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Cash Transfer Programmes in low-income countries, understanding pathways to nutritional change – A realist review protocol

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Abstract

Introduction: Child malnutrition continues to be a significant global public health concern. Nutrition-related interventions have changed and diversified over the last two decades, with increasing emphasis on nutrition-sensitive programmes which address the underlying determinants of child malnutrition. Cash transfer programmes (CTPs) are used with increasing popularity in low-middle-income countries to improve both food/nutrition insecurity and resilience. Available studies have provided mixed findings on the outcomes of CTPs on child nutritional status. The purpose of this review is to understand how, why, for whom and in what circumstances CTPs can consistently and positively influence child nutritional status.

Methods and analysis: This realist review is informed by RAMSES guidelines and recent protocols for reviews in similar contextual environments. A five-step process is to be followed. To ensure rigour and validity we adopt accepted and validated analytic techniques. Early scoping of the literature and a conceptual framing exercise has identified potential contextual factors and underlying mechanisms, providing the basis for tentative preliminary theories expressed as a series of If/Then statements and context-mechanism-outcome configurations. The analysis will apply a realist logic to identify patterns and regularities/demi-regularities in these configurations until programme theory (s) are refined. A final literature search, quality appraisal and data extraction will be undertaken to further test the theory(s). Final steps involve analysis and synthesis, and dissemination of a preliminary theory. The various CMOs constructed through our analysis will inform research to be undertaken following this review, involving primary data collection and expert consultations to extend our review findings.

Ethics and dissemination: This stage of the study will not involve primary research; however, ethical clearance has been sought through the University of Queensland for the next steps of the research project. Findings will be presented in accordance with RAMESES guidelines and published in a peer-reviewed journal.

Keywords: nutrition-sensitive, cash-transfers, unconditional cash transfer, conditional cash transfer, nutrition insecurity, malnutrition, nutrition status, children, food insecurity, implementation, realist review

Article Summary

Strengths and Limitations of this study

- The use of realist review methods enables explicit examination of contextual factors and underpinning mechanisms to explain how various cash transfer programme (CTP) implementation structures, services and practices influence child nutritional status

- The review will provide a middle-range theory (MRT) and CMO configurations as a summary of current understandings that can be empirically tested through the collection and analysis of primary data
- The method includes a broad range of evidence from various data sources, including grey literature; while strengthening understandings of context it may also affect data quality
- The quality appraisal and data extraction stage of the review will adopt standard approaches to ensure rigour and validity
- Maintaining an audit trail throughout the review process will ensure decision-making is structured and reproduceable

Background

Poor nutrition in low-resource countries continues to be an underlying cause of at least one third of all child deaths and approximately twenty percent of maternal mortality annually[1]. Evidence suggests however, that sufficient and adequate nutrition during the first 1000 days of life (from conception to a child's second birthday) would increase longer-term resilience to economic shocks at the individual, household, community, and national levels [2]. Based on a review of the evidence and with a focus on low-income countries, UNICEF has identified numerous factors that contribute to poor child nutrition status, and has consolidated these in a conceptual framework of the determinants of child nutritional status [3]. UNICEF categorises these determinants into the basic (e.g. political and economic structures), underlying (e.g. household food security/health environment/care for mothers and children), and immediate (e.g. child's dietary intake and child's health status) [3]. As with other social determinants of health, addressing the determinants of child nutritional status therefore requires interventions targeting not only child health, but the structural, environmental and resource related causes (i.e. underlying and basic determinants), affecting child nutritional status.

Based on the UNICEF Framework, interventions to improve maternal and child nutrition are typically categorised as nutrition-sensitive or nutrition-specific. Nutrition-sensitive strategies aim to address the underlying and basic determinants of child nutritional status and can support nutrition-specific interventions, such as feeding programmes and typically target women of reproductive age, pregnant and lactating women and children under the age of five. This is because children under the age of five are the most vulnerable to malnutrition and associated morbidities, and the prevention of largely irreversible outcomes (i.e. failure to thrive/stunting) must be addressed in the first 1000 days of life. Nutrition-sensitive interventions include for example, agricultural programmes, infrastructure development, education, asset support and social protection initiatives [1]. To address the basic and underlying determinants of child nutritional status, increasingly, donors and governments have been using cash transfer programmes (CTPs), to alleviate chronic and acute food and nutrition insecurity in vulnerable populations, rather than food aid [4].

CTPs can be either conditional or unconditional. Examples of conditional cash transfers are incentives for school enrolment, immunisation programmes, childcare benefit schemes and unemployment benefits with job-seeking requirements [5]. This type of cash transfer is commonly used in more advanced economies. Unconditional cash transfers are those provided without conditions for recipients to meet certain behaviours, they can be offered through the provision of cash only or a package of assistance interventions, dependent on context. Examples include, monthly cash transfers during hunger gap periods to help households manage risk, continuous transfers to orphans and vulnerable households, or a combination of cash and in-kind assistance (e.g. food rations, if food availability in local markets is low). This form of cash transfer is more commonly employed in lower-middle-income countries, especially those with large rural populations, because of high rates of food insecurity and dependence on external support during periods of economic hardship (e.g. between harvest periods). For example, in Kenya, the Hunger Safety Net Programme (HSNP), provides unconditional cash transfers to pastoralist households in the North and East of the country during periods of low rainfall, to improve food security, reduce dependence on food aid and prevent the sale of assets.

The underlying theory of unconditional CTPs is that during periods of economic hardship, cash is provided in a timely manner (i.e. before the depletion of household assets and accumulation of debts), in sufficient quantities to meet essential household expenditures to facilitate positive, rather than negative, household risk management strategies. The underlying assumption of nutrition-sensitive CTPs is that by increasing household income, households will be able to

buy adequate quantities of food and of sufficient diversity, which in turn will benefit child nutrition and prevent both acute (e.g. wasting) and chronic (e.g. stunting) malnutrition. Improving nutritional outcomes through cash transfers however, is only one strategy and is usually complemented by other initiatives that aim to address the underlying and immediate determinants of child nutritional status [1 6-8]. For example, improving health services and health-seeking behaviours, increasing the capacity of primary health care workers to deliver nutrition education for caregivers, improving household agricultural productivity and work opportunities.

While the underlying pathways of how CTPs may affect child nutritional status in times of economic hardship are illustrated in frameworks such as those provided by the UNICEF Framework, as scholars such as Leroy et al [7], Black et al [1] and De Groot et al [6] observe, nutrition interventions such as CTPs are implemented in complex social systems with outcomes influenced by various contextual factors. Furthermore, while several studies have demonstrated CTPs can impact positively on food consumption, agricultural yields, and asset depletion [7 9-12], there is limited research that explains how, in what circumstances and over what timeframe, various CTP implementation structures, services and practices influence child nutritional status. The purpose of this review is to understand how, why, for whom, in what circumstances, in what respect and over what duration, CTPs can consistently and positively influence child nutritional status. Applying a realist logic of enquiry will facilitate our exploration and explanation of the avenues in which CTPs reach intended and unintended child nutrition outcomes.

The review and evidence synthesis outlined in this protocol is the first stage of a research project that employs a theory-driven realist approach [13]. The results of tentative theories developed in this review will be empirically tested in Kenya and Ethiopia (currently implementing large-scale CTPs). We have selected a realist approach because CTPs have been implemented in different ways and in different contexts and available studies have provided mixed findings on the outcomes of CTPs on child nutrition, suggesting context may play a key role in how and in what circumstances different causal mechanisms are triggered to generate nutritional outcomes. Furthermore, using a realist synthesis will allow us to use evidence from a broad range of data sources from international development, nutrition, food security and CTPs, providing novel insights into CTP programme development and implementation. This will allow us to develop tentative theories that can then be tested empirically to provide a deeper understanding of CTP implementation structures and practices.

Methods

Realist Review Methodology

The realist approach to synthesising evidence has become accepted as a rigorous alternative method to systematic reviews, where the intent is to understand causation. Other forms of systematic reviews were investigated (e.g. meta-analysis), however, while providing information on outcomes, other methods often fail to explain how or why programmes worked and do not easily account for the complexity found in real-world nutrition related CTPs [14].

Publication standards have been issued by the RAMESES (Realist and Meta-Narrative Evidence Synthesis: Evolving Standards) project, and realist reviews are utilised with greater frequency in complex intervention evaluations, particularly those related to human behaviour change outcomes, such as CTPs [15-19]. The approach is a theory-based approach to understanding 'what works for whom in what circumstances' and importantly, *why and in what context?* [13].

The realist approach as proposed by Pawson and Tilley [13], is based on a specific philosophical approach, that is, realism and more specifically, scientific realism, sitting somewhere between

positivism (the belief that knowledge must be scientifically tested with systematic mathematical or logical proof) and constructivism (the theory that knowledge is constructed by humans through their own experiences) [20 21]. The approach is based on the understanding that there is a social reality, but this is socially constructed. Outcomes (O) are generated by mechanism(s) (M) that are triggered within certain contexts (C). The mechanism(s) from a realist perspective (in socially contingent interventions) is usually hidden and is the reaction or response of people to resources introduced by the intervention within a certain context and can be enabling or disabling. Context relates to the setting in which the programme operates, including systems such as health, political, environmental, and social systems. The context can have several layers and can be separated into the outer and inner contexts of an intervention.

In a realist approach, the researcher seeks to understand interventions through the concept of generative causation that is hypothesised and tested through context-mechanism-configurations (CMOs) [22]. A key task for the researcher is to identify situations where interventions have had effective and/or ineffective implementation, achieving either planned or unplanned outcomes, and to examine the causes of these [23]. Typically, to achieve this differentiation, potential preliminary theory(s) (or candidate theory(s)) of the context, mechanisms and outcomes in which a programme is or will be implemented are generated throughout the review, to account for the processes of an intervention that lead to an outcome [24]. CMO configurations and potential theories are then analysed to inform the creation of protocols for data collection for the review and analysis. Realist evaluations typically use data from various sources, including qualitative, quantitative or mixed methods studies. An evidence-informed programme theory answering the realist question of what works, for whom, under what circumstances, is the result of the inquiry [13]. All phases of a realist inquiry are iterative, to allow for constant refinement of potential theories and CMOs. Developing and testing CMO configurations can help ensure external validity, by enabling a level of abstraction for the theory, or theories, that can be useful in other contexts.

A realist synthesis, which is synonymous with the realist review, applies a realist philosophy to collate findings from various studies that are related to either a single research questions or a collection of questions [25 26]. The steps of a realist review, as recommended by Pawson et al [22] are as follows: 1. Clarifying the scope of the review 2. Searching for evidence 3. Appraising primary studies and extracting data 4. Synthesising evidence and drawing conclusions 5. Disseminating, implementing and evaluating. All phases of a realist inquiry are iterative, to allow for constant refinement of potential theories and CMOs. Developing and testing CMO configurations can help ensure external validity, by enabling a level of abstraction for the theory, or theories, that can be useful in other contexts. Step 1 of the review has been completed, step 2 is currently in progress.

Protocol and Review Methods

The approach for this protocol has been informed by peer-reviewed realist review protocols published in the last ten years, RAMESES guidelines and the work of Ray Pawson [13 27-37]. We conducted a search of databases such as Medline, Scopus, and Google Scholar, using search terms including “realist review” and “protocol”. Our search yielded 68 records, of which 13 were found to be pertinent for our review. Relevant protocols were chosen based on similarities in programme contextual factors, such as national operating systems, multiple implementing agencies, multifaceted causal chains, and potential outcomes. These have informed the protocol below.

To ensure rigour and validity, we adopt accepted and validated analytic techniques. The use of these techniques will allow us to compare and consolidate key multidisciplinary

implementation attributes and their relationships [27]. We used the PRISMA-P checklist when writing our report[38].

Review objectives

To understand the relationships between cash transfer programmes and child nutritional status the objectives of our review are to:

1) identify the underlying programme theory (s) of CTPs with nutrition objectives, targeting children under five and pregnant and lactating women in low income countries
2) explore how and why these interventions influence nutritional status of children under five, particularly in the context of large-scale, multi-stakeholder interventions, driven by external donors
3) identify how cash transfer programmes achieve or propose to achieve nutrition outcomes in the context of large-scale social protection programmes in low- and middle-income countries
4) understand the key contextual factors that interreact with the resources (i.e. cash transfer) and the reasoning of participants to generate nutrition outcomes.

