

# Cash Transfers and Child Nutrition: Evidence from sub-Saharan Africa

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## Abstract

This paper summarises the arguments and counterarguments within the scientific discussion on cash transfers and child nutrition. The main purpose of the research is to assess the effectiveness of cash transfers in improving nutritional outcomes in vulnerable children in sub-Saharan Africa. Systematisation of the literary sources indicates that studies have justified cash transfer as social-income support that addresses a vital social determinant of health (income) for children in low-and-middle-income countries. The methodological basis of this study is a systematic review that searched a wide range of academic and grey literature databases, including PubMed, Cochrane Library and Google Scholar. This study included cluster-randomised controlled trials (R.C.T.s), randomised controlled trials, quasi-experimental studies, mixed-methods studies, and non-randomised cluster trials. Studies included in this systematic review were screened for their eligibility. The systematic review uses the Cochrane data collection form to extract data from the included studies. It was not feasible to statistically combine the results of the studies due to the heterogeneity of most of the studies. Preferably, the review employs a narrative synthesis to present the estimated effects of cash transfers on children's nutritional outcomes. The systematic review presents the results of data synthesis, of which eleven studies met the inclusion criteria. Overall, the evidence from the systematic review indicates that cash transfer programmes targeted at children effectively improve anthropometric and nutritional outcomes. Further research is needed to spell out the multiple pathways to how cash transfers improve children's nutritional outcomes. Moreover, this systematic review shows the importance of cash transfers in improving child nutrition. Policymakers should continue to employ institutional mechanisms to strengthen the nutritional status of children, especially the vulnerable ones since cash transfer intervention is a temporary measure.

**Keywords:** Africa, cash transfer, children, conditional cash transfer (CCT), nutritional outcomes, unconditional cash transfer (UCT).

**JEL Classification:** I14, I31, I38.

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## Introduction

Globally, over 200 million children between 0-5 years are not accomplishing their potential for socio-emotional development due to income poverty, poor health, and nutrition (Grantham-McGregor et al., 2007). Current evidence showed that at least more than 600 million children are affected by different dimensions of child poverty (Save the Children International and Africa Platform for Social Protection, 2017).

Poverty is an anomaly that affects all parts of the world (Ekezie et al., 2017). It comes in various forms such as hunger and malnutrition, engagement in precarious work, childhood marriages, death during infancy and limited

access to healthcare centres and education and other basic needs for human existence (Ekezie et al., 2017; Save the Children International and Africa Platform for Social Protection, 2017).

Poverty has substantial, adverse, and long-ranging effects on a child cognitive, motor, and social-emotional development (Walker et al., 2011). Most notably, in developing countries where poverty affects the most significant segments of the population (Walker et al., 2011). Studies have shown that children in Africa are severely affected by poverty. In the East and Southern Africa region, the report by Save the Children and Africa Platform for Social Protection shows that “66 children per 1000 live births die during infancy, 36% of children are malnourished, 27% of children are out of school.” (Save the Children International and Africa Platform for Social Protection, 2017:2). Also, the report reveals that “21% of girls (aged 15-19 years are currently married” (Save the Children International and Africa Platform for Social Protection, 2017:2).

Many governments have increasingly designed and implemented social protection schemes (de Groot et al., 2015; Ekezie et al., 2017; Fernald, Gertler, & Neufeld, 2008; Walque et al., 2017) to address child poverty and deprivation in developing countries. Commonly used social protection schemes to support their beneficiaries include social insurance (to reduce risks associated with old age, health, and unemployment) and social assistance (aims to transfer cash to vulnerable individuals) (Esenyel & Torun, 2015). By strengthening the resilience of vulnerable and poor households, social protection schemes can enhance the household’s capability to secure food and healthcare services (de Groot et al., 2015). Thus, social protection is perceived as a fundamental approach to stimulate progress in enhancing child health and nutrition (de Groot, Palermo et al., 2017; Ruel & Alderman, 2013). Among social protection schemes, cash transfer (C.T.) programmes are the most common poverty eradication strategies for fighting poverty and used by many developing countries (de Groot et al., 2015; Ekezie et al., 2017; Esenyel & Torun, 2015; Fernald et al., 2008; Walque et al., 2017), which are vital in ensuring appropriate healthcare and nutrition for children (de Groot et al., 2015, 2017).

African countries that have initiated C.T. programmes include Malawi, South Africa, Ethiopia, Ghana, Kenya, Zimbabwe, Zambia, and Lesotho (Transfer Project, 2019). Others are Egypt, Tunisia, Morocco, Botswana, Namibia, and a host of other countries in West Africa (UNICEF-ESARO/Transfer Project, 2015). These programmes aim at enhancing food security, health, nutritional and educational status, especially for children (Davis et al., 2012).

The core objective of this study is to systematically generate cash transfer programmes evidence for improving child’s nutritional status in sub-Saharan Africa. Thus, the research question implies, do cash transfer programmes help in improving child nutrition? While there is a pool of literature on the impact of cash transfer programmes in sub-Saharan Africa, a comprehensive review is missing from the literature, as most present studies focused on adults’ outcomes.

This study examines the interface between C.T. programmes and child health and nutritional status in selected sub-Saharan African countries. It also provides a synthesis of current evidence from the Endline Impact Evaluation Report and presents existing knowledge and gaps on C.T. programmes on children outcomes. The study draws on theory and systematic evidence to synthesise the heterogeneous impacts of C.T. programmes on children’s health outcomes in sub-Saharan Africa.

The remainder of this article is structured as follows. Section 2 describes the conceptual framework on how cash transfers might influence child health and nutritional status. Section 3 presents the methodology employed to assess the impact of cash transfer on children’s nutritional outcomes. Section 4 then presents the synthesis of the results of studies included in the review. Finally, Section 5 presents the conclusion.

## **Conceptual framework**

### **How cash transfers might influence child health and nutritional status**

Social protection mechanisms such as cash transfers are seen as a vital component of poverty reduction programmes and an attempt to decrease vulnerability to economic, social, natural, and diverse shocks and stresses (Sanfilippo et al., 2012). Cash transfers are then notably significant for children, considering their higher degrees

of vulnerability than adults and the role that cash transfers can play in providing enough nutrition and access to and utilising social services (Sanfilippo et al., 2012).

