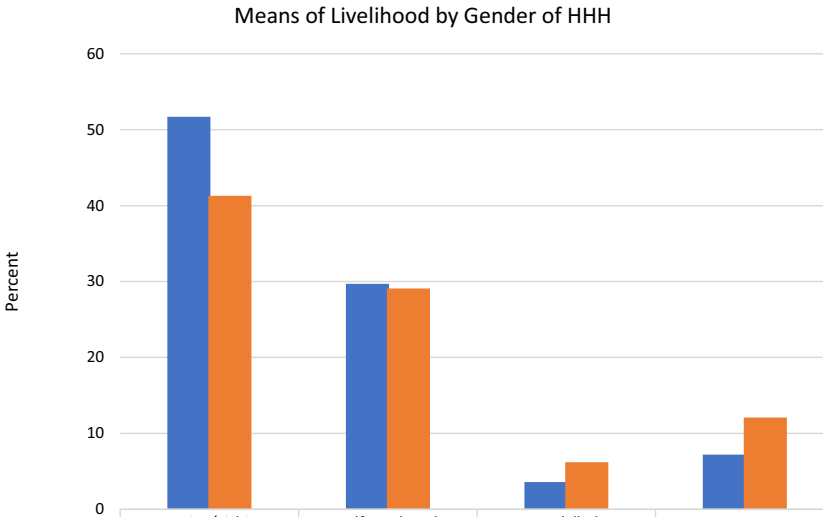

Figure 1. Household sources of income.

Figure 1 shows the means of livelihood of households surveyed disaggregated by gender of the head of household. The results show that 51.7% of male headed households compared with 41.3% of female headed households earned their livelihood from farming, fishing, or mining. About one-third (29%) of households were headed by males and females who reported owning small scale businesses. More female-headed households compared to male-headed households were engaged in unskilled labour (6.2% vs. 3.6%) and unemployed (12.1% vs. 7.2%).

Utilization of cash received

Findings also showed how the funds received were utilised by the beneficiaries across the states surveyed. Only 4.9% of respondents (Table 2) reported that the funds were of no impact to their households. Others used the received funds majorly for food (79.9%) and to improve household living conditions (70.5%). Some beneficiaries also reported using some of the money for health services (68.5%), educational support of their wards (56.7%), and servicing of loans (57.6%).

Food diversity

Results show that respondents in beneficiary groups consumed on the average foods from about nine different groups of the twelve food groups available within 7 days preceding the survey compared with non-beneficiaries who reported consuming only seven different food groups. The mean household dietary diversity (HDD) score increased among the beneficiary group from 6 months before the study, whereas the

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Table 2. Distribution of food access, food diversity, and utilisation of funds

	Beneficiary (%)	Non-beneficiary (%)
Household hunger		
Little or no hunger	42.4	25.5
Moderate hunger	53.7	67.6
Sever hunger	3.9	7.0
Meal frequency (≥3 meals/day)		
0–5 years	51.5	37.2
6–18 years	46.7	33.7
>18 years	42.5	28.9
*Household dietary diversity**		
Before cash transfer programme	8.3	7.8
After cash transfer programme	8.5	6.8
*Minimum dietary diversity for women consumed >5 food groups**	93.9	74.6
Utilisation of funds		
Food	79.9	NA
Improve living conditions	70.5	NA
Health services	68.5	NA
Education	56.7	NA
Loan repayment	57.6	NA
No impact	4.9	NA

NA: Not applicable to non-beneficiaries.
*Significant at $p < 0.0001$ using Chi square.

score reduced among the non-beneficiary group (Table 2). For household dietary diversity (HDD), there was significant increase in HDD among beneficiaries between inception of the CCT and time of survey (8.3 vs. 8.5; $p < 0.0001$) whereas for non-beneficiaries, there was a decline in HDD (7.8 vs. 6.8; $p < 0.0001$).

Results on minimum dietary diversity for women in this study showed that 89% of women aged 15–49 years consumed foods from five or more of the ten food groups in the 24 hours preceding the survey. A significantly greater proportion of women in beneficiary groups (94% vs. 75%) consumed from at least five food groups, compared to non-beneficiaries ($p < 0.001$). Women in beneficiary group consumed an average of 7.4 food groups compared to 5.6 among non-beneficiaries (data not shown).