Patient and Public Involvement

The public and/or patients were not involved in this stage of the research project

Step 1: Theoretical and conceptual framework

The initial theoretical and conceptual frameworks of how nutrition sensitive programmes are theorised to influence child nutrition status were identified based on an initial review of the literature, discussions with relevant stakeholders (e.g. donors, community members, development practitioners) working in nutrition and food security and the first author's practical experience. The initial literature search revealed four potentially relevant frameworks [1 6-8]. Based on these frameworks and the UNICEF conceptual framework [1 3 6-8], and complemented by stakeholder interviews and practical experience, we identified common themes across the frameworks and possible gaps in knowledge. We then mapped the proposed pathways and underlying assumptions of how CTPs influence child nutritional status in a conceptual framing exercise (using the UNICEF and other relevant frameworks as our foundation) and then began the process of identifying potential CMO configurations and tentative theories. The results included several potential CMOs, and a series of If/Then statements to facilitate in the creation of tentative theories. The CMOs have been categorised into four main domains, that were chosen through the grouping of common concepts and themes. The four main domains of implementation structures, contextual influences, food and community response, as represented in Figure 1. Implementation practices have been identified as a key contributing factor in CTPs achieving nutrition outcomes. Therefore, this review will also draw on the practical concepts of implementation research guidelines to help with our understanding of what elements of CTPs contribute to planned or unplanned outcomes

An example of two of our hypothesised CMOs and tentative theories categorised under the domain of implementation structures and associated capacity building are as follows:

- Nutrition education provided by a health professional (C), who is skilled in behaviour change techniques (resource M) and able to create nutrition awareness in recipients (response M) that will ensure CTP recipients provide food to their children in sufficient quantity and diversity and prevent/treat diseases, reducing chronic malnutrition rates in children under five (O)

OR

- Nutrition education provided by CTP employees (e.g. government workers or programme monitors) (C), unskilled in behaviour change techniques but trained in CTP protocols (resource M), deliver appropriate nutrition messages and health-seeking advice, guaranteeing CTP recipients diversify their child's daily dietary intake and prevent diseases (response M), reducing chronic malnutrition rates in children under the age of five (O)

Step 2: Identifying relevant literature to develop preliminary programme theories

Following the identification of our tentative programme theory (s), the next stage in our review will be to identify the relevant literature for inclusion in the review. The purpose of this step is to identify a broad range of studies relating to CTPs and their outcomes from quantitative, qualitative and mixed methods empirical studies.

Literature search strategy

Following the RAMESES guidelines for a realist review, in this step we will undertake an iterative approach to searching for relevant literature, allowing relevant new studies to be included continuously into findings and the overall synthesis.

We expect databases such as Medline, ProQuest, Cochrane, Scopus, Web of Science and Google Scholar to be most instrumental in our search of the extant literature. The search will be conducted in English, the research questions and theoretical framework will inform selection of search terms, including for example: cash transfer, nutrition, children, pregnant and lactating women, women of reproductive age, nutrition sensitive, conditional cash transfer, unconditional cash transfer, social safety nets, financial incentives, food security, food consumption, dietary diversity, acute, chronic malnutrition, low-income, middle-income, social protection, implementation, World Bank, WFP, UNICEF, WHO, DFID, USAID. The search strategy will include variations of the following examples of term combinations:

- "cash transfers" AND "nutrition"
- "cash transfers" AND "nutrition" AND "children"
- "cash transfers" OR "social safety nets" OR "financial incentives" AND "nutrition" OR "nutritional status"
- "cash transfers" OR "conditional cash transfer" OR "unconditional cash transfer" AND "nutrition"
- "cash transfers" AND "food security"

All searches will be limited to those published from 1990 (reflecting the start of Latin American CTP programmes, where the first large-scale conditional cash transfers were implemented) to present.

Inclusion and exclusion criteria

As per the realist approach, in this study, we are less concerned with whether an evaluation meets traditional epidemiological methodological standards, (e.g. must be a randomised controlled trial or case-control trial), but rather what type of information may be gathered from studies about how, why and for whom CTPs achieve nutritional change, and under what circumstances. Our inclusion and exclusion criteria have been designed to reflect this, by including a variety of studies regardless of study design. The studies will be included or excluded based on programme elements at this stage of the literature search, as per the following:

Included

1) Programmes targeting children under the age of five, including pregnant and lactating women
2) Programmes with >1000 recipients
3) Programmes implemented through government systems at national level with external donor support
4) Welfare programmes in high-income countries
5) Programmes targeting increased food consumption, dietary diversity, and reduction of malnutrition rates as primary outcomes
6) Programmes measuring at least one proximal outcome, such as maternal child care practices, IYCF practices and micronutrient deficiencies in women and children

Excluded

1) Programmes targeting school-aged children, adolescents, and adults (except pregnant and lactating women (PLWs))
2) Small-scale emergency relief cash transfer programmes implemented as a one-off intervention
3) Studies that do not measure at least one proximal outcome (e.g. dietary diversity, household food consumption, maternal childcare practices)

Article Screening

One reviewer will generate a list of articles and abstracts (if available), based on the search strategy mentioned above. These will be separated among the review team and titles and abstracts will be reviewed by individual reviewers to see if they 1) focused on CTPs (regardless of modality) and if 2) they appear to fit with the inclusion/exclusion criteria. Reviewers will list the articles as 'include', 'exclude' and 'maybe' [39]. In the absence of an abstract, titles of articles will be used to determine if they are appropriate for review (e.g. mention of CTPs and nutrition outcomes). If the title is ambiguous, the article will remain in the 'maybe' group for the next stage of the review. Following Velonis (2016), we will ensure inner-rater reliability, through a randomly selected number of article titles and abstracts, each being reviewed independently to determine if the study should be included. In the case of discrepancies, agreements will be reached collectively.

Following the initial screening, articles that have been labelled 'included' and 'maybe' will be/ reviewed a second time by the reviewers. Once completed, the reviewers will discuss and collate results, in cases where an article has been 'included' by one reviewer and 'excluded' by the second reviewer, reasoning will be discussed, and a consensus reached.

The complete article or paper for titles included at this stage will then be obtained for the final stage of the screening. Inter-rater reliability will be assessed again by having the reviewers read the same randomly selected five articles, make their own recommendations on inclusion and exclusion, then meet to discuss as a group [39]. Results will be discussed collectively between the reviewers to ascertain any differences between findings, points of difference in categorisation will be discussed and consensus reached mutually. The remaining articles will be distributed amongst the reviewers and skim read to make a final decision as to their inclusion or exclusion, findings will again be shared, and consensus reached. Articles will be used as input for step 3 of the review.

Analysis

Step 3: Refining programme theories

This step seeks to refine our tentative programme theories and CMOs following the initial screening of the literature as outlined in steps 1 and 2 of the protocol as per RAMESES and Pawson recommendations for realist reviews [22 30]. In this step we will seek to review the articles

identified in step 2 and consider them in relation to our programme theories for integrity, adjudicate between rival programme theories and review the same theories in comparative settings [22]. These three strategies will facilitate in the consolidation of our programme theories. A final literature search, quality appraisal and data extraction of included studies is also included in this step of the review.

1) Reviewing for programme theory integrity

The purpose of this strategy is to study how programmes have been implemented in what contexts and what results they have generated for whom. According to Pawson et al [22], in a realist synthesis, this strategy can aide in the discovery of typical weak points in the history of the programme under review. For this review, this will mean for example, examining the history of CTPs to identify if changes and deviations in implementation structures have had an influence on child nutrition outcomes.

For example (hypothesised theory):

- CTPs implemented by national governments without external support (C) using standardised CTP protocols and clear guidelines with nutrition objectives (M resource), ensuring CTP implementers have a clear understanding of programme priorities and how to deliver them (M response), are more successful in changing traditional food beliefs (O).

2) Reviewing to adjudicate between rival programme theories

The purpose of this strategy is to identify which variations of mechanisms are most successful in driving different outcomes, by uncovering evidence from competing programme theories [22]. The conceptual frameworks, tentative theories and CMOs identified in Step 1 of the review, highlight the numerous possible pathways a CTP may improve child nutrition status. By adjudicating between rival programme theories, we will elicit key causal factors that may be driving changes in outcomes in large-scale CTPs, through analysis of both relevant literature and consultation with a range of stakeholders, to identify what works for whom in what circumstances.

For example (hypothesised theory):

- CTPs provided with nutrition education training (C) are more successful in improving maternal child care practices (O), when delivered by a local midwife/traditional birth attendant (M resource) as women are more likely to trust messages given by established community members (M response).
  OR
- CTPs delivered through condition of attendance to maternal child health services (C), ensure women will improve child care practices (O) or they will not receive monthly cash payments (M resource) and positive nutrition awareness (M response) will only be achieved through constant monitoring.

3) Reviewing the same theory in comparative settings

This strategy addresses the core of realist evaluation to identify patterns in the context in which interventions interact with participant reasoning to generate outcomes [22]. Our theories will be compared between settings with similar CTP modalities in terms of the four domains highlighted in Figure 1.

For example (hypothesised theory):

- Conditional CTPs implemented by national and local governments (C) ensure attendance at MCH clinics for health and nutrition screening, provided by skilled

health professionals (M resource), recipients will attend and receive nutrition education, creating positive behaviour change (M response) that will improve the nutrition status of children in recipient households (O).

OR

- Unconditional CTPs provided by INGOs and NGOs (C), with positive implementation histories, will provide nutrition education programmes in conjunction with cash transfers, through skilled outreach workers (M resource) who are trusted by the community (M response) and diversify diets for children in recipient households (O).

Literature search strategy

The purpose of a literature search in this step of the review is to further explore evidence from a wide range of programmes, including empirical studies, policy and protocol documents, evaluations, systematic reviews, grey literature (non-peer reviewed documents) from the field (e.g. programme proposals, monitoring reports and donor updates) that will add to the search from step 2 in the development of our programme theory. The search in this phase will be more purposive in nature than in step 2. Reference and citation searches from articles identified in step 2 will be tracked through 'snowballing' search techniques to identify additional documents [22]. Additional articles will be selected at this stage according to whether they add to our emerging theories or areas of explanatory potential in terms of context, mechanism and outcome patterns [30]. New targeted search terms, not included in the original search will be used in this stage of the literature search, as per realist evidence searching recommendations [30 40].

Searching for new documents will end at the point of theoretical saturation, that is, when we have established there is sufficient evidence to establish our MRT [25].

Agency project proposals, donor progress reports, protocol documents and descriptive evaluations will be required for use in the identification of effective or ineffective implementation practices. Whilst these will not have methodological rigour, they are considered essential documents in the construction of our programme theory. Quality issues will be addressed as per the section below.

Quality appraisal and Data Extraction

One reviewer (HF) has commenced searching databases as per step 2 of the protocol and article screening has commenced. Articles will be appraised by two reviewers based on relevance and demonstration of sufficient rigour (methods used to generate data will be appraised in the analysis and synthesis)[25]. The MMAT (Mixed Methods Appraisal Tool) will be used to assess the rigour and validity of articles. It is recommended by RAMESES to appraise the quality of quantitative, qualitative and mixed methods studies and has been independently tested for efficiency and reliability [14 41 42]. A third reviewer will review approximately 10% of included papers against the MMAT tool to further ensure rigour and reliability. Implementation practices have been identified as one of the key influencing factors for CTPs to achieve nutrition outcomes in our preliminary programme theory, therefore, we will also use the Egan et al (2008) implementation appraisal checklist to guide our appraisal of the quality of reporting of implementation practices from the articles included in our review [43]. The checklist will require some modification due to differing contexts, however, several themes from the Egan et al (2008) checklist are consistent with the organisational-level workplace interventions of the CTPs we are evaluating (e.g. motivation, theory-of-change, employee support, resources provided, differential effects and population characteristics) [43]. These techniques and tools will only be applied to the relevant aspects of the studies that relate to our programme theory rather than the study as a whole [14].