Several concepts for developing a conceptual framework have been used to hypothesise and design the pathways between C.T. programmes and child nutrition (de Groot et al., 2015, 2017). The most prominent approach is to initiate from the determinants of child nutrition and hypothesise the effects of a cash transfer programme on those determinants (de Groot et al., 2015, 2017). This approach is appropriate as it describes how C.T. can affect the root causes of child nutrition and thus helps shed light on the channels of impact (de Groot et al., 2015, 2017). Gaarder and colleagues presented a vital analysis of health conditional from eleven conditional cash transfer (C.C.T.) programmes (Gaarder et al., 2010).

De Groot and colleagues stipulated three significant pathways through which C.T. may influence the primary determinant of child nutrition by providing supplementary financial sources available in households for food security, health, and care. This study now summarises how these pathways may be influenced by C.T. using De Groot and colleagues' conceptualisation (de Groot et al., 2015, 2017).

✓ **Enhanced child nutrition through improved resources for food availability**

One of the aims of many C.T. programmes is to improve the food security situation among beneficiaries (Hjelm, 2016). Vulnerable people in developing countries usually face high degrees of food insecurity, affecting families living in poverty (Hjelm, 2016). Children are especially vulnerable to food insecurity, as nutritious food is vital for child development (Hjelm, 2016). C.T. programme increases family disposal income and, consequently, the resources available for family food security (de Groot et al., 2015, 2017). If families use the cash to buy nutritious food or invest in food production, family food security and diet diversity improve (de Groot et al., 2015, 2017). In Latin America, C.C.T. programmes have strong evidence of improving child health and nutritional status (Segura-Pérez et al., 2016). In sub-Saharan Africa, CT programmes have shown to be an efficient mechanism for increasing families' calorie intake (Burchi & Strupat, 2016). Nevertheless, de Groot and colleagues asserted that the presence of food, food prices and economic shocks could moderate these pathways (de Groot et al., 2015, 2017). Subsequently, improved family food security and diet diversity could influence the child's nutritional intake if food resources are distributed in a child-sensitive process in the household (de Groot et al., 2015, 2017).

✓ **Increased child nutrition through improved resources for health**

C.T. programmes can immediately affect the family level resources for health (de Groot et al., 2015, 2017). C.T. programmes give cash to vulnerable people, and they directly affect poverty reduction (Doetinchem et al., 2008). Beneficiaries can make their own decisions about how to spend the money. Likewise, it is supposed to positively impact beneficiaries' socioeconomic wellbeing, such as improving a household dwelling (Doetinchem et al., 2008). In C.C.T.s, the conditionality motivates vulnerable people to invest in their human capital to eradicate an inter-generational poverty cycle. Health is one of the most significant elements enabling future generations to overcome poverty (Doetinchem et al., 2008). Beneficiaries of C.T.s use part of the money on out-of-pocket (OOP) expenditures during curative or preventive healthcare utilisation, transportation to health centres, medication, and preventive medicines (de Groot et al., 2015, 2017; Doetinchem et al., 2008). The effective use of cash by the poor to increase resources for health is equivalent to an improved health environment for the child and improving people's health (de Groot et al., 2015, 2017; Doetinchem et al., 2008). Browne (2013) states that Gaarder et al. (2010) presented a practical interpretation of health C.C.T. of different programmes to support this hypothesis. They evaluated the basic assumption identified in programmes documentation and built their theory of change ToC from these (Browne, 2013). According to Browne (2013), the hypotheses in the ToC include:

- ❖ C.C.T. programmes lead to a rise in the uptake of preventive health services among vulnerable people who are presently underutilising these.
- ❖ An increase in access to healthcare services will improve health status, and particularly an increase in utilising public health services will have this effect.

- ❖ Money from social cash transfer programmes affects health basically by ensuring services accessibility and increased food consumption.
- ❖ Women in poor households have limited health knowledge, and that a transfer of information to them will generate behaviour changes.
- ❖ Enforcing conditions and observing compliance are significant to increase uptake of services to the needed level.
- ❖ Some programmes have accepted that the conditionalities are insufficient to ensure adequate child nutritional investment and have included a food supplement.
- ✓ **Improved child nutrition through increased resources for care**

Studies have shown that C.T. targeted at women can impact intra-household dynamics (IFPRI, LSHTM, & W.F.P., 2014). If the cash is given to the primary caregiver, she can better advocate for her choices because she can control more resources (de Groot et al., 2015, 2017). Economic models of family bargaining hypothesise that control of resources influences bargaining through peoples' threat points and outside options (de Groot et al., 2015, 2017). In these models, the management of resources creates external opportunities and threat points more reliable (de Groot et al., 2015, 2017). It, therefore, influences peoples' ability to apply their choices (de Groot et al., 2015, 2017). Evidence has shown that transfer beneficiaries experience considerable increases in psychological wellbeing, and various types of transfer lead to reductions in levels of the stress hormone cortisol (Haushofer & Shapiro, 2013). Thus, CT can significantly impact caregivers' psychological wellbeing, resulting in more positive parenting towards children (de Groot et al., 2015, 2017). Also, stress, the individualised reaction to demanding situations, is correlated with an increased risk for intimate partner violence (IPV) (Cano & Vivian, 2001; Capaldi et al., 2012; Mason & Smithey, 2012; Roberts et al., 2011; Schwab-Reese, Peek-Asa et al., 2016). Parental stress can affect child outcomes. A total decrease in family stress level may also impact caregiver behaviour and precisely influence child health. Additionally, CT can offer mintage incentives for expectant mothers to engage in precarious work, which has implications for birth outcomes; following increases resources for care, care for mothers and children may improve.

## **Methodology**

### ***Criteria for considering studies for this review***

#### Types of studies

This study uses the EPOC (EPOC, 2017a) inclusion criteria to determine the study designs are vital for evaluating the impact of C.T. programmes on young children's nutritional outcomes. The following study designs were eligible for this study:

- Randomised controlled trials (R.C.T.s) and cluster-randomised controlled trials (C-RCTs),
- Quasi-experimental;
- Mixed methods;
- Quantitative analysis.

#### *Types of participants*

This impact evaluation aims to systematically assess the effects of C.C.T. and U.C.T. programmes on children's nutritional outcomes. I restricted the study population to children between the ages of 0-18 years old living in poor households in sub-Sahara Africa as defined by the World Bank (World Bank, 2019).