On household food hunger, results show that a higher proportion of non-beneficiaries (67.6%) had either lacked food in the household, reduced the portion of food for members, or gone without food at least once in the 4 weeks prior to

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Table 3. Association between cash transfer and household food consumption

	Crude OR (95% CI)	*P*	Adjusted OR (95% CI)	*P*
*Household dietary diversity (HDD)**				
Non-beneficiary	1		1	
Beneficiary	1.2 [1.05–1.36]	<0.0001	1.2 [1.04–1.38]	<0.0001
*Minimum dietary diversity for women[a] (MDD-W)***				
Non-beneficiary	1		1	
Beneficiary	4.25 [3.30–5.16]	<0.0001	4.12 [3.30–5.16]	<0.0001
*Meal frequency (≥3 meals/day)***				
0–5 years				
Non-beneficiary	1		1	
Beneficiary	1.79 [1.56–2.04]	<0.0001	1.76 [1.52–2.03]	<0.0001
5–18 years				
Non-beneficiary	1		1	
Beneficiary	1.73 [1.51–1.97]	<0.0001	1.74 [1.50–2.01]	<0.0001
>18 years				
Non-beneficiary	1		1	
Beneficiary	1.82 [1.59–2.08]	<0.0001	1.81 [1.56–2.11]	<0.0001
*Household hunger (little or no hunger)***				
Non-beneficiary	1			
Beneficiary	3.0 [2.18–4.07]	<0.0001	2.6 [1.81–3.59]	<0.0001

Each model adjusted for gender, marital status, educational status, and age of respondents.
Crude OR – odds ratio of CTP beneficiary status on outcome variable.
Adjusted OR – odds ratio of CTP beneficiary status when all independent variables are included in the model for each outcome variable.
[a]Women consumed >5 food groups.
*Computed using linear regression of the difference-in-difference between beneficiaries and non-beneficiaries.
**Computed using logistic regression.

the study compared to beneficiaries (53.7%) whereas a lower proportion of non-beneficiaries compared to beneficiaries (25.5% vs. 42.4%; $p < 0.0001$) reported little or no episodes of hunger in the household within 4 weeks prior to the study. Only 3.9% in beneficiary group reported severe hunger compared to 7% among non-beneficiaries ($p < 0.001$).

Impact of cash transfer

When controlled for gender, marital status, educational status, and age (Table 3), logistic regression analysis showed that those who had received cash (beneficiaries) were about three times more likely than non-beneficiaries to report experiencing little or no hunger (adjusted odds ratio {AOR}:2.6; 95% CI: 1.81–3.59). Furthermore, results showed that food consumption was significantly better among all ages in all

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households surveyed in the beneficiary group compared to the non-beneficiaries. Children 0–59 months of beneficiaries were twice likely to have at least three meals a day (AOR:1.76; 95% CI: 1.52–2.03) compared to children of non-beneficiaries. Similarly, among beneficiaries those aged 5–18 years (AOR:1.74; 95% CI: 1.50–2.01) and older than 18 years (AOR:1.81; 95% CI: 1.56–2.11) were twice more likely to consume a minimum of three meals in the 24-hour period preceding the survey compared to non-beneficiaries.

For food diversity, when controlled for gender, marital status, educational status, and age, the result of the difference in difference regression analysis showed that on the average, beneficiaries of the cash transfer significantly consumed 20% more diverse food groups than non-beneficiaries (AOR: 1.2; 95% CI: 1.04 – 1.38).

Lastly for MDD-W, women who were beneficiaries were four times more likely to have a higher dietary diversity that women who were non-beneficiaries (AOR: 4.12; 95% CI: 3.30–5.16).

Discussion

This is the first study in Nigeria to measure the impact of cash transfer, and we observed some key findings. First, beneficiaries of the cash transfer had better food security compared to non-beneficiaries. Second, beneficiaries were less likely to report experiencing severe hunger. Third, beneficiaries including their children were more likely to consume at least three meals a day. Fourth, female beneficiaries were more likely to have higher minimum dietary diversity, and last, beneficiaries were more likely to have higher household dietary diversity than non-beneficiaries. These findings have salient implications on food access, food security, and food diversity in Nigeria.

Most cash transfer programmes have always ensured to include considerable number of female-headed households because this tends to improve allocation of resources and bargaining power of women (DEC, 2017). This study in having 34% of female-headed households allows the demonstration of the impact of the cash transfers in a more gender sensitive manner. Women who were beneficiaries had a better minimum dietary diversity than non-beneficiaries, and this has direct implications for the women's health and their children. Furthermore, for those who may be pregnant, it also suggests that their fetus will be well nourished during pregnancy and mitigates the negative outcomes of malnutrition in pregnancy including but not limited to small for gestational age babies. In addition to reaching a moderate number of women, a large proportion of persons in the study were not educated, hence further showing the reach of the project to those who need it the most. The better nutrition outcome among female beneficiaries observed in this study may be explained by Leroy et al.'s (2009) framework that identified the 'women's income and control over resources pathway'. This pathway suggests that by women being beneficiaries of cash transfer, it increases their control over resources, and promotes women empowerment and their decision-making power relative to household nutrition including nutrient-rich food.

Our findings on the utilisation of the cash received by beneficiaries is comparable with other studies on cash transfer programmes across Africa. The purchase of food has consistently been the largest use of cash transfer, ranging from 41% to 82%. This study's

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findings are largely similar to those from Kenya (Longley et al., 2012; Hidrobo et al., 2012, DEC, 2017) and Brazil (Segall-Correa et al., 2008; Paes-Sousa et al., 2011) that reported an increase in food purchase and security following CCT interventions. However, a systematic review of the impact of cash transfers by Bastagli et al. (2019), showed mixed results with twenty-five of thirty-one studies increasing food expenditure, while six of the studies showed no significant impact, possibly due to changes in households' behaviour or programme design. The findings suggest that livelihood, needs to be improved generally to get the best out of cash transfer programmes, since households have many other concerns, they tend to use funds to meet additional needs, and this may not result in concentrated efforts on improving their livelihood significantly.