Data extraction will focus on key context, mechanism and outcome findings that will contribute to the further development and refinement of CMO configurations and programme theories. An excel spreadsheet for extracting data from articles based on their relevance and rigour, following the article screening step of step 2, will be formulated and agreed on between the reviewers. Reviewers will use the spreadsheet to record the following information: 1) the programme elements that are described, 2) what nutrition outcomes are measured and how they are measured, 3) what proximal outcomes (e.g. improved maternal child care practices through nutrition education support) are measured and how they are measured, 4) contextual factors that are mentioned in the article, 5) mechanisms that lead to outcomes that are mentioned in the article, 6) the study design and rigour (e.g. making note of potential bias or validity issues using the MMAT tool and Implementation Appraisal checklist) of the article. The findings of the review will provide an overall impression of the depth of the data available and how much it will contribute to our programme theory [39].

Step 4: Analysis and Synthesis

This step will involve the examination of the gathered data and determining whether it refutes or supports our preliminary programme theory and theoretical framework. We will explore the various evaluations pertaining to proximal child nutrition outcomes (e.g. maternal child care practices, food security and availability of health resources) and assess how the data extracted from these studies informs our understanding of how cash transfer programmes achieve nutritional change in children under the age of five. We will use the data to create CMOs for each programme, or 'family of programmes' under investigation. The various CMOs constructed through our analysis will be tested in research to be undertaken following this review involving primary data collection methods and consultation with experts and key programme stakeholders to extend our review findings and construct our middle range theory (MRT).

Step 5: Presentation and Dissemination

The findings from the review will be presented in accordance with the RAMESES guidelines as recommended by Wong et al [25]. Findings will be published in a peer-reviewed journal. The results will be disseminated to policymakers, external donors, relevant governments, and research institutes (e.g. IFPRI), through formal or informal presentations, conferences and reports.

Discussion

Cash transfer programmes are inherently complex, involving numerous programme components, systems for implementation, aiming to produce a variety of outcomes. They are heterogeneous interventions, ranging from conditional cash transfers to cash and in-kind assistance (e.g. food aid distribution), provided in a diverse range of settings to a variety of recipients. In theory, CTPs should be able to achieve positive nutrition outcomes through their ability to influence the determinants of nutrition status and CTPs are rapidly replacing traditional food security programmes, as a strategy to alleviate chronic poverty for households vulnerable to economic shocks and to improve both food security and nutrition resilience. Evidence suggests CTPs have a positive impact on household food consumption and asset holdings. However, child nutrition outcomes are not routinely achieved through social safety net programmes [44] and there is limited understanding of how they can be optimally implemented to consistently influence child nutrition status.

One of the key contributions of this review, in relation to other CTP impact evaluations and systematic reviews is our focus on how the various CTP programme elements and implementation structures can be implemented synergistically to improve nutrition status, rather than evaluating the impact effect on nutrition through the cash transfer itself. To our

knowledge this is the first realist review of these types of interventions. The use of this approach in conjunction with other methods for data analysis and synthesis, will offer a deeper understanding of the mechanisms and contextual factors required to address the various determinants of child nutrition status throughout CTP implementation processes. We believe our choice of study design and evidence synthesis will provide strong explanatory evidence of how and why CTPs produce nutrition outcomes, in what circumstances and for whom. Our initial review of the literature indicates an existing and current evidence base related to CTP impact on both child nutrition indicators and proximal outcomes, such as household food consumption and maternal childcare practices. However, evaluations of the entire implementation process have been limited. Theorising programme CMO configurations through a realist-informed evidence synthesis will expand the knowledge surrounding implementation processes and structures that may be pivotal for CTPs to achieve nutrition change. These concepts may not have been fully explored using existing conceptual frameworks. The realist review method has limitations and findings may not be easily reproduced due to its theoretical causal relationships and inability to analyse data across several disciplines. These limitations will be addressed using other complementary methods, such as meta-ethnography in the data analysis and synthesis phases. The strength of the realist review method is its ability to be flexible and adaptable, which suits the complexity of large-scale social safety net programmes with external donor support.

The research will facilitate in the development of strategies to be included in CTP project design and implementation guidelines to produce consistent nutrition outcomes in contexts where large-scale, multi-sectoral safety social net programmes are a core poverty alleviation policy.

[Figure 1 near here]

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None to declare

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Figure Captions

Figure 1: Theoretical framework domains

Figure 1: Theoretical framework domains

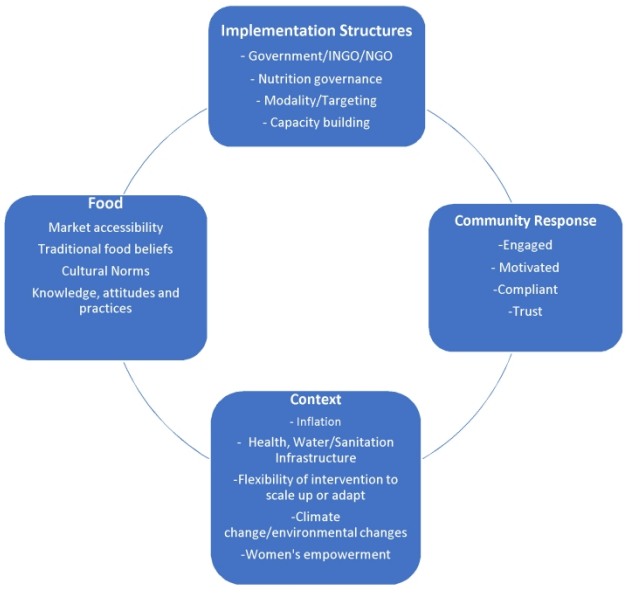

Figure 1: Theoretical framework domains

209x297mm (300 x 300 DPI)

Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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In your methods section, say that you used the PRISMA-P reporting guidelines, and cite them as:

Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. Syst Rev. 2015;4(1):1.

		Reporting Item	Page Number
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	N/A

	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	1
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the guarantor of the review	13
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N/A
Sources	#5a	Indicate sources of financial or other support for the review	13
Sponsor	#5b	Provide name for the review funder and / or sponsor	N/A
Role of sponsor or funder	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s), if any, in developing the protocol	N/A
Rationale	#6	Describe the rationale for the review in the context of what is already known	5
Objectives	#7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	7
Eligibility criteria	#8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such	8

		as years considered, language, publication status) to be used as criteria for eligibility for the review	
Information sources	#9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	8
Search strategy	#10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	8
Study records - data management	#11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	11
Study records - selection process	#11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	9
Study records - data collection process	#11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	11
Data items	#12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	10

Outcomes and prioritization	#13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	12
Risk of bias in individual studies	#14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	11
Data synthesis	#15a	Describe criteria under which study data will be quantitatively synthesised	N/A
	#15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I2, Kendall's τ)	N/A
	#15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	N/A
	#15d	If quantitative synthesis is not appropriate, describe the type of summary planned	12
Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	11
Confidence in cumulative evidence	#17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	6

BMJ Open

Cash Transfer Programmes in lower and middle-income countries, understanding pathways to nutritional change – A realist review protocol

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Cash Transfer Programmes in lower and middle-income countries, understanding pathways to nutritional change – A realist review protocol

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Abstract

Introduction: Child malnutrition continues to be a significant global public health concern. Nutrition-related interventions have changed and diversified over the last two decades, with increasing emphasis on nutrition-sensitive programmes which address the underlying determinants of child malnutrition. Cash transfer programmes (CTPs) are used with increasing popularity in lower and middle-income countries to improve both food/nutrition insecurity and resilience. Available studies however, have provided mixed findings on the outcomes of CTPs on child nutritional status. This review is the first stage of a research project that will develop evidence-informed theories of the ways in which CTPs affect child malnutrition. These are to be empirically tested in the field and will contribute to a better understanding of how, why, for whom and in what circumstances CTPs can be implemented to consistently and positively influence child nutritional status.

Methods and analysis: This realist review is informed by the available standards for realist reviews and follows a five-step process. In step 1 an Initial scoping of the literature has been completed and identified potential contextual factors and underlying mechanisms that influence nutritional outcomes. This allowed us to develop potential theories to address our research question. In step 2, a systematic literature search using multiple databases will be undertaken with papers screened for inclusion using defined inclusion/exclusion criteria. In the next step, data from included studies will be used to test and further refine our explanatory framework. Data will be extracted into a bespoke data extraction tool with the fourth step using a mix of inductive and deductive analytical processes to identify patterns, link chains of inference and tracking and linking of articles. Final steps involve analysis, synthesis, and dissemination of a preliminary theory for feedback prior to empirically testing the theory in Kenya and Ethiopia where large-scale CTPs) are being implemented.

Keywords: nutrition-sensitive, cash-transfers, unconditional cash transfer, conditional cash transfer, nutrition insecurity, malnutrition, nutrition status, children, food insecurity, implementation, realist review

Article Summary

Strengths and Limitations of this study

- The use of realist review methods enables explicit examination of contextual factors and underpinning mechanisms to explain how various cash transfer programme (CTP) implementation structures, services and practices influence child nutrition outcomes
- The review will develop a programme theory and a set of specific hypothese relating context-mechanism-outcome as a summary of current understandings that can be empirically tested through the collection and analysis of primary data
- The method includes a broad range of evidence from various data sources, including grey literature; while strengthening understandings of context it may also affect data quality
- Realist reviews can be difficult to reproduce, we have sought to mitigate this risk through specification of criteria and approaches that support structured and reproduceable decision-making
- The findings will not produce generalisable effect sizes, but may be used to inform future empirical studies

Background

Poor nutrition in low-resource countries continues to be an underlying cause of at least one third of all child deaths and approximately twenty percent of maternal mortality annually[1]. Nutrition-related interventions have changed and diversified over the last two decades, with increasing emphasis on nutrition-sensitive programmes which address the underlying determinants of child malnutrition. Cash transfer programmes (CTPs) are used with increasing popularity in lower and middle-income countries to improve both food/nutrition insecurity and resilience[2]. Available studies however, have provided mixed findings on the outcomes of CTPs on child nutritional status[3-7]. This review is the first stage of a research project that will consider current evidence and understanding of CTPs to develop programe theories to summarise the ways in which CTPs affect child malnutrition. The pathways considered to be most influential and/or important will form the basis of specific hypotheses to be empirically tested in the field in subsequent work.

The numerous factors that contribute to poor child nutrition in low-income countries are summarised in a conceptual framework developed by UNICEF and categorised as basic determinants (e.g. political and economic structures), underlying (e.g. direct influences on household food security/health environment/care for mothers and children), and immediate determinants (e.g. child's dietary intake and child's health status) [8]. As with other social determinants of health, addressing child nutritional status requires interventions targeting not only child health, but the structural, environmental and resource related causes (i.e. underlying and basic determinants), affecting child nutritional status[9]. Based on this framework, interventions to improve maternal and child nutrition are typically categorised as nutrition-sensitive or nutrition-specific[10]. Nutrition-sensitive strategies aim to address the underlying and basic determinants of child nutritional status and include asset support and social protection initiatives as well as agricultural, infrastructure development, education programmes[10]. These can support nutrition-specific interventions, such as feeding programmes and typically target women of reproductive age, pregnant and lactating women and children under the age of five[11]. Children under the age of five years are the most vulnerable to malnutrition and associated morbidities, and the prevention of largely irreversible outcomes (i.e. failure to thrive/stunting) must be addressed in the first 1000 days of life, from conception until two years of age[10].

Over the last two decades, external donors, policy makers and national governments of low- and middle-income countries have increasingly used social protection programmes, including cash transfers, in combination with other targeted programmes to alleviate chronic and acute food and nutrition insecurity and the underlying social determinants of health in vulnerable populations[12 13]. CTPs are non-contributory social protection programmes that provide monetary transfers to low-income households seeking to health and welfare decisions and outcomes through an 'income effect', and through this to break the 'intergenerational cycle of poverty'[13-15]. They can be categorised into two groups, conditional cash transfers (CCTs) or unconditional cash transfers (UCTs)[14]. The monetary transfers for CCTs are conditioned on recipients complying with a set of behavioural requirements, generally addressing financial barriers associated with accessing social services, such as school enrolment/attendance or health services[13 14]. UCTs also target low-income individuals or households with monetary transfers but do not require recipients to meet a set of conditions[14]. CTPs can also include a combination of monetary transfers and in-kind assistance (e.g. food rations) and vouchers (for food or other commodities[14 16]. The modality and duration of CTPs differ by context. CTPs for assistance in humanitarian disasters are often one-time/short duration and focus on short-term objectives (e.g. relief from a disaster). A second modality of CTPs are regular and ongoing cash transfers in development settings focused upon poverty reduction and addressing vulnerabilities with a possible graduation

from the programme[14]. Other contextual factors that influence the CTP include the social policy environment, availability and accessibility of complementary health and welfare services, socio-demographics of the population, existing behaviours of recipients, and organisational capability and capacity[14]. The nutritional objectives also differ by context with short-term programmes in a humanitarian context generally framed as addressing acute nutritional outcomes such as a reduction in child wasting, while the ongoing programs generally identify longer term nutritional outcomes such as ameliorating child stunting.