### *Types of interventions*

This study considered relevant articles that evaluated the impacts of cash transfers on different children's nutritional outcomes. For cash transfer interventions to be included in this study, they had to meet the following criteria:

- the transfers had to be conditional or unconditional;
- regularly provided (monthly, once in two months, quarterly);
- provided to reduce poverty, increasing access to health services, food security and education;
- transfer to beneficiaries through electronic means, face to face or any other convenient means;
- transfer to households with orphans or vulnerable children;
- must be a non-contributory cash transfer;
- help prevent acute malnutrition in young children.

### *Outcome measures*

The outcomes included in this study in terms of nutritional outcomes ensure comparability with the systematic review of the impact of cash transfers on nutritional outcomes in low-and-middle-income countries (Pega et al., 2017). Nutritional outcomes, including but not limited to:

- mid-upper arm circumference;
- weight-for-height;
- height-for-age;
- food consumption;
- diet diversity;
- underweight;
- stunted.

### *Search methods for identification of studies*

#### Electronic searches

I carried out the initial searches to identify studies for this systematic review as part of a holistic review of the role of both C.C.T.s and U.C.T.s in improving child nutritional status. The searches for relevant studies were conducted in different databases to determine their eligibility. I used different search terms to search for the studies initially selected for the systematic review. The search terms included, but not limited to:

- vulnerability;
- children;
- poor household;
- food security;
- food nutrient.

To avoid selection bias, I carried out comprehensive and rigorous searches for relevant studies in the academic (Pubmed, MEDLINE., Scopus) and grey literature (African Health Journals, African Journals Online, Google Scholar) databases.

## ***Data collection and analysis***

### **Selection of studies**

The searches for relevant studies were conducted on academic and grey literature databases and the websites of major international organisations that are stakeholders and actors in international development. Additional searches were conducted on past reviews, books and reference lists of the included studies.

I screened the titles and abstracts of studies initially identified from the searches conducted from the resources mentioned above for relevance. Through this process, irrelevant studies were eliminated with the retaining of others for further screening. For studies to meet the inclusion criteria of this systematic review, I screened the full text of studies retained to identify their eligibility. It was through the screening of the full text of relevant studies that duplicates were removed.

### **Data extraction and management**

I extracted data from each included study with EPOC data collection form (EPOC, 2017b). The data collection form is meant for intervention review, and it is for studies with randomised trials and non-randomised trials. I extracted the following information from the included studies using the EPOC data collection form:

- study citation (including author(s)' name and date of publication);
- year and duration of the study (impact evaluation of cash transfers on children's outcomes);
- ages of study participants;
- characteristics of interventions (amount of the transfer, conditionality, purpose of transfer);
- a sample size of treatment group;
- a sample size of the control group;
- type of study (randomised trials, non-randomised trials or mixed methods);
- study setting (country and geographical location);
- methods of impact estimation (multilevel logistic regression models, propensity score matching);
- outcomes measured.

### ***Assessment of the risk of bias in the included studies***

There are different assessment tools for assessing the quality of relevant studies in a systematic review. However, I opted for the Mixed Methods Appraisal Tool (MMAT) Version 2018 to evaluate the methodological quality for studies included in this systematic review (Hong et al., 2018). The reason for using MMAT is that "it permits to appraise the methodological quality of five categories of studies: qualitative research, randomised controlled trials, non-randomised studies, quantitative descriptive studies, and mixed methods studies" (Hong et al., 2018:1). Most of the included studies in this systematic review fell within the five categories of the study types mentioned above. To assess the risk of bias of the included studies, I applied the MMAT tool in each category of study types under review. I reported the risk of bias of individual studies at the methodological level. I judged each potential study source of bias as high, moderate, and low.

### ***Data synthesis***

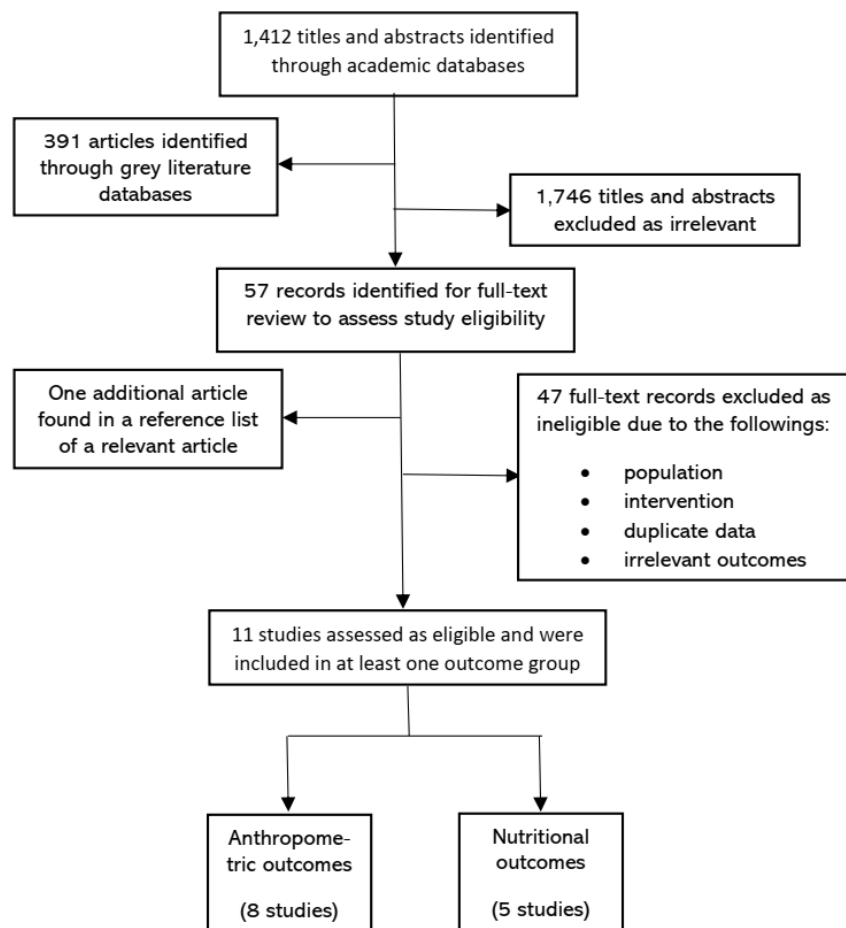
Owing to the heterogeneity in the designs, interventions, sample size and outcomes mentioned in the included studies, it was not feasible to statistically combine the results of the studies. Instead, I used narrative synthesis to present the estimated effects of C.T.s programmes on children's health and nutritional outcomes. Before using narrative synthesis to present the results from the included studies, I initially used manual coding to identify salient information. The second round of coding was used to identify categories and themes. I used the final coding stage to identify similarities and differences of themes, and I presented the coded information in text and tables.