On the utilisation of funds especially as it relates to improving food security of beneficiaries, this study found significant impact of cash transfer on food access. Household dietary diversity and food consumption scores have been reported to improve with cash transfer programmes (Hidrobo et al., 2012; Metz, 2012; Audsley et al., 2010; Bailey, 2013), and this study also showed similar results as the cash transfer project increased the dietary diversity of households and reduced hunger score, despite the drop in living standard experienced across the country (shown in the dietary diversity results for non-beneficiaries). Increased dietary diversity due to CTP has also been reported in Mexico (Hoddinott & Skoufias, 2004) and Bangladesh (Ferre & Sharif, 2014) where there was increased consumption of calories and high-protein animal-source foods, respectively.

Bastagli et al.'s (2019) systematic review of cash transfers showed that there was a positive significant impact on dietary diversity. They reported that of twelve studies evaluating cash transfer and dietary diversity, seven showed statistically significant changes across a range of dietary diversity measures. They further reported that studies that showed no significance were probably due to implementation problems or limited availability of diversified foods. Given the high level of poverty in Nigeria with over 80 million Nigerians living below the poverty line of $1.50 (NBS, 2020) and coupled with rising inflation and food prices, beneficiaries of the cash transfer programme have been able to mitigate to some degree external shocks to food security. Furthermore, this study was conducted during the early phase of COVID 19 pandemic in which there was a national lockdown policy to limit the spread of the virus, and this further affected the availability of staple food in the country thus worsening food prices. Lastly, children of beneficiaries were more likely to eat at least three meals a day compared to children of non-beneficiaries. With a national stunting prevalence of 37% (NDHS, 2018), further research is required to understudy the impact of cash transfer in reducing stunting in Nigeria. These findings provide insight on the impact of cash transfer on food consumption patterns including consumption frequency and dietary quality.

Limitations

This study is not without limitations. This was a cross sectional study and thus results should be interpreted with caution as respondents were not followed

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prospectively. However, the comparison of the outcomes pre and post intervention within each respondent enables each respondent to serve as a control and provides reliable data on the impact of cash transfer on food security and food diversity. Furthermore, non-beneficiaries were randomly chosen from the same locality as beneficiaries allowing for comparison between the two groups. Recall bias remains a challenge as data was not collected at baseline from beneficiaries and non-beneficiaries; however, the use of easily recallable indicators such as types of food eaten and frequency of food in a short recall period of a week and within 24 hours reduces the error from recall bias and thus strengthens the internal validity of the study. Lastly, conducting the study during the first few months after COVID lockdown was lifted may have exaggerated the food insecurity of the respondents; however, the increased food security of beneficiaries strengthens the impact of cash transfer as beneficiaries experienced the same shocks as non-beneficiaries. This study has some strengths. The regional representation and diversity of respondents sampled across the country, coupled with a good sample size allows for reliable insight into the performance of CTP and the comparisons made. In addition, by using a 7-day and 24-hour recall, the study relied on the ability of the respondents to accurately recall foods consumed from different food groups for themselves and other household members. Lastly, by collecting information on multiple outcomes relating to household food security, the study was able to triangulate and estimate the performance of the CTP in improving livelihood outcomes among beneficiaries.

Conclusion

Beneficiaries of the CTP experienced fewer episodes of severe hunger, had more meal frequency, and higher household dietary diversity than non-beneficiaries. The significant positive differences in food diversity and food security among beneficiaries suggests that the CTP is effective and can directly mitigate adverse effects of malnutrition with its long-term negative impact on children and thus must be expanded to more vulnerable people across all states in Nigeria.

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Authors' contributions. TFE and GIE conceived the study. GIE and TFE coordinated data collection. GIE, TFE, and BOD conducted data analysis. GIE, AI, KL, AL, MB, TFE, and BOA interpreted the data.

GIE, AL, BOD, and TFE wrote the manuscript. AI, KB, AL, MB, BOA, and SY reviewed and revised the manuscript. All authors approved the final manuscript.

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Kabir Abdullahi and Abdullahi Lawal are current staff of the National Social Safety Net Coordinators Office that implements the national cash transfer programme. However, they played no role in the study design, selection of study states or study participants, data collection, or data analysis.

TFE, GIE, SY, BOA, and BOD declare no competing interest.

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Ethics approval and consent to participate. Ethical approval was obtained from the National Health Ethics Research Committee (NHREC), Federal Ministry of Health. Written consent was obtained from all participants.

Given the number of states and number of LGAs included in the study, ethical approval was obtained from the National Health Research Ethics Committee as the study was classified as a multisite study.

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