Latin American countries, including Mexico and Brazil, were among the first lower and middle-income countries to implement CCTs to reduce financial barriers to accessing services for low-income individual and households [16-18]. Introduced in the late 1990s, impact evaluations and systematic reviews conducted since have demonstrated positive impacts on access to health and nutrition services and poverty reduction, however, there have been mixed results regarding child nutrition outcomes[3 19]. With the increasing uptake of CTPs in lower income contexts, such as sub-Saharan Africa and Asia, further studies have demonstrated positive outcomes of CTPs on household food security, food consumption, agricultural yields, poverty reduction and asset protection [3 5-7 20-23] yet expected nutrition benefits (e.g. reduction in wasting and stunting rates of children under five) have not been clearly demonstrated.

Several research teams have considered this issue [1 3 24 25]. Whilst the studies differ in purpose, design and approach, they each propose pathways by which increased income and/ or financial incentives can affect the underlying determinants of child nutrition status and identify various mediating, moderating or modifying variables that may influence the effect of each pathway on the immediate determinants of child nutrition.

The framework by de Groot et al[25], for example, suggests ways that the addition of financial resources can influence the underlying determinants of child nutrition through the three pathways of food security, health and care. The model presented by Leroy and colleagues[3], although focussed on the impact pathways of CCTs, has similarities to the de Groot conceptual framework. Leroy and colleagues outline how the addition of financial resources can make it easier for a household to purchase higher quantities and quality of food (HH food security), increase access to health services (health) and increase women's control over income and empowerment (care). Each framework highlights possible mediating/moderating/modifying variables that could interrupt the underlying pathways influence the immediate determinants of child nutrition -- shocks, feeding practices and feeding styles, women's time (e.g. additional travel required to collect cash and meet conditions of CCTs), availability of food and food prices, and existing resources for health, can have either positive or negative influences on the impact of cash transfers on child nutrition. The REFANI theory-of-change[24] also maps the pathways, but provides a deeper insight into household choices related to income use and how these might activate mechanisms of change to generate nutrition-related outcomes**.** The researchers[2 3 5 6 24 25] have identified several gaps in knowledge that warrant further research, examples include; caregiver behaviour (including feeding practices), quality of health and nutrition services, child dietary intake and dietary diversity, individual food security, the costing and cost-effectiveness of cash transfers in the reduction of child undernutrition.

While each of the models incorporate overarching contextual factors, how context affects the pathways to generate outcomes remains underdeveloped. This is an important gap as implementation structures and programme environments for CTPs with nutrition objectives are heterogeneous. The systems for implementation for example, may include multiple government and non-government agencies and be provided to a diverse range of recipients.

Cash transfers take numerous forms – conditional/ unconditional cash transfers/ in-kind assistance/vouchers. Further, access to complementary health and welfare services varies.

Using a realist approach to develop an initial programme theory, the evaluation conducted by Owusu et al[14] of cash transfers and the social determinants of health in Ghana expands the knowledge of the interplay between context, potential mechanisms, and health outcomes. The authors hypothesise that CTPs have a strong impact on poverty reduction and improve access to services, however, significant changes are needed to improve programme impacts on the social determinants of health[14]. The recommended changes are similar to the findings from the nutrition research (i.e. addressing household motivation, risk-taking behaviour, intersectoral collaboration, programme awareness). The authors provide a programme theory that can be tested and refined in future studies, such as for the realist review proposed herein.

As discussed in the paper by Floate et al[26] the use of a realist approach in combination with a theory-of-change (e.g. the REFANI theory-of-change) can assist in identifying underlying mechanisms and explore the interplay with contextual factors that result in both planned and unplanned outcomes. While re-examining the frameworks from earlier research using a realist enquiry, we will extend them by explicitly considering how the various CTP programme elements and implementation structures influence the pathways that affect the determinants of child nutrition.

The review and evidence synthesis outlined in this protocol is the first stage of a research project that employs a theory-driven realist approach [27]. The programme theories developed in this review will be empirically tested in Kenya and Ethiopia (currently implementing large-scale CTPs). To our knowledge this is the first realist review of the impact of CTPs on child nutrition status.

Methods

Realist Review Methodology

The realist approach to synthesising evidence has become accepted as a rigorous alternative method to systematic reviews, where the intent is to understand causation. Other forms of systematic reviews were investigated (e.g. meta-analysis), however, while providing information on outcomes, other methods often fail to explain how or why programmes worked and do not easily account for the complexity found in real-world nutrition related CTPs [28].

Publication standards have been issued by the RAMESES (Realist and Meta-Narrative Evidence Synthesis: Evolving Standards) project, and realist reviews are utilised with greater frequency in complex intervention evaluations, such as CTPs[14 29-31]. The approach is a theory-based approach to understanding 'what works for whom in what circumstances' and importantly, *why and in what context?* [27].

The realist approach as proposed by Pawson and Tilley [27], is based on a specific philosophical approach, that is, realism and more specifically, scientific realism, sitting somewhere between positivism (the belief that knowledge must be scientifically tested with systematic mathematical or logical proof) and constructivism (the theory that knowledge is constructed by humans through their own experiences) [32 33]. The approach is based on the understanding that there is a social reality, but this is socially constructed. Outcomes (O) are generated by mechanism(s) (M) that are triggered within certain contexts (C). The mechanism(s) from a realist perspective (in socially contingent interventions) is usually hidden and is the reaction or response of people to resources introduced by the intervention within a certain context and can be enabling or disabling. Context relates to the setting in which the programme operates, including systems such as health, political, environmental, and social systems. The context

can have several layers and can be separated into the outer and inner contexts of an intervention.

In a realist approach, the researcher seeks to understand interventions through the concept of generative causation that is hypothesised and tested through context-mechanism-configurations (CMOs) [34]. A key task for the researcher is to identify situations where interventions have had effective and/or ineffective implementation, achieving either planned or unplanned outcomes, and to examine the causes of these [35]. Typically, to achieve this differentiation, potential theories (or candidate theories) of the context, mechanisms and outcomes in which a programme is or will be implemented are generated throughout the review, to account for the processes of an intervention that lead to an outcome [36]. CMO configurations and potential theories are then analysed to inform the creation of protocols for data collection for the review and analysis. Realist evaluations typically use data from various sources, including qualitative, quantitative or mixed methods studies. An evidence-informed programme theory answering the realist question of what works, for whom, under what circumstances, is the result of the inquiry [27]. All phases of a realist inquiry are iterative, to allow for constant refinement of potential theories and CMOs. Developing and testing CMO configurations can help ensure external validity, by enabling a level of abstraction for the theory, or theories, that can be useful in other contexts.

A realist synthesis, which is synonymous with the realist review, applies a realist philosophy to collate findings from various studies that are related to either a single research question or a collection of questions [37 38]. The steps of a realist review, as recommended by Pawson et al [34] are as follows: 1. Clarifying the scope of the review 2. Searching for evidence 3. Appraising primary studies and extracting data 4. Synthesising evidence and drawing conclusions 5. Disseminating, implementing and evaluating. All phases of a realist inquiry are iterative, to allow for constant refinement of potential theories and CMOs. Step 1 of the review has been completed, step 2 is currently in progress.

Protocol and Review Methods

The approach for this protocol has been informed by peer-reviewed realist review protocols published in the last ten years, RAMESES guidelines and the work of Ray Pawson [27 34 37 39-49]. We conducted a search of databases such as Medline, Scopus, and Google Scholar, using search terms including “realist review” and “protocol”. Our search yielded 68 records, of which 8 were found to be pertinent for our review[28 39-42 47 49 50]. Relevant protocols were chosen based on similarities in programme contextual factors, such as national operating systems, multiple implementing agencies, multifaceted causal chains, and potential outcomes. These have informed the protocol below. The review commenced in October 2018, with completion estimated to be in June 2019.

To ensure rigour and relevance, we adopt accepted and validated analytic techniques for example the MMAT tool (Mixed Methods Appraisal Tool)[51 52], which are described in more detail in Step 3 and 4 of this protocol. The use of these techniques will allow us to compare and consolidate key multidisciplinary implementation attributes and their relationships [39]. We used the PRISMA-P checklist when writing our report[53].

Review objectives

To understand the relationships between cash transfer programmes and child nutritional status the objectives of our review are to:

1) identify the programme theories underpinning the designs of CTPs with nutrition objectives, targeting children under five and pregnant and lactating women in lower and middle-income countries;

2) identify the mechanisms that explain how CTPs affect child nutrition in lower and middle-income countries;
3) examine how key contextual factors, (including implementation structures, programme components and recipient characteristics) interact with resources (i.e. cash transfer and supporting services) and participant reasoning to generate child nutrition outcomes;
4) propose how and why CTPs affect, or do not affect child nutrition in lower and middle–income countries.

Patient and Public Involvement

The public and/or patients were not involved in this stage of the research project

Step 1: Clarifying the scope of the review

Clarifying the scope of review involes uderstanding the nature and content of the intervention, including its purpose and expected outcomes or impacts. It is often undertaken using an intial literature review and in discussion with pracitioners and experts in the field. The purpose of this stage is to develop a framework for examining and synthesising evidence from diverse sources [34] and begin to identify key words and concepts. In this review, the initial theoretical and conceptual frameworks of how nutrition sensitive programmes are theorised to influence child nutrition status were identified based on an initial review of the literature, discussions with relevant stakeholders (e.g. donors, community members, development practitioners) working in nutrition and food security and the first author's practical experience. The initial literature search revealed four potentially relevant frameworks [1 3 24 25]. Based on these frameworks and the UNICEF conceptual framework [1 3 8 24 25], and complemented by stakeholder interviews and practical experience, we identified common themes across the frameworks and possible gaps in knowledge. We then mapped the proposed pathways and underlying assumptions of how CTPs influence child nutritional status in a conceptual framing exercise (using the UNICEF and other relevant frameworks as our foundation) and then began the process of identifying potential CMO configurations and potential theories. The results included several possible CMOs, and a series of If/Then statements to facilitate in the creation of theories. The CMOs have been categorised into four main domains, that were chosen through the grouping of common concepts and themes. The four main domains are implementation structures, contextual influences, food systems and community response, as represented in Figure 1. Implementation practices have been identified as a key contributing factor in CTPs achieving nutrition outcomes. Therefore, this review will also draw on the practical concepts of implementation research guidelines[54] to help with our understanding of what elements of CTPs contribute to planned or unplanned outcomes.

An example of two of our hypothesised CMOs and potential theories categorised under the domain of implementation structures and associated capacity building category are as follows:

- Nutrition education provided by a health professional (C), who is skilled in behaviour change techniques (resource M) and able to create nutrition awareness in recipients (response M) that will ensure CTP recipients provide food to their children in sufficient quantity and diversity and prevent/treat diseases, reducing chronic malnutrition rates in children under five (O)
  OR
- Nutrition education provided by CTP employees (e.g. government workers or programme monitors) (C), unskilled in behaviour change techniques but trained in CTP protocols (resource M), deliver appropriate nutrition messages and health-seeking advice, guaranteeing CTP recipients diversify their child's daily

dietary intake and prevent diseases (response M), reducing chronic malnutrition rates in children under the age of five (O)

Step 2: Searching for relevant evidence

Following specification of our potential programme theories, the next stage will be to identify relevant literature to further develop and test the theories. The aim is to identify a broad range of studies (including quantitative, qualitative and mixed methods) relating to CTPs and the programme theories[55]. The ways in which we will undertake this step are described below.

Literature search strategy

Following the RAMESES guidelines for a realist review, in this step we will undertake an iterative approach to searching for relevant literature, allowing relevant new studies to be included continuously into findings and the overall synthesis.