## Results

### Study selection

Figure 1 presents a flowchart of the study selection process. The systematic search for relevant studies initially identified 3,803 articles through electronic databases, websites, and reference lists of the included studies. Among the identified studies, a total of 11 studies met the inclusion criteria for the systematic review.



**Figure 1. Flowchart of study selection**

Source: Author's design from included studies.

The initial searches for relevant articles on academic databases produced 1,412 titles. To complete the search criteria for the systematic review, this study conducted searches on grey literature databases and the websites of prominent organisations that are stakeholders in international development. Through these searches, the study identified an additional 391 articles. During the screening of the titles and abstracts of these identified studies, I excluded 1,746 articles because they did not meet the study's inclusion criteria.

The remaining 57 articles were screened for full-text review to determine their eligibility. One relevant study (Tonguet-Papucci et al., 2017), was identified from the reference lists of one of the 57 articles bringing the total articles for full-text screening to 58 articles. Of the 58 articles, 47 were considered ineligible and excluded because of some reasons ranging from population, intervention, duplicate data and irrelevant outcomes.

A total of 11 studies were assessed as eligible and were included in the study (Abdoulayi et al., 2016; Agüero et al., 2007; Angeles et al., 2017; Evans et al., 2014; F.A.O. & UNICEF, 2018; Gilligan et al., 2013; Grellety et al., 2017; Grijalva-Eternod et al., 2018; Handa et al., 2014; Hougbe et al., 2017; Tonguet-Papucci et al., 2017). The

outcomes measured by these studies were grouped into (i) anthropometric and (ii) nutrition. While some studies measured one outcome, others measured two or more outcomes.

### Included studies

The description of the characteristics of the included studies is on Table 3. However, more detailed descriptions of the main features of the included studies are discussed below.

Table 1. Characteristics of included studies

Author Year	Country	Year and Duration of Study	Age	Treatment	Treatment Group Sample size	Control Group Sample size	Design of Impact Evaluation	Method of Impact Estimation	Outcomes Measured <sup>a</sup>
Abdoulayi et al. 2016	Malawi	2013 (2 years)	0-17y	UCT	1,678 households from 14 village clusters	1,853 households from 15 village cluster	Mixed methods	Longitudinal, experimental study design	A, N
Agüero et al. 2007	South Africa	Not stated	36 months	UCT	245 children	1,361 children	Quantitative descriptive	Generalised propensity score	A
Angeles et al. 2017	Ghana	2010 (6 years)	0-17y	UCT	699 households	914 households	Non-randomised	Propensity score matching (P.S.M.), Difference in differences (D.I.D.)	N
Evans et al. 2014	Tanzania	2009 (3 years)	0-5y 7-15y	CCT	40 villages	40 villages	Mixed methods	DID	A
FAO & UNICEF 2018	Lesotho	2016 (2 years)	0-17y	UCT	15,671 households, 86,203 individuals	Not stated	Quasi-experimental	PSM, DID, regression discontinuity	A
Gilligan et al. 2013	Uganda	2010 (2years)	3-5y	U.C.T.	1,398 children	1,380 children	RCT	DID	A
Grellety et al. 2017	DR Congo	6 months	6 -59 month	UCT	743 children	747 children	Cluster-randomized controlled trial	Poisson regression model	A
Grijalva-Eternod et al. 2018	Somalia	6 months	6-69 months	UCT	120 households, 1,490 children	120 households, 847 children	Non-randomised cluster trial	D.I.D.	N
Handa et al. 2014	Zambia	2010 (2 years)	< 5 years	UCT	1,257 households	1,257 households	Cluster-randomized controlled trial	DID	A, N
Houngbe et al. 2017	Burkina Faso	24 months	< 36 months	UCT	620 children	630 children	Cluster-randomized controlled trial	Poisson regression model	A
Tonguet-Papucci et al. 2017	Burkina Faso	2013 (1 year)	14-27 months	U.C.T.	16 villages, 160 children	16 villages, 162 children	Cluster-randomized controlled trial	Mixed linear, logistic, and Poisson regression models	N

Note: <sup>a</sup> Anthropometric (A), Nutrition (N).

### Types of study designs

Of the eleven studies included in this systematic review, four were cluster-RCTs (Grellety et al., 2017; Handa et al., 2014; Houngbe et al., 2017; Tonguet-Papucci et al., 2017), and two were R.C.T.s (Evans et al., 2014; Gilligan et al., 2013). One included study used a mixed-methods approach to evaluate the impact of C.T.s on child nutritional outcomes (Abdoulayi et al., 2016). One study used quasi-experimental (F.A.O. & UNICEF, 2018).



Two studies used a quantitative non-randomised approach (Agüero et al., 2007; Angeles et al., 2017). One included study used a non-randomised cluster trial (Grijalva-Eternod et al., 2018).

### Participants

The included studies involved 136,022 participants in their analyses of the impacts of C.T. programmes on children’s health and nutritional outcomes. The included studies participants include 36,234 households, 9,783 children, 239 villages, and 89,766 others consisted of political wards (120) mother and child living pairs (3,443) and individuals 86,203. (Figure 6).

### Interventions

In all the studies, the interventions were targeted at poor households with children, except in South Africa, where the intervention was targeted at the KwaZulu-Natal which was not the poorest province in South Africa but was considered to have the highest incidence of deprivation in terms of access to social services and perceived wellbeing (Agüero et al., 2007). This systematic review included one C.C.T. and 10 U.C.T.s. The main characteristics of the C.C.T. and U.C.T. interventions are detailed in Table 2. National governments operated most of the C.T. interventions included in this systematic review except for the interventions in Uganda and Somalia. The beneficiaries of the interventions were poor households with children, while the main objectives of the interventions were to reduce household poverty and enhance children’s nutritional status. Different mechanisms were used to transfer the cash to their beneficiaries. Among these were face-to-face direct cash payment, bank transfer, pay point, mobile money transfer and electronic transfer of funds to cards. The U.C.T.s were without any primary conditionalities attached to them, while the only C.C.T. had conditions attached to it. The main conditions attached to the C.C.T. were health clinic attendance and children must go to school. One unique aspect of the C.T.s was in Uganda, where C.T. was primarily meant to be C.T.s for a child’s early childhood development (ECD) centres. However, the conditionality attached to the intervention was removed because of some irregularities observed in the implementation process (Gilligan et al., 2013).