We expect databases such as Medline, ProQuest, Cochrane, Scopus, Web of Science, Business Source Complete, EconLit and Google Scholar to be most instrumental in our search of the extant literature. Reports and unpublished papers from the 'gray' literature will be sourced from websites such as the World Bank, UNICEF, WFP, WHO, FAO, 3ie Impact Database, Transfer Project DFID and USAID. The search will be conducted in English, the potential theories and possible CMOs have informed the selection of search terms, including for example: cash transfer, nutrition, children, pregnant and lactating women, women of reproductive age, nutrition sensitive, conditional cash transfer, unconditional cash transfer, social safety nets, financial incentives, food security, food consumption, dietary diversity, acute, chronic malnutrition, low-income, middle-income, social protection, implementation, World Bank, WFP, UNICEF, WHO, DFID, USAID. The search strategy will include variations of the following examples of term combinations:

- "cash transfers" AND "nutrition"
- "cash transfers" AND "nutrition" AND "children"
- "cash transfers" OR "social safety nets" OR "financial incentives" AND "nutrition" OR "nutritional status"
- "cash transfers" OR "conditional cash transfer" OR "unconditional cash transfer" AND "nutrition"
- "cash transfers" AND "food security"

All searches will be limited to those published from 1990 (reflecting the start of Latin American CTP programmes, where the first large-scale conditional cash transfers were implemented) to present.

Inclusion and exclusion criteria

As per the realist approach, in this study, we are less concerned with whether an evaluation meets traditional epidemiological methodological standards, (e.g. must be a randomised controlled trial or case-control trial), but rather what type of information may be gathered from studies about how, why and for whom CTPs achieve nutritional change, and under what circumstances. Our inclusion and exclusion criteria have been designed to reflect this, by including a variety of studies regardless of study design. The studies will be included or excluded based on the following criteria:

Included

1) programmes targeting children under the age of five, including pregnant and lactating women;
2) centrally managed programmes implemented through various systems, including national governments, international agencies and non-government organisations;

3) programmes in humanitarian/relief and development settings with multiple sites;
4) programmes targeting underlying determinants of malnutrition (aspects of food security, health and care) with reduction of malnutrition as a primary objective
5) programmes measuring at least one nutrition outcome or an immediate determinant (such as diet, nutritional supplementation rate or associated morbidities).

Excluded

1) programmes targeting school-aged children, adolescents, and adults (except pregnant and lactating women (PLWs))
2) welfare programmes in high income countries

Article Screening

One reviewer will generate a list of articles and abstracts (if available), based on the search strategy mentioned above. These will be separated among the review team, consisting of two reviewers (HF, GM) and titles and abstracts will be reviewed by individual reviewers to see if they 1) focused on CTPs (regardless of modality) and if 2) they appear to fit with the inclusion/exclusion criteria. Reviewers will list the articles as 'include', 'exclude' and 'maybe' [50]. In the absence of an abstract, titles of articles will be used to determine if they are appropriate for review (e.g. mention of CTPs and nutrition outcomes). If the title is ambiguous, the article will remain in the 'maybe' group for the next stage of the review. As described by Velonis[50], we will ensure inner-rater reliability, through a randomly selected number of article titles and abstracts, each being reviewed independently to determine if the study should be included. In the case of discrepancies, agreements will be reached collectively.

Following the initial screening, articles that have been labelled 'included' and 'maybe' will be/ reviewed a second time by the reviewers. Once completed, the reviewers will discuss and collate results, in cases where an article has been 'included' by one reviewer and 'excluded' by the second reviewer, reasoning will be discussed, and a consensus reached, where consensus cannot be reached a third reviewer will be brought into the discussion.

The complete article or paper included at this stage, will then be obtained for the final stage of the screening. Inter-rater reliability will be assessed again by having the reviewers read the same randomly selected five articles, make their own recommendations on inclusion and exclusion, then meet to discuss as a group. Results will be discussed collectively between the reviewers to ascertain any differences between findings, points of difference in categorisation will be discussed and consensus reached mutually. The remaining articles will be distributed amongst the reviewers and skim read to make a final decision as to their inclusion or exclusion, findings will again be shared, and consensus reached. Articles will be used as input for step 3 of the review.

Step 3: Appraising primary studies and extracting data

This step seeks to refine our programme theories and CMOs following the initial screening of the literature as outlined in steps 1 and 2 of the protocol as per RAMESES and Pawson recommendations for realist reviews [34 42]. In this step we will seek to review the articles identified in step 2 and consider them in relation to our programme theories for integrity, adjudicate between rival programme theories and review the same theories in comparative settings [34]. These three strategies will facilitate in the consolidation of our programme theories. A final literature search, quality appraisal and data extraction of included studies is also included in this step of the review. For the quality appraisal, where appropriate, the MMAT (Mixed Methods Appraisal Tool)[51 52] will be used to evaluate rigour and credibility of relevant evidence we extract from each study has been generated.

1) Reviewing for programme theory integrity

The purpose of this strategy is to study how programmes have been implemented in what contexts and what results they have generated for whom. According to Pawson et al [34], in a realist synthesis, this strategy can aide in the discovery of typical weak points in the history of the programme under review. For this review, this will mean for example, examining the history of CTPs to identify if changes and deviations in implementation structures have had an influence on child nutrition outcomes.

For example (hypothesised theory):

- CTPs implemented by national governments without external support (C) using standardised CTP protocols and clear guidelines with nutrition objectives (M resource), ensuring CTP implementers have a clear understanding of programme priorities and how to deliver them (M response), are more successful in changing traditional food beliefs (O).

2) Reviewing to adjudicate between rival programme theories

The purpose of this strategy is to identify which variations of mechanisms are most successful in driving different outcomes, by uncovering evidence from competing programme theories [34]. The conceptual frameworks, potential theories and CMOs identified in Step 1 of the review, highlight the numerous possible pathways a CTP may improve child nutrition status. By adjudicating between rival programme theories, we will elicit key causal factors that may be driving changes in outcomes in large-scale CTPs, through analysis of both relevant literature and consultation with a range of stakeholders, to identify what works for whom in what circumstances.

For example (hypothesised theory):

- CTPs provided with nutrition education training (C) are more successful in improving maternal child care practices (O), when delivered by a local midwife/traditional birth attendant (M resource) as women are more likely to trust messages given by established community members (M response).
  OR
- CTPs delivered through condition of attendance to maternal child health services (C), ensure women will improve child care practices (O) or they will not receive monthly cash payments (M resource) and positive nutrition awareness (M response) will only be achieved through constant monitoring.

3) Reviewing the same theory in comparative settings

This strategy addresses the core of realist evaluation to identify patterns in the context in which interventions interact with participant reasoning to generate outcomes [34]. Our theories will be compared between settings with similar CTP modalities in terms of the four domains highlighted in Figure 1.

For example (hypothesised theory):

- Conditional CTPs implemented by national and local governments (C) ensure attendance at MCH clinics for health and nutrition screening, provided by skilled health professionals (M resource), recipients will attend and receive nutrition education, creating positive behaviour change (M response) that will improve the nutrition status of children in recipient households (O).
  OR

- Unconditional CTPs provided by INGOs and NGOs (C), with positive implementation histories, will provide nutrition education programmes in conjunction with cash transfers, through skilled outreach workers (M resource) who are trusted by the community (M response) and diversify diets for children in recipient households (O).

Revisiting the literature

The purpose of a literature search in this step of the review is to further explore evidence from a wide range of programmes, including empirical studies, policy and protocol documents, evaluations, systematic reviews, gray literature (non-peer reviewed documents) from the field (e.g. programme proposals, monitoring reports and donor updates) that will add to the search from step 2 in the development of our programme theories. The search in this phase will be more purposive in nature than in step 2. Reference and citation searches from articles identified in step 2 will be tracked through 'snowballing' search techniques to identify additional documents [34]. Additional articles will be selected at this stage according to whether they add to our emerging theories or areas of explanatory potential in terms of context, mechanism and outcome patterns [42]. New targeted search terms, not included in the original search will be used in this stage of the literature search, as per realist evidence searching recommendations [42 56].

Searching for new documents will end at the point of theoretical saturation, that is, when we have established there is sufficient evidence to confirm a preliminary theory for testing in the field [37].

Agency project proposals, donor progress reports, protocol documents and descriptive evaluations will also be used in the identification of effective or ineffective implementation practices.

Quality appraisal and Data Extraction

One reviewer (HF) has commenced searching databases as per step 2 of the protocol and article screening has commenced. Articles and documents will be appraised by two reviewers (HF, GM), independently using the inclusion/exclusion criteria described earlier.

Realist reviews require the use of a wide range of documents to contribute to the development of programme theories with quality appraisal conducted throughout the review process. Documents or parts of documents therefore are not excluded based on methodological quality but on relevance and rigour[57]. In realist synthesises, unlike a traditional systematic review, an assessment occurs in conjunction with the assessment of the study's relevance and related 'programme theories' and if the methods utilised to generate the data, or related 'programme theories' were appropriate. In other words, in this study we will seek and use different fragments of evidence within each study that are relevant to our programme theories. Each fragment of evidence will be appraised, as it is extracted, for its relevance to theory building and if the methods used to generate the data are trustworthy and credible.

Where appropriate, the MMAT (Mixed Methods Appraisal Tool)[51 52] will be used in our assessment of rigour and credibility of the way in which the fragments of evidence we extract from each study have been generated. The MMAT tool is recommended by RAMESES to appraise the quality of data extracted from studies as it can be applied to studies that use quantitative, qualitative and mixed methods and has been independently tested for efficiency and reliability [28 51 58]. The principle researcher (HF) will lead the process and will share and discuss the emerging synthesis with the other two researchers (GF, JD). In addition, JD will review approximately 10% of included papers and evaluate the extracted data using the

MMAT tool. Implementation practices have been identified as one of the key influencing factors for CTPs to achieve nutrition outcomes in our potential programme theories, therefore, we will also use as appropriate, the Egan et al.[59] implementation appraisal checklist to guide our appraisal of the quality of reporting of implementation practices from the articles included in our review. The checklist will require some modification due to differing contexts. However, several themes from the Egan et al. checklist are consistent with the organisational-level workplace interventions of the CTPs we are evaluating (e.g. motivation, theory-of-change, employee support, resources provided, differential effects and population characteristics) [59]. These techniques and tools will only be applied to the relevant aspects of the studies that relate to our programme theories rather than the study as a whole [28].

Data extraction will focus on key context, mechanism and outcome findings that will contribute to the further development and refinement of CMO configurations and programme theories. Two reviewers (HF, GM) will independently read each source in full, identifying data that will contribute to theory building A bespoke excel spreadsheet will be developed for extracting data and will be formulated and agreed on between the reviewers. The study reviewers will use the spreadsheet to record data relevant to theory building and may include for example, information such as: 1) document bibliographic information 2) country of study/document, 3) the type of CTP , 4) what nutrition outcomes are measured and how they are measured, 5) what proximal outcomes (e.g. improved maternal child care practices through nutrition education support) are measured and how they are measured, 6) contextual factors that are mentioned in the article, 7) mechanisms that lead to outcomes that are mentioned in the article, 8) the study design, 9) the relevance to theory building and 10) the credibility of the methods used to generate the fragments of evidence extracted from the individual studies. When extracting data, if an article does not include all aspects of the theory or data relevant to a question 'Not reported' will be recorded. Where direct quotations are extracted the page number from which the quote was taken will be noted.

The reviewers will pilot the data extraction sheet by independently extracting data from approximately ten articles and discuss results, the spreadsheet may need modification following piloting. Data will be managed using Microsoft Excel, an annotated notebook will be kept ensuring an audit trail of decision-making is maintained. The findings of the data extraction will provide an overall impression of the depth of the data available and how much it will contribute to our programme theories [50].

Step 4: Synthesising evidence and drawing conclusions

This step will involve the identification of recurrent patterns (or demi-regularities) in outcomes, mechanisms and contexts[37] and will be focussed on addressing our research questions

A mix of inductive and deductive analytical processes will be used to identify patterns in the extracted data, which will be produced in the form of If/Then statements, with the aim of linking the chains of inference, and tracking and linking of articles. Two reviewers (HF, GM) will examine the If/Then statements to identity recurring themes within mechanisms that will be grouped thematically (as anticipated in Figure1) as well as challenging emerging findings and seeking divergent examples. Though this iterative process we will formulate hypotheses, linking themes to chains of inference, which will subsequently be empirically tested in our field work.

The broader literature will also be used to inform and refine our emerging theories. For example theories that may be drawn on, as per the Owusu et al[14] realist evaluation are capability theory (Sen[60]), empowerment theory (Kabeer[61]) and self-determination theory (Ryan and Deci[62]). These theories will be consistent with the behavioural and structural mechanisms that have been identified in the causal pathways of the underlying determinants

of child nutrition. Literature will be located through searches of social science and health databases, as well reviewing the reference lists of included papers and our own libraries. Searches of the literature will be undertaken purposively and iteratively, with the main criterion the ability to refine our programme theories. Search terms for this stage will be developed with the research team based on the key concepts and processes suggested to have explanatory power within the key programme theories identified.

Based on the review and analysis, the CMO configurations and aspects of programmes theories considered to be the most influential and/or important for nutrition outcomes will be identified, to be tested in research to be undertaken following this review involving primary data collection and consultation with experts and key programme stakeholders.

Step 5: Dissemination

The findings from the review will be presented in accordance with the RAMESES guidelines as recommended by Wong et al [37]. Findings will be published in a peer-reviewed journal. The results will be disseminated to policymakers, external donors, relevant governments, and research institutes (e.g. IFPRI), through formal or informal presentations, conferences and reports.

Discussion

Cash transfer programmes are inherently complex, involving numerous programme components, systems for implementation, aiming to produce a variety of outcomes. They are heterogeneous interventions, ranging from conditional cash transfers to cash and in-kind assistance (e.g. food aid distribution), provided in a diverse range of settings to a variety of recipients. In theory, CTPs should be able to achieve positive nutrition outcomes through their ability to influence the determinants of nutrition status and CTPs are rapidly replacing traditional food security programmes, as a strategy to alleviate chronic poverty for households vulnerable to economic shocks and to improve both food security and nutrition resilience. Evidence suggests CTPs have a positive impact on household food consumption and asset holdings. However, child nutrition outcomes are not routinely achieved through social protection programmes[4] and there are gaps in knowledge of how they can be optimally implemented to consistently influence child nutrition status.

One of the key contributions of this review, in relation to other CTP impact evaluations and systematic reviews is our focus on how the various CTP programme elements and implementation structures can be implemented synergistically to improve nutrition status, rather than evaluating the impact effect on nutrition through the cash transfer itself. Our initial review of the literature indicates an existing and current evidence base related to CTP impact on both child nutrition indicators and proximal outcomes, such as household food consumption and maternal childcare practices. However, evaluations that also consider the influence of implementation structures and processes have been limited. To our knowledge this is the first realist review of CTPs impact on child nutrition status. The use of this approach in conjunction with other methods for data analysis and synthesis, will offer a deeper understanding of the mechanisms and contextual factors required to address the various determinants of child nutrition status throughout CTP implementation processes.

The realist review method has limitations and findings may not be easily reproduced where disciplinary perspectives and judgement differs across research teams in terms of relevance and quality of literature identified. We have sought to address this through clear specification of criteria, use of validated approaches (such as the MMAT tool) and maintaining an audit trail throughout the review process to support structured and reproduceable decision-making. The strength of the realist review method is its ability to be flexible and adaptable, which suits the complexity of cash transfer programmes with nutrition objectives.

The research will inform the development of strategies to be included in CTP project design and implementation guidelines to produce consistent nutrition outcomes in contexts where cash transfer programmes are implemented with short or long term objectives.

[Figure 1 near here]

Ethics and dissemination

This stage of the study will not involve primary research; however, ethical clearance has been sought through the University of Queensland for the next steps of the research project. Findings will be presented in accordance with RAMESES guidelines and published in a peer-reviewed journal.

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None to declare

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This paper describes a protocol for undertaking a literature review. As such data are not yet available for lodging with a repository

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Figure Captions

Figure 1: Theoretical framework domains

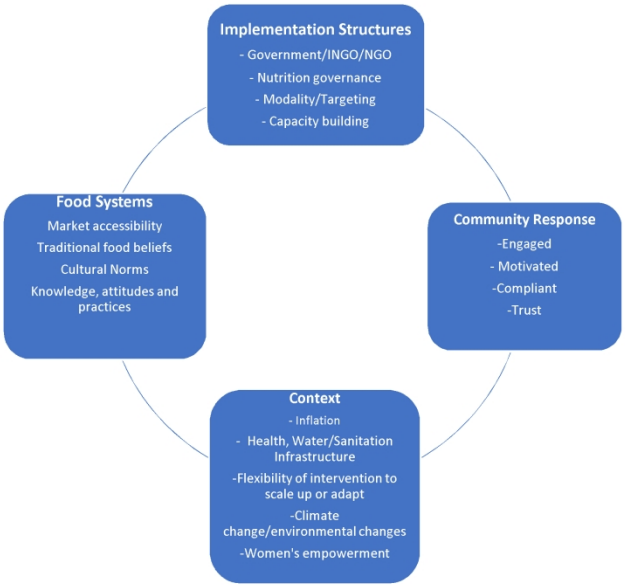

Figure 1: Theoretical Framework Domains

209x297mm (300 x 300 DPI)

Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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In your methods section, say that you used the PRISMA-P reporting guidelines, and cite them as:

Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. Syst Rev. 2015;4(1):1.

		Reporting Item	Page Number
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	N/A

	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	1
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the guarantor of the review	13
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N/A
Sources	#5a	Indicate sources of financial or other support for the review	13
Sponsor	#5b	Provide name for the review funder and / or sponsor	N/A
Role of sponsor or funder	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s), if any, in developing the protocol	N/A
Rationale	#6	Describe the rationale for the review in the context of what is already known	5
Objectives	#7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	7
Eligibility criteria	#8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such	8

		as years considered, language, publication status) to be used as criteria for eligibility for the review	
Information sources	#9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	8
Search strategy	#10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	8
Study records - data management	#11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	11
Study records - selection process	#11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	9
Study records - data collection process	#11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	11
Data items	#12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	10

Outcomes and prioritization	#13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	12
Risk of bias in individual studies	#14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	11
Data synthesis	#15a	Describe criteria under which study data will be quantitatively synthesised	N/A
	#15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I2, Kendall's τ)	N/A
	#15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	N/A
	#15d	If quantitative synthesis is not appropriate, describe the type of summary planned	12
Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	11
Confidence in cumulative evidence	#17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	6

BMJ Open

Cash Transfer Programmes in lower and middle-income countries, understanding pathways to nutritional change – A realist review protocol

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Cash Transfer Programmes in lower and middle-income countries, understanding pathways to nutritional change – A realist review protocol

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Abstract

Introduction: Child malnutrition continues to be a significant global public health concern. Nutrition-related interventions have changed and diversified over the last two decades, with increasing emphasis on nutrition-sensitive programmes which address underlying determinants of child malnutrition. Cash transfer programmes (CTPs) are used with increasing popularity in lower and middle-income countries to improve both food/nutrition insecurity and resilience. Available studies however, provide mixed findings on the outcomes of CTPs for child nutritional status. This review is the first stage of a research project to develop evidence-informed theories of how CTPs affect child malnutrition. These will be empirically tested in the field and contribute to a better understanding of how, why, for whom and in what circumstances CTPs can be implemented to optimise impacts on child nutritional status.

Methods and analysis: This realist review is informed by available standards for realist reviews and follows a five-step process. In step 1 an initial scoping of literature identified potential contextual factors and underlying mechanisms that influence nutritional outcomes, and potential theories developed to address our research question. In step 2, a systematic literature search using multiple databases will be undertaken with papers screened using defined inclusion/exclusion criteria. In step 3, included studies will be appraised, data extracted into a bespoke data extraction tool and used to test and further refine our explanatory framework. The fourth step will synthesise, using a mix of inductive and deductive analytical processes to identify patterns, link chains of inference and tracking and linking of articles. The final step involves dissemination of a preliminary theory for feedback prior to empirically testing it in Kenya and Ethiopia where large-scale CTPs are being implemented.

Ethics and Dissemination: This review will not involve primary data collection. Findings will be presented in accordance with RAMESES guidelines and published in a peer-reviewed journal.

Keywords: nutrition-sensitive, cash-transfers, unconditional cash transfer, conditional cash transfer, nutrition insecurity, malnutrition, nutrition status, children, food insecurity, implementation, realist review

Article Summary

Strengths and Limitations of this study

- The use of realist review methods enables explicit examination of contextual factors and underpinning mechanisms to explain how various cash transfer programme (CTP) implementation structures, services and practices influence child nutrition outcomes.
- The review will develop a programme theory and a set of specific hypothese relating context-mechanism-outcome as a summary of current understandings that can be empirically tested through the collection and analysis of primary data.
- The method includes a broad range of evidence from various data sources, including grey literature, while strengthening understandings of context it may also affect data quality.
- Realist reviews can be difficult to reproduce, we have sought to mitigate this risk through specification of criteria and approaches that support structured and reproduceable decision-making.
- The findings will not produce generalisable effect sizes, but may be used to inform future empirical studies.

Background

Poor nutrition in low-resource countries continues to be an underlying cause of at least one third of all child deaths and approximately twenty percent of maternal mortality annually[1]. Nutrition-related interventions have changed and diversified over the last two decades, with increasing emphasis on nutrition-sensitive programmes which address the underlying determinants of child malnutrition. Cash transfer programmes (CTPs) are used with increasing popularity in lower and middle-income countries to improve both food/nutrition insecurity and resilience[2]. Available studies however, have provided mixed findings on the outcomes of CTPs on child nutritional status[3-7]. This review is the first stage of a research project that will consider current evidence and understanding of CTPs to develop programe theories to summarise the ways in which large-scale CTPs affect child malnutrition. The pathways considered to be most influential and/or important will form the basis of specific hypotheses to be empirically tested in the field in subsequent work.

The numerous factors that contribute to poor child nutrition in lower and middle-income countries are summarised in a conceptual framework developed by UNICEF and categorised as basic determinants (e.g. political and economic structures), underlying (e.g. direct influences on household food security/health environment/care for mothers and children), and immediate determinants (e.g. child's dietary intake and child's health status) [8]. As with other social determinants of health, addressing child nutritional status requires interventions targeting not only child health, but the structural, environmental and resource related causes (i.e. underlying and basic determinants), affecting child nutritional status[9]. Based on this framework, interventions to improve maternal and child nutrition are typically categorised as nutrition-sensitive or nutrition-specific[10]. Nutrition-sensitive strategies aim to address the underlying and basic determinants of child nutritional status and include asset support and social protection initiatives as well as agricultural, infrastructure development, education programmes[10]. These can support nutrition-specific interventions, such as feeding programmes and typically target women of reproductive age, pregnant and lactating women and children under the age of five[11]. Children under the age of five years are the most vulnerable to malnutrition and associated morbidities, and the prevention of largely irreversible outcomes (i.e. failure to thrive/stunting) must be addressed in the first 1000 days of life, from conception until two years of age[10].

Over the last two decades, external donors, policy makers and national governments of lower and middle-income countries have increasingly used social protection programmes, including cash transfers, in combination with other targeted programmes to alleviate chronic and acute food and nutrition insecurity and the underlying social determinants of health in vulnerable populations[12 13]. CTPs are non-contributory social protection programmes that provide monetary transfers to low-income households seeking to health and welfare decisions and outcomes through an 'income effect', and through this to break the 'intergenerational cycle of poverty'[13-15]. They can be categorised into two groups, conditional cash transfers (CCTs) or unconditional cash transfers (UCTs)[14]. The monetary transfers for CCTs are conditioned on recipients complying with a set of behavioural requirements, generally addressing financial barriers associated with accessing social services, such as school enrolment/attendance or health services[13 14]. UCTs also target low-income individuals or households with monetary transfers but do not require recipients to meet a set of conditions[14]. CTPs can also include a combination of monetary transfers and in-kind assistance (e.g. food rations) and vouchers (for food or other commodities[14 16]. The modality and duration of CTPs differ by context. CTPs for assistance in humanitarian disasters are often one-time/short duration and focus on short-term objectives (e.g. relief from a disaster). A second modality of CTPs are regular and ongoing cash transfers in development settings focused upon poverty reduction and addressing vulnerabilities with a possible graduation

from the programme[14]. Other contextual factors that influence the CTP include the social policy environment, availability and accessibility of complementary health and welfare services, socio-demographics of the population, existing behaviours of recipients, and organisational capability and capacity[14]. The nutritional objectives also differ by context with short-term programmes in a humanitarian context generally framed as addressing acute nutritional outcomes such as a reduction in child wasting, while the ongoing programs generally identify longer term nutritional outcomes such as ameliorating child stunting.