Table 2. Detailed information about C.C.T. and U.C.T. programmes in each country

Author Year	Country	Name (Intervention)	Beneficiaries	Why	What (Materials)	Who provided	How	How much (monthly benefit US\$)	Requirements
Abdoulayi et al. 2016	Malawi	Mtukula Pakhomo Social Cash Transfer Programme (SCTP)	Poor households	To reduce poverty and food insecurity	Cash incentive	Government of Malawi	Transfer	\$2.3-\$5	NA
Agüero et al. 2007	South Africa	Child Support Grant (C.S.G.)	Poor children	To increase the nutrition of poor households with children	Cash incentive	Government of South Africa	Transfer	\$25	NA
Angeles et al. 2017	Ghana	Livelihood Empowerment Against Poverty (LEAP) Programme	Impoverished households	To reduce short-term poverty and enhance long-term human capital development	Cash incentive	Government of Ghana	Direct cash payment	\$7-\$12	NA
Evans et al. 2014	Tanzania	Community-based Conditional Cash Transfers (CB-CCT)	Poorest and most vulnerable districts	To reduce poverty and enhance livelihood	Cash	Government of Tanzania	Transfer to bank accounts	\$12-\$36 every two months	Conditioned that children go to school and both children the elderly visit health centres

Table 2 (cont.). Detailed information about C.C.T. and U.C.T. programmes in each country

Author Year	Country	Name (Intervention)	Beneficiaries	Why	What (Materials)	Who provided	How	How much (monthly benefit US\$)	Requirements
F.A.O. & UNICEF 2018	Lesotho	Child Grant Programme (C.G.P.)	Poor and vulnerable households with children	To improve the living standard of orphans and vulnerable children (OVC)	Cash	Government of Lesotho	Pay point, mobile payment and bank transfer	\$24-\$51 quarterly payments	NA
xGilligan et al. 2013	Uganda	Cash and food transfers	Households with children	To improve food security and enhance child development	Cash and food	W.F.P.	Electronic transfer of funds to cards	\$12 distributed in 6-week cycles	Conditionality was removed
Grellety et al. 2017	DR Congo	Infant and Young Child Feeding (IYCF) with Cash Transfers	Very poor households	To improve acute malnutrition	Cash supplement	Not stated	Face-to-face at health centres	\$40	NA
Grijalva-Eternod et al. 2018	Somalia	Cash-based Intervention (C.B.I.)	Women with children	To improve acute malnutrition	Cash	Concern Worldwide	Mobile money transfer	\$84	NA
Handa et al. 2014	Zambia	Child Grant Programme (C.G.P.)	Families with small children in poor districts	To reduce extreme poverty	Cash	Government of Zambia	Transfer	\$12	NA
Houngbe et al. 2017	Burkina Faso	Multiannual Seasonal Cash Transfer	Children	To reduce the occurrence of malnutrition	Cash	ECHO	Mobile phone transfer	\$17	NA
Tonguet-Papucci et al. 2017	Burkina Faso	Multiannual Seasonal Cash Transfer	Children	To prevent acute malnutrition	Cash	European Commission funds	Mobile money transfer	\$17	N.A.

Note: N.A. means not applicable.

### Methodological quality of included studies

Table 3 shows the details of the possibility of each type of bias in individual study. I used the MMAT risk of bias tool prepared by (Hong et al., 2018) to assess the methodological quality of each study included in the systematic review. From the assessment, I considered the overall risk of bias in this study to be moderate. The majority of the included studies were cluster-RCTs and R.C.T.s whose designs were used to assess the effects of C.T. programmes on children's nutritional outcomes. All the studies in the cluster-RCTs and R.C.T.s category have straightforward research questions, and the data collected by these studies were able to answer their research questions. Aside from one study, Houngbe et al. (2017), the rest of the studies demonstrated how they performed their randomisation to a reasonable level. The randomisation in most of the studies was done at the household, village, and individual levels. All randomised controlled trials provided a baseline. None of the randomised controlled trials gave required details on assessors blinded to the intervention provided. One study did not explain whether study participants adhere to the assigned intervention (Gilligan et al., 2013). One study in the mixed methods category presented minor limitations. It was considered to be presenting a moderate risk of bias (Abdoulayi et al., 2016). The study domains of shortcomings were in columns 8 and 9 in Table 3. Three of the four studies in the quantitative non-randomised category were of moderate risk of bias except for one study with a low risk of bias (Grijalva-Eternod et al., 2018). Only two studies accounted for confounders in their designs and analyses (Agüero et al., 2007; Grijalva-Eternod et al., 2018). While most of the studies in the quantitative non-

randomised category conducted their impact evaluations during the administering of the interventions, one study used previously collated data to estimate the effects of cash transfers on children’s outcomes (Agüero et al., 2007).

Table 3. Results of risk of bias assessment using the MMAT risk of bias tool for cluster-RCTs and R.C.T.s, mixed methods non-randomised studies

Cluster-RCTs and R.C.T.s										
First author	Year	Are there clear research questions?	Do collected data allow to address research questions?	Is randomisation appropriately performed?	Are the groups comparable at baseline?	Are there complete outcome data?	Are outcome assessors blinded to the intervention provided?	Did the participants adhere to assigned intervention?	To total score (out of 7)	Overall: limitations
Evans	2014	Yes	Yes	Yes	Yes	Yes	No	Yes	6	Moderate risk
Gilligan	2013	Yes	Yes	Yes	Yes	Yes	Can't tell	Can't tell	5	Moderate risk
Grellety	2017	Yes	Yes	Yes	Yes	Yes	No	Yes	7	Moderate risk
Handa	2014	Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	6	Moderate risk
Houngbe	2017	Yes	Yes	Can't tell	Yes	Yes	Can't tell	Yes	5	Moderate risk
Tonguet	2017	Yes	Yes	Yes	Yes	Yes	No	Yes	6	Moderate risk
Mixed methods										
First author	Year	Are there clear research questions?	Do the collected data allow to address the research questions?	Is there any adequate rationale for using a mixed methods design to address the research question?	Are the different components of the study effectively integrated to answer the research question?	Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?	To total score (out of 7)	Overall: limitations

Table 3 (cont.). Results of risk of bias assessment using the MMAT risk of bias tool for cluster-RCTs and R.C.T.s, mixed methods non-randomised studies