Latin American countries, including Mexico and Brazil, were among the first lower and middle-income countries to implement CCTs to reduce financial barriers to accessing services for low-income individual and households [16-18]. Introduced in the late 1990s, impact evaluations and systematic reviews conducted since have demonstrated positive impacts on access to health and nutrition services and poverty reduction, however, there have been mixed results regarding child nutrition outcomes[3 19]. With the increasing uptake of CTPs in lower and middle-income contexts, such as sub-Saharan Africa and Asia, further studies have demonstrated positive outcomes of CTPs on household food security, food consumption, agricultural yields, poverty reduction and asset protection [3 5-7 20-23] yet expected nutrition benefits (e.g. reduction in wasting and stunting rates of children under five) have not been clearly demonstrated.

Several research teams have considered this issue [1 3 24 25]. Whilst the studies differ in purpose, design and approach, they each propose pathways by which increased income and/ or financial incentives can affect the underlying determinants of child nutrition status and identify various mediating, moderating or modifying variables that may influence the effect of each pathway on the immediate determinants of child nutrition.

The framework by de Groot et al[25], for example, suggests ways that the addition of financial resources can influence the underlying determinants of child nutrition through the three pathways of food security, health and care. The model presented by Leroy and colleagues[3], although focussed on the impact pathways of CCTs, has similarities to the de Groot conceptual framework. Leroy and colleagues outline how the addition of financial resources can make it easier for a household to purchase higher quantities and quality of food (HH food security), increase access to health services (health) and increase women's control over income and empowerment (care). Each framework highlights possible mediating/moderating/modifying variables that could interrupt the underlying pathways influence the immediate determinants of child nutrition -- shocks, feeding practices and feeding styles, women's time (e.g. additional travel required to collect cash and meet conditions of CCTs), availability of food and food prices, and existing resources for health, can have either positive or negative influences on the impact of cash transfers on child nutrition. The REFANI theory-of-change[24] also maps the pathways, but provides a deeper insight into household choices related to income use and how these might activate mechanisms of change to generate nutrition-related outcomes**.** The researchers[2 3 5 6 24 25] have identified several gaps in knowledge that warrant further research, examples include; caregiver behaviour (including feeding practices), quality of health and nutrition services, child dietary intake and dietary diversity, individual food security, the costing and cost-effectiveness of cash transfers in the reduction of child undernutrition.

While each of the models incorporate overarching contextual factors, how context affects the pathways to generate outcomes remains underdeveloped. This is an important gap as implementation structures and programme environments for CTPs with nutrition objectives are heterogeneous. The systems for implementation for example, may include multiple government and non-government agencies and be provided to a diverse range of recipients.

Cash transfers take numerous forms – conditional/ unconditional cash transfers/ in-kind assistance/vouchers. Further, access to complementary health and welfare services varies.

Using a realist approach to develop an initial programme theory, the evaluation conducted by Owusu-Addo et al[14] of cash transfers and the social determinants of health in Ghana expands the knowledge of the interplay between context, potential mechanisms, and health outcomes. The authors hypothesise that CTPs have a strong impact on poverty reduction and improve access to services, however, significant changes are needed to improve programme impacts on the social determinants of health[14]. The recommended changes are similar to the findings from the nutrition research (i.e. addressing household motivation, risk-taking behaviour, intersectoral collaboration, programme awareness). The authors provide a programme theory that can be tested and refined in future studies, such as for the realist review proposed herein.

As discussed in the paper by Floate et al[26] the use of a realist approach in combination with a theory-of-change (e.g. the REFANI theory-of-change) can assist in identifying underlying mechanisms and explore the interplay with contextual factors that result in both planned and unplanned outcomes. While re-examining the frameworks from earlier research using a realist enquiry, we will extend them by explicitly considering how the various CTP programme elements and implementation structures influence the pathways that affect the determinants of child nutrition.

The review and evidence synthesis outlined in this protocol is the first stage of a research project that employs a theory-driven realist approach [27]. The programme theories developed in this review will be empirically tested in Kenya and Ethiopia (currently implementing large-scale CTPs). To our knowledge this is the first realist review of the impact of CTPs on child nutrition status.

Methods

Realist Review Methodology

The realist approach to synthesising evidence has become accepted as a rigorous alternative method to systematic reviews, where the intent is to understand causation. Other forms of systematic reviews were investigated (e.g. meta-analysis), however, while providing information on outcomes, other methods often fail to explain how or why programmes worked and do not easily account for the complexity found in real-world nutrition related CTPs [28].

Publication standards have been issued by the RAMESES (Realist and Meta-Narrative Evidence Synthesis: Evolving Standards) project, and realist reviews are utilised with greater frequency in complex intervention evaluations, such as CTPs[14 29-31]. The approach is a theory-based approach to understanding 'what works for whom in what circumstances' and importantly, *why and in what context?* [27].

The realist approach as proposed by Pawson and Tilley [27], is based on a specific philosophical approach, that is, realism and more specifically, scientific realism, sitting somewhere between positivism (the belief that knowledge must be scientifically tested with systematic mathematical or logical proof) and constructivism (the theory that knowledge is constructed by humans through their own experiences) [32 33]. The approach is based on the understanding that there is a social reality, but this is socially constructed. Outcomes (O) are generated by mechanism(s) (M) that are triggered within certain contexts (C). The mechanism(s) from a realist perspective (in socially contingent interventions) is usually hidden and is the reaction or response of people to resources introduced by the intervention within a certain context and can be enabling or disabling. Context relates to the setting in which the programme operates, including systems such as health, political, environmental, and social systems. The context

can have several layers and can be separated into the outer and inner contexts of an intervention.

In a realist approach, the researcher seeks to understand interventions through the concept of generative causation that is hypothesised and tested through context-mechanism-configurations (CMOs) [34]. A key task for the researcher is to identify situations where interventions have had effective and/or ineffective implementation, achieving either planned or unplanned outcomes, and to examine the causes of these [35]. Typically, to achieve this differentiation, potential theories (or candidate theories) of the context, mechanisms and outcomes in which a programme is or will be implemented are generated throughout the review, to account for the processes of an intervention that lead to an outcome [36]. CMO configurations and potential theories are then analysed to inform the creation of protocols for data collection for the review and analysis. Realist evaluations typically use data from various sources, including qualitative, quantitative or mixed methods studies. An evidence-informed programme theory answering the realist question of what works, for whom, under what circumstances, is the result of the inquiry [27]. All phases of a realist inquiry are iterative, to allow for constant refinement of potential theories and CMOs. Developing and testing CMO configurations can help ensure external validity, by enabling a level of abstraction for the theory, or theories, that can be useful in other contexts.

A realist synthesis, which is synonymous with the realist review, applies a realist philosophy to collate findings from various studies that are related to either a single research question or a collection of questions [37 38]. The steps of a realist review, as recommended by Pawson et al [34] are as follows: 1. Clarifying the scope of the review 2. Searching for evidence 3. Appraising primary studies and extracting data 4. Synthesising evidence and drawing conclusions 5. Disseminating, implementing and evaluating. All phases of a realist inquiry are iterative, to allow for constant refinement of potential theories and CMOs. Step 1 of the review has been completed, step 2 is currently in progress.

Protocol and Review Methods

The approach for this protocol has been informed by peer-reviewed realist review protocols published in the last ten years, RAMESES guidelines and the work of Ray Pawson [27 34 37 39-49]. We conducted a search of databases such as Medline, Scopus, and Google Scholar, using search terms including “realist review” and “protocol”. Our search yielded 68 records, of which 8 were found to be pertinent for our review[28 39-42 47 49 50]. Relevant protocols were chosen based on similarities in programme contextual factors, such as national operating systems, multiple implementing agencies, multifaceted causal chains, and potential outcomes. These have informed the protocol below. The review commenced in October 2018, with completion estimated to be in June 2019.

To ensure rigour and relevance, we adopt accepted and validated analytic techniques, for example the MMAT tool (Mixed Methods Appraisal Tool)[51 52], which are described in more detail in Step 3 and 4 of this protocol. The use of these techniques will allow us to compare and consolidate key multidisciplinary implementation attributes and their relationships [39]. We used the PRISMA-P checklist when writing our report[53].

Review objectives

To understand the relationships between large-scale cash transfer programmes and child nutritional status the objectives of our review are to:

1) identify the programme theories underpinning the designs of CTPs with nutrition objectives, targeting children under five and pregnant and lactating women in lower and middle-income countries;

2) identify the mechanisms that explain how CTPs affect child nutrition in lower and middle-income countries;
3) examine how key contextual factors, (including implementation structures, programme components and recipient characteristics) interact with resources (i.e. cash transfer and supporting services) and participant reasoning to generate child nutrition outcomes;
4) propose how and why CTPs affect, or do not affect child nutrition in lower and middle–income countries.

Patient and Public Involvement

The public and/or patients were not involved in this stage of the research project.

Step 1: Clarifying the scope of the review

Clarifying the scope of review involes uderstanding the nature and content of the intervention, including its purpose and expected outcomes or impacts. It is often undertaken using an intial literature review and in discussion with pracitioners and experts in the field. The purpose of this stage is to develop a framework for examining and synthesising evidence from diverse sources [34] and begin to identify key words and concepts. In this review, the initial theoretical and conceptual frameworks of how nutrition sensitive programmes are theorised to influence child nutrition status were identified based on an initial review of the literature, discussions with relevant stakeholders (e.g. donors, community members, development practitioners) working in nutrition and food security and the first author's practical experience. The initial literature search revealed four potentially relevant frameworks [1 3 24 25]. Based on these frameworks and the UNICEF conceptual framework [1 3 8 24 25], and complemented by stakeholder interviews and practical experience, we identified common themes across the frameworks and possible gaps in knowledge. We then mapped the proposed pathways and underlying assumptions of how CTPs influence child nutritional status in a conceptual framing exercise (using the UNICEF and other relevant frameworks as our foundation) and then began the process of identifying potential CMO configurations and potential theories. This provides an initial rough programme theory to inform our search strategy and to find the data needed to test and refine these configurations and theories.

The results included several possible CMOs, and a series of If/Then statements to facilitate in the creation of theories. The CMOs have been categorised into four main domains, that were chosen through the grouping of common concepts and themes. The four main domains are implementation structures, contextual influences, food systems and community response, as represented in Figure 1. Implementation practices have been identified as a key contributing factor in CTPs achieving nutrition outcomes. Therefore, this review will also draw on the practical concepts of implementation research guidelines[54] to help with our understanding of what elements of CTPs contribute to planned or unplanned outcomes.

An example of two of our hypothesised CMOs and potential theories categorised under the domain of implementation structures and associated capacity building category are as follows:

- Nutrition education provided by a health professional (C), who is skilled in behaviour change techniques (resource M) and able to create nutrition awareness in recipients (response M) that will ensure CTP recipients provide food to their children in sufficient quantity and diversity and prevent/treat diseases, reducing chronic malnutrition rates in children under five (O)
  OR
- Nutrition education provided by CTP employees (e.g. government workers or programme monitors) (C), unskilled in behaviour change techniques but trained

in CTP protocols (resource M), deliver appropriate nutrition messages and health-seeking advice, guaranteeing CTP recipients diversify their child's daily dietary intake and prevent diseases (response M), reducing chronic malnutrition rates in children under the age of five (O)

Step 2: Searching for relevant evidence

Following specification of our potential programme theories, the next stage will be to identify relevant literature to further develop and test the theories. The aim is to identify a broad range of studies (including quantitative, qualitative and mixed methods) relating to CTPs and the programme theories[55]. The ways in which we will undertake this step are described below.

Literature search strategy

Following the RAMESES guidelines for a realist review, in this step we will undertake an iterative approach to searching for relevant literature, allowing relevant new studies to be included continuously into findings and the overall synthesis.