Cluster-RCTs and R.C.T.s										
Abdoulayi	2016	Yes	Yes	Yes	Yes	Yes	Can't tell	Can't tell	5	Moderate risk
Quantitative non-randomised										
7	Year	Are there clear research questions?	Do collected data allow to address the research questions?	Are the participants representative of the target population?	Are measurements appropriate regarding both the outcome and intervention (or exposure)?	Are there complete outcome data?	Are the confounders accounted for in the design and analysis?	During the study period, is the intervention administered (or exposure occurred) as intended?	To total score (out of 7)	Overall: limitations
Agliero	2007	Yes	Yes	Yes	Yes	Yes	Yes	No	6	Moderate risk
Angeles	2017	Yes	Yes	Yes	Yes	Yes	No	Yes	6	Moderate risk
F.A.O.	2018	Yes	Yes	Yes	Yes	Yes	No	Yes	6	Moderate risk
Grijalva	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Low risk

**Key**

Yes = assessed as “low risk” of bias

No = assessed as “high risk” of bias

Cannot tell = assessed as “unclear risk” of bias

Risk of bias	Quality score	Interpretation	Overall assessment within a study
Low risk of bias	7	Possible bias unlikely to seriously affect the results	Low risk of bias for all main domains
Moderate risk of bias	5-6	The possible bias that raises some doubts the results	Possible risk of bias for one or more main domains
High risk of bias	0-4	The possible bias that seriously weakens the confidence in the results	High of bias for two or more main domains

Source: An assessment tool developed by (Hong et al., 2018).

## **Impact of cash transfers on anthropometric outcomes**

### *Height-for-age (stunting)*

Six studies (two cluster-RCTs, two mixed methods and one each of R.C.T. and quantitative descriptive study) assessed the effects of five U.C.T. programmes and one C.C.T. programme on children's height, and the results showed no programme effect across countries except in South Africa (Abdoulayi et al., 2016; Agüero et al., 2007; Evans et al., 2014; Gilligan et al., 2013; Grellety et al., 2017; Hougbe et al., 2017). (Table 4). In Burkina Faso, there was no change between the treatment and control groups over the 24 months follow-up. The odds of stunting in the two groups at the end of the U.C.T. programme were similar (Hougbe et al., 2017). In DR Congo, the cash transfer intervention did not positively affect child height gain because there was no catch-up in H.A.Z. for both treatment and control groups (Grellety et al., 2017). Children remained stunted during the impact evaluation (Grellety et al., 2017). Still on a negative note, in Malawi, despite 49% of the treated sample being stunted at baseline, there were no overall impacts of the U.C.T. programme on the prevalence of stunting. The evaluators also did not find any impact amongst the subgroups (Abdoulayi et al., 2016). In South Africa, the impact of C.S.G. on H.A.Z. was positive when the treatment began at the youngest age. However, the value of the effect decreased with the age of initial treatment (Agüero et al., 2007). When treatment was given to children at the age of two, the impact was still positive but no longer statistically significant. The study found no positive effect when the intervention was less than 20% of the nutritional window but found positive gains when the treatment covered approximately two-thirds of the nutritional windows (Agüero et al., 2007). In Tanzania, the study calculated the anthropometric z-score with 2006 WHO child growth standards (Evans et al., 2014). The findings from the impact evaluation showed that the C.C.T. programme had no statistically significant effect on H.A.Z. (Evans et al., 2014). The programme in Uganda used both food and cash transfers to support vulnerable children in the area of malnutrition (Gilligan et al., 2013). Findings from the R.C.T. analysis showed that both the food and cash transfers did not reduce the prevalence of stunting among children of various age groups (Gilligan et al., 2013).

### *Weight-for-height (wasting)*

Seven studies from Burkina Faso, DR Congo, Lesotho, Malawi, Tanzania, Uganda and Zambia used cluster-RCTs, quasi-experimental, R.C.T. and mixed methods approaches to assess the effects of C.C.T. and U.C.T. programmes on W.H.Z. or wasting (Table 4). The evidence from these studies was mixed, with studies from DR Congo, Lesotho, Malawi and Zambia showing positive effects of U.C.T.s on child wasting. On the contrary, the effects of C.C.T. and U.C.T.s on child wasting in Tanzania, Burkina Faso and Uganda were of no effect. In the study in DR Congo, the W.H.Z. mid-upper arm circumference for age Z-score (MAUCZ-age and mid-upper arm circumference for height Z-score (MUACZ-ht) changes were significantly higher than zero for the treatment group compared to the control group's changes in Z-score that were not positive (Grellety et al., 2017). In Lesotho, the C.G.P. improved the nutritional status of children in the treatment households, particularly concerning moderate and severe wasting (F.A.O. & UNICEF, 2018). The Malawi SCTP Endline Impact Evaluation Report showed that the intervention decreased the prevalence of wasting in treatment households with children (Abdoulayi et al., 2016). Younger children felt the impact more, but the study called for caution in the interpretation of the result due to the low prevalence of wasting at baseline among all children (F.A.O. & UNICEF, 2018). The result of Zambia programme showed that C.G.P. improved child weight-for-height (Handa et al., 2014). The multiannual seasonal U.C.T. programme in Burkina Faso showed no difference in the incidence of wasting among the treatment group and control group (Hougbe et al., 2017). The results from the R.C.T. on C.C.T. in Tanzania revealed that there was no significant effect of the community cash programme on wasting and body mass index (B.M.I.)-for-age (Evans et al., 2014). Uganda's study also showed that both the food and cash transfer interventions did not reduce the prevalence of wasting among beneficiary children in sub-groups (Gilligan et al., 2013).

### *Weight-for-age (underweight)*

Six studies investigated the effects of C.C.T. and U.C.T.s on W.A.Z. or the prevalence of underweight. Studies from Malawi (Abdoulayi et al., 2016), Tanzania (Evans et al., 2014) and Uganda (Gilligan et al., 2013) found no impact on W.A.Z. However, the U.C.T. in DR Congo that was meant to treat severe acute malnutrition (S.A.M.)

showed a positive effect as the cash-intervention group continued to have higher weight (Grellety et al., 2017). Similarly, Lesotho's U.C.T. programme improved children's nutritional status, particularly to a lesser extent, moderate and severe W.H.Z. (F.A.O. & UNICEF, 2018). The result of the programme in Zambia showed that C.G.P. improved child weight-for-age (Handa et al., 2014) (Table 4).

Table 4. Impact of C.C.T. and U.C.T. programmes on children's anthropometric outcomes

	Country	Age group	Treatment	Stunting	Wasting	Underweight
Abdoulayi et al. 2016	Malawi	6-59 months	U.C.T.	At baseline, the overall treatment children mean on H.A.Z. was -1.89 with around half of the children being stunted, and the intervention did not reduce the prevalence of stunting.	U.C.T. reduced wasting in children in treatment households by three percentage points (pp). U.C.T. reduced the incidence of wasting by nine pp (p=0.05), three pp (p=0.05) and 6 pp (p=0.05) in female-headed households and male children, respectively. The programme increased W.H.Z. for children in male-headed households by 0.49 points (p=0.05).	At baseline, the average W.A.Z. for treatment children was -0.97, and by endline the children were marginally worse off in terms overall means.
Agüero et al. 2007	South Africa	36 months		The utmost estimated H.A.Z. increase was higher, approximately 0.45 for children who began treatment earlier in life.		
Evans et al. 2014	Tanzania	0-4 years	C.C.T.	No programme impact at endline.	No programme impact at endline.	No programme impact at midline
FAO & UNICEF 2018	Lesotho	< 60 months	UCT		The programme improved nutrition with moderate and severe wasting by 1% and 5%, respectively (Significant levels).	The programme improved nutrition with moderate and severe underweight by 1% and 1%, respectively (Significant levels).
Gilligan et al. 2013	Uganda	5-6 years, 36-53 months, 0.5-2 years	U.C.T., food	Food and cash interventions did not reduce the prevalence of stunting. However, food intervention had 9.5 pp impact reduction in stunting over the cash intervention.	Cash and food intervention did not reduce the prevalence of wasting, but cash transfers led to a significant 5.2 pp reduction in severe wasting compared to food group.	No U.C.T. impact but severe underweight prevalence was 3.8% lower in the U.C.T. group than in the food group.
Grellety et al. 2017	DR Congo	6 -59 month	UCT	UCT did not improve linear growth.	After six months, 80% of the intervention children had regained their W.H.Z.	The W.A.Z. for cash transfer children was significantly greater than zero.
Handa et al. 2014	Zambia	< 5 years	UCT		C.G.P. improved child weight-for-height of around 0.12 standard deviations.	C.G.P. improved child weight-for-age of about 0.12 standard deviations.
Houngbe et al. 2017	Burkina Faso	< 36 months	UCT	The mean change in stunting was comparable (p=0.78) in both the treatment and control groups. The odds of stunting at the end of the programme in both groups (OR: 0.73, 95%CI: 0.47, 1.14; p=0.17) was similar.	The study discovered similarity in the incidence of wasting episodes in the treatment and control groups (incidence rate ratio: 0.92, 95% CI: 0.64, 1.32; p=0.66).	

Source: Author's compilation from included studies.



## Impact of cash transfers on nutritional outcomes

Six studies reported the estimates of the effects of U.C.T. programmes on child nutritional or related outcomes. In Burkina Faso, an evaluation of the seasonal U.C.T. programme on high-nutritional-value foods in young Burkinabe children showed positive results (Tonguet-Papucci et al., 2017). The mixed-effects Poisson regression models used to analyse differences in the dietary diversity scores (D.D.S.s) and the quantity of food taken a day revealed that the seasonal U.C.T. programme improved the diet of children aged 14-27 months. The results of the impact evaluation showed that the cash allowed large numbers of the treatment children to consume milk and dairy products (25% against 7.41%;  $P = 0.007$ ), flesh foods (26% against 14.8%;  $P = 0.01$ ), and egg (31.3% against 11.1%;  $P = 0.003$ ) compared with the control children (Tonguet-Papucci et al., 2017). In terms of energy and nutrient intake, the impact evaluation did not significantly affect the intake of solid, semisolid, and soft foods given to the treated and controlled children. Nevertheless, the study found that treated children consumed more fat ( $P < 0.01$ ) than the controlled group and could consume more protein ( $P = 0.06$ ). Children who were the beneficiaries of the seasonal U.C.T.s consumed more energy from fats ( $P < 0.01$ ) and fewer carbohydrates ( $P < 0.01$ ) than the non-beneficiary children (Tonguet-Papucci et al., 2017). Additionally, treated children had significantly higher consumption of vitamin B-12 ( $P < 0.001$ ), riboflavin ( $P < 0.05$ ), and vitamin E ( $P < 0.05$ ) than controlled children (Tonguet-Papucci et al., 2017).

Results from the DR Congo study showed that there was a significant increase in Households Dietary Diversity Scores (HDDSs), Food Consumption Scores (F.C.S.s) and Dietary Diversity Scores (D.D.S.s) in both treatment and control children (Grellety et al., 2017). However, the increment in the treatment children was very much higher than the control children. The increase measured to between 2.6 times for the index child's dietary diversity to 5.2 times the control children value for the D.D.S. (Grellety et al., 2017). In Malawi, the estimated effect of the SCTP on children's nutritional outcomes showed a negative impact (Abdoulayi et al., 2016). The study's findings revealed that only 4% of the children in treatment households took part in a nutrition programme at baseline (Abdoulayi et al., 2016). This declined to 3% at endline compared to an increase of 5% among children in control households (Abdoulayi et al., 2016).

The cash-based intervention in Somalia implemented to prevent acute malnutrition in children displaced by armed conflict showed mixed results (Grijalva-Eternod et al., 2018). The study's findings revealed that the cash intervention had a significant increase in child D.D.S. of 0.53 (95% CI 0.01; 1.05). In terms of acute malnutrition, the incidence of acute malnutrition was lowered in beneficiary children, but the effect was not significant. Overall, the study found that food security and children's dietary diversity significantly improved in cash transfers. However, the improvements did not correlate positively with the increase in children's nutritional status or with a declined risk of developing acute malnutrition (Grijalva-Eternod et al., 2018).

Using R.C.T. and D.I.D. model applied to survey instruments in Uganda, Gilligan et al. (2013) reported that the U.C.T. programme led to significant gains for the children aged 1-7 in the frequency of consumption of starches, meat and eggs and dairy. The magnitude of these effects was large, representing 66% gains in the incidence of meat and egg consumption and a 100% gain in the frequency of dairy consumption (Gilligan et al., 2013). On whether the U.C.T. impacted child anemia, the study's findings showed that U.C.T. led to weakly significant reductions in the prevalence of anemia and the prevalence of moderate/severe anemia among aged 54-83 months at endline. The impacts on the incidence of any anemia were similar across children aged 54-71 months and children aged 72-83 months at endline — a decrease of around ten percentage points (Gilligan et al., 2013). The impacts of U.C.T. on the prevalence of moderate/severe anemia appeared focused on children aged 54-71 months at endline. A decrease of approximately ten percentage points, cash had minor impacts on the prevalence of moderate/severe among children aged 72-83 months at endline (Gilligan et al., 2013). In Zambia, the study that used R.C.T. with data from households to evaluate the C.G.P. showed that the intervention had a substantial and statistically significant impact on Infant and Young Child Feeding (IYCF), a gain of 22 percentage points (Handa et al., 2014).

## Conclusion

Eleven studies were included in this systematic review. The majority of the studies used cluster-RCTs, R.C.T.s, quasi-experimental and mixed methods design. The main findings of this study were of two domains which are anthropometric and nutritional outcomes.

Six studies reported the effects of five U.C.T. programmes and one C.C.T. programme on child height. The results showed no programme effect across countries except in South Africa, where the utmost estimated H.A.Z. increase was higher, approximately 0.45 for children who began treatment earlier in life. The evidence of seven studies' assessments of C.T. programmes on child wasting was mixed. Studies from DR Congo, Lesotho, Malawi, and Zambia showed positive effects of U.C.T.s on child wasting, while studies from Burkina Faso, Tanzania and Uganda showed no programme effects. In terms of underweight, three studies showed a positive impact on children's underweight and three other studies did not find any positive impact.

Five studies reported an estimate of the effect of U.C.T. programmes on child nutritional or related outcomes. The results were positive, negative, and of no effect with the positive effects overshadowing the negative and no effect outcomes. This study found that four U.C.T. programmes and one C.C.T. programme did not have any programme effect on children stunting. Nevertheless, one U.C.T. programme showed a positive impact on children stunting. However, when these children were two-year-old and given the treatment, the effect was still positive but no longer statistically significant (Agüero et al., 2007). Few studies showed mixed results of cash transfer interventions on child's wasting and underweight.

Cash transfers support vulnerable households on food security (de Groot et al., 2015, 2017). Through the consumption of quality food, children can improve their health and nutritional status (de Groot et al., 2015, 2017; Fernald et al., 2012; Leroy et al., 2009). Of the 11 included studies, five mentioned nutritional or related outcomes due to U.C.T. programmes. These programmes showed that the intervention led to consuming various diets by beneficiary's children (Abdoulayi et al., 2016). However, the cash did not influence children to participate in a nutrition programme in Malawi (Abdoulayi et al., 2016). The bulk of the included studies were typically well-conducted, with only one study having a high risk of bias (Houngbe et al., 2017) and one other study having a low risk of bias (Grijalva-Eternod et al., 2018) and the rest studies having a moderate risk of bias. From the author's judgement in Table 5, the quality of evidence of children's anthropometric outcomes is shallow, while that of the nutritional outcomes showed a moderate quality of evidence. The overall existing evidence presented in this study finds that C.T. programmes can improve children's anthropometric and nutritional outcomes.

Table 5. Summary of outcomes and quality of evidence using GRADE

<b>Cash transfer programmes effects on children health and nutritional outcomes</b>			
<b>Population:</b> Children (0-18) living in vulnerable households			
<b>Settings:</b> Sub-Saharan Africa			
<b>Intervention:</b> C.C.T.s (1), U.C.T.s (10) for reducing poverty and vulnerabilities			
<b>Comparison:</b> no C.C.T. or U.C.T.			
Outcomes	Relative effect	No of studies	Quality of the evidence (GRADE)
Children anthropometric outcomes	Only one study showed a positive effect on stunting. Mixed results were found in children's W.H.Z. (wasting) and W.A.Z. (underweight)	8	⊕⊕⊕⊕ Very low
Health outcomes	Six of the ten studies that looked at children's health showed positive outcomes. However, two studies showed adverse outcomes on children's morbidity.	10	⊕⊕⊕⊕ Low
Nutritional outcomes	C.T. increased in dietary diversity scores and food consumption. C.T. led to the reduction of malnutrition and anemia though the effects on anaemia were more pronounced in sub-groups.	6	⊕⊕⊕⊕ Moderate
Uptake of healthcare services	Mixed-effects on health-seeking behaviour and positive effects on birth certificates and health expenditures. No programme effect on vaccination.	12	⊕⊕⊕⊕ Moderate

Key

High ⊕⊕⊕⊕	The research presents a remarkably satisfactory indication of the possible effects. The possibility that the effect will be considerably different is low.
Moderate ⊕⊕⊕⊖	The research presents a remarkably satisfactory indication of the possible effects. The possibility that the effect will be considerably different is moderate.
Low ⊕⊕⊖⊖	The research presents a remarkably satisfactory indication of the possible effects. Nevertheless, the possibility that the effect will be considerably different is high.
Very low ⊕⊖⊖⊖	The research presents a remarkably satisfactory indication of the possible effects. However, the possibility that the effect will be considerably different is very high.

Note: considerably different = a large enough difference that it might affect a decision.

Source: GRADE working group grade of evidence (EPOC, 2017c).

This study identified some related reviews published between 2007 and 2018 (Awojobi, 2019; Ekezie et al., 2017; Fernald et al., 2012; Lagarde et al., 2009; Owusu-Addo et al., 2018; Pega et al., 2017; Walque et al., 2017). These reviews discussed various health, nutritional, and healthcare services in different geographical settings, primarily in low-and-middle-income countries.

Using a systematic review approach, Awojobi (2018) assessed the impact of C.T. programmes on children’s outcomes in developing countries. Of the seven studies included in Awojobi’s review, two studies found positive effects of cash transfer on child’s health and development (Macours et al., 2012; Millán et al., 2018).

The findings of this review further corroborate those of previous studies that C.T. programmes improve several children’s health and nutritional outcomes, including illness, stunting, wasting, underweight and healthcare-seeking behaviour (Fernald et al., 2012; Lagarde et al., 2009; Owusu-Addo et al., 2018; Pega et al., 2017; Walque et al., 2017).

To the best of my knowledge, this is the first systematic review that systematically assessed national governments, pilot interventions and humanitarian C.T. programmes on children’s nutritional outcomes in sub-Saharan Africa. According to the findings of this review, C.T. programmes have the potential of improving children’s nutritional status. Future experimental research is needed to support the current evidence of this study. The future studies should focus more on children in rural areas where poverty is more pronounced than the urban areas.

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