We expect databases such as Medline, ProQuest, Cochrane, Scopus, Web of Science, Business Source Complete, EconLit and Google Scholar to be most instrumental in our search of the extant literature. Reports and unpublished papers from the 'gray' literature will be sourced from websites such as the World Bank, UNICEF, WFP, WHO, FAO, 3ie Impact Database, Transfer Project DFID and USAID. The search will be conducted in English, the potential theories and possible CMOs have informed the selection of search terms, including for example: cash transfer, nutrition, children, pregnant and lactating women, women of reproductive age, nutrition sensitive, conditional cash transfer, unconditional cash transfer, social safety nets, financial incentives, food security, food consumption, dietary diversity, acute, chronic malnutrition, low-income, middle-income, social protection, implementation, World Bank, WFP, UNICEF, WHO, DFID, USAID. The search strategy will include variations of the following examples of term combinations:

- "cash transfers" AND "nutrition"
- "cash transfers" AND "nutrition" AND "children"
- "cash transfers" OR "social safety nets" OR "financial incentives" AND "nutrition" OR "nutritional status"
- "cash transfers" OR "conditional cash transfer" OR "unconditional cash transfer" AND "nutrition"
- "cash transfers" AND "food security"

All searches will be limited to those published from 1990 (reflecting the start of Latin American CTP programmes, where the first large-scale conditional cash transfers were implemented) to present.

Inclusion and exclusion criteria

As per the realist approach, in this study, we are less concerned with whether an evaluation meets traditional epidemiological methodological standards, (e.g. must be a randomised controlled trial or case-control trial), but rather what type of information may be gathered from studies about how, why and for whom CTPs achieve nutritional change, and under what circumstances. Our inclusion and exclusion criteria have been designed to reflect this, by including a variety of studies regardless of study design. The studies will be included or excluded based on the following criteria:

Included

1) programmes targeting children under the age of five, including pregnant and lactating women;

2) centrally managed programmes implemented through various systems, including national governments, international agencies and non-government organisations;
3) programmes in humanitarian/relief and development settings with multiple sites;
4) programmes targeting underlying determinants of malnutrition (aspects of food security, health and care) with reduction of malnutrition as a primary objective
5) programmes measuring at least one nutrition outcome or an immediate determinant (such as diet, nutritional supplementation rate or associated morbidities).

Excluded

1) programmes targeting school-aged children, adolescents, and adults (except pregnant and lactating women (PLWs))
2) welfare programmes in high income countries

Article Screening

One reviewer will generate a list of articles and abstracts (if available), based on the search strategy mentioned above. These will be separated among the review team, consisting of two reviewers (HF, GM) and titles and abstracts will be reviewed by individual reviewers to see if they 1) focused on CTPs (regardless of modality) and if 2) they appear to fit with the inclusion/exclusion criteria. Reviewers will list the articles as 'include', 'exclude' and 'maybe' [50]. In the absence of an abstract, titles of articles will be used to determine if they are appropriate for review (e.g. mention of CTPs and nutrition outcomes). If the title is ambiguous, the article will remain in the 'maybe' group for the next stage of the review. As described by Velonis[50], we will ensure inner-rater reliability, through a randomly selected number of article titles and abstracts, each being reviewed independently to determine if the study should be included. In the case of discrepancies, agreements will be reached collectively.

Following the initial screening, articles that have been labelled 'included' and 'maybe' will be/ reviewed a second time by the reviewers. Once completed, the reviewers will discuss and collate results, in cases where an article has been 'included' by one reviewer and 'excluded' by the second reviewer, reasoning will be discussed, and a consensus reached, where consensus cannot be reached a third reviewer will be brought into the discussion.

The complete article or paper included at this stage, will then be obtained for the final stage of the screening. Inter-rater reliability will be assessed again by having the reviewers read the same randomly selected five articles, make their own recommendations on inclusion and exclusion, then meet to discuss as a group. Results will be discussed collectively between the reviewers to ascertain any differences between findings, points of difference in categorisation will be discussed and consensus reached mutually. The remaining articles will be distributed amongst the reviewers and skim read to make a final decision as to their inclusion or exclusion, findings will again be shared, and consensus reached. Articles will be used as input for step 3 of the review.

Step 3: Appraising primary studies and extracting data

This step seeks to refine our programme theories and CMOs following the initial screening of the literature as outlined in steps 1 and 2 of the protocol as per RAMESES and Pawson recommendations for realist reviews [34 42]. In this step we will seek to review the articles identified in step 2 and consider them in relation to our programme theories for integrity, adjudicate between rival programme theories and review the same theories in comparative settings [34]. These three strategies will facilitate in the consolidation of our programme theories. A final literature search, quality appraisal and data extraction of included studies is also included in this step of the review. For the quality appraisal, where appropriate, the MMAT (Mixed Methods Appraisal Tool)[51 52] will be used to evaluate rigour and credibility of relevant evidence we extract from each study has been generated.

1) Reviewing for programme theory integrity

The purpose of this strategy is to study how programmes have been implemented in what contexts and what results they have generated for whom. According to Pawson et al [34], in a realist synthesis, this strategy can aide in the discovery of typical weak points in the history of the programme under review. For this review, this will mean for example, examining the history of CTPs to identify if changes and deviations in implementation structures have had an influence on child nutrition outcomes.

For example (hypothesised theory):

- CTPs implemented by national governments without external support (C) using standardised CTP protocols and clear guidelines with nutrition objectives (M resource), ensuring CTP implementers have a clear understanding of programme priorities and how to deliver them (M response), are more successful in changing traditional food beliefs (O).

2) Reviewing to adjudicate between rival programme theories

The purpose of this strategy is to identify which variations of mechanisms are most successful in driving different outcomes, by uncovering evidence from competing programme theories [34]. The conceptual frameworks, potential theories and CMOs identified in Step 1 of the review, highlight the numerous possible pathways a CTP may improve child nutrition status. By adjudicating between rival programme theories, we will elicit key causal factors that may be driving changes in outcomes in large-scale CTPs, through analysis of both relevant literature and consultation with a range of stakeholders, to identify what works for whom in what circumstances.

For example (hypothesised theory):

- CTPs provided with nutrition education training (C) are more successful in improving maternal child care practices (O), when delivered by a local midwife/traditional birth attendant (M resource) as women are more likely to trust messages given by established community members (M response).
  OR
- CTPs delivered through condition of attendance to maternal child health services (C), ensure women will improve child care practices (O) or they will not receive monthly cash payments (M resource) and positive nutrition awareness (M response) will only be achieved through constant monitoring.

3) Reviewing the same theory in comparative settings

This strategy addresses the core of realist evaluation to identify patterns in the context in which interventions interact with participant reasoning to generate outcomes [34]. Our theories will be compared between settings with similar CTP modalities in terms of the four domains highlighted in Figure 1.

For example (hypothesised theory):

- Conditional CTPs implemented by national and local governments (C) ensure attendance at MCH clinics for health and nutrition screening, provided by skilled health professionals (M resource), recipients will attend and receive nutrition education, creating positive behaviour change (M response) that will improve the nutrition status of children in recipient households (O).
  OR

- Unconditional CTPs provided by INGOs and NGOs (C), with positive implementation histories, will provide nutrition education programmes in conjunction with cash transfers, through skilled outreach workers (M resource) who are trusted by the community (M response) and diversify diets for children in recipient households (O).

Revisiting the literature

The purpose of a literature search in this step of the review is to further explore evidence from a wide range of programmes, including empirical studies, policy and protocol documents, evaluations, systematic reviews, gray literature (non-peer reviewed documents) from the field (e.g. programme proposals, monitoring reports and donor updates) that will add to the search from step 2 in the development of our programme theories. The search in this phase will be more purposive in nature than in step 2. Reference and citation searches from articles identified in step 2 will be tracked through 'snowballing' search techniques to identify additional documents [34]. Additional articles will be selected at this stage according to whether they add to our emerging theories or areas of explanatory potential in terms of context, mechanism and outcome patterns [42]. New targeted search terms, not included in the original search will be used in this stage of the literature search, as per realist evidence searching recommendations [42 56].

Searching for new documents will end at the point of theoretical saturation, that is, when we have established there is sufficient evidence to confirm a preliminary theory for testing in the field [37].

Agency project proposals, donor progress reports, protocol documents and descriptive evaluations will also be used in the identification of effective or ineffective implementation practices.

Quality appraisal and Data Extraction

One reviewer (HF) has commenced searching databases as per step 2 of the protocol and article screening has commenced. Articles and documents will be appraised by two reviewers (HF, GM), independently using the inclusion/exclusion criteria described earlier.

Realist reviews require the use of a wide range of documents to contribute to the development of programme theories with quality appraisal conducted throughout the review process. Documents or parts of documents therefore are not excluded based on methodological quality but on relevance and rigour[57]. In realist synthesises, unlike a traditional systematic review, an assessment occurs in conjunction with the assessment of the study's relevance and related 'programme theories' and if the methods utilised to generate the data, or related 'programme theories' were appropriate. In other words, in this study we will seek and use different fragments of evidence within each study that are relevant to our programme theories. Each fragment of evidence will be appraised, as it is extracted, for its relevance to theory building and if the methods used to generate the data are trustworthy and credible.

Where appropriate, the MMAT (Mixed Methods Appraisal Tool)[51 52] will be used in our assessment of rigour and credibility of the way in which the fragments of evidence we extract from each study have been generated. The MMAT tool is recommended by RAMESES to appraise the quality of data extracted from studies as it can be applied to studies that use quantitative, qualitative and mixed methods and has been independently tested for efficiency and reliability [28 51 58]. The principle researcher (HF) will lead the process and will share and discuss the emerging synthesis with the other two researchers (GF, JD). In addition, JD will review approximately 10% of included papers and evaluate the extracted data using the

MMAT tool. Implementation practices have been identified as one of the key influencing factors for CTPs to achieve nutrition outcomes in our potential programme theories, therefore, we will also use as appropriate, the Egan et al.[59] implementation appraisal checklist to guide our appraisal of the quality of reporting of implementation practices from the articles included in our review. The checklist will require some modification due to differing contexts. However, several themes from the Egan et al. checklist are consistent with the organisational-level workplace interventions of the CTPs we are evaluating (e.g. motivation, theory-of-change, employee support, resources provided, differential effects and population characteristics) [59]. These techniques and tools will only be applied to the relevant aspects of the studies that relate to our programme theories rather than the study as a whole [28].

Data extraction will focus on key context, mechanism and outcome findings that will contribute to the further development and refinement of CMO configurations and programme theories. Two reviewers (HF, GM) will independently read each source in full, identifying data that will contribute to theory building A bespoke excel spreadsheet will be developed for extracting data and will be formulated and agreed on between the reviewers. The study reviewers will use the spreadsheet to record data relevant to theory building and may include for example, information such as: 1) document bibliographic information 2) country of study/document, 3) the type of CTP , 4) what nutrition outcomes are measured and how they are measured, 5) what proximal outcomes (e.g. improved maternal child care practices through nutrition education support) are measured and how they are measured, 6) contextual factors that are mentioned in the article, 7) mechanisms that lead to outcomes that are mentioned in the article, 8) the study design, 9) the relevance to theory building and 10) the credibility of the methods used to generate the fragments of evidence extracted from the individual studies. When extracting data, if an article does not include all aspects of the theory or data relevant to a question 'Not reported' will be recorded. Where direct quotations are extracted the page number from which the quote was taken will be noted.

The reviewers will pilot the data extraction sheet by independently extracting data from approximately ten articles and discuss results, the spreadsheet may need modification following piloting. Data will be managed using Microsoft Excel, an annotated notebook will be kept ensuring an audit trail of decision-making is maintained. The findings of the data extraction will provide an overall impression of the depth of the data available and how much it will contribute to our programme theories [50].

Step 4: Synthesising evidence and drawing conclusions

This step will involve the identification of recurrent patterns (or demi-regularities) in outcomes, mechanisms and contexts[37] and will be focussed on addressing our research questions

A mix of inductive and deductive analytical processes will be used to identify patterns in the extracted data, which will be produced in the form of If/Then statements, with the aim of linking the chains of inference, and tracking and linking of articles. Two reviewers (HF, GM) will examine the If/Then statements to identity recurring themes within mechanisms that will be grouped thematically (as anticipated in Figure1) as well as challenging emerging findings and seeking divergent examples. Though this iterative process we will formulate hypotheses, linking themes to chains of inference, which will subsequently be empirically tested in our field work.

The broader literature will also be used to inform and refine our emerging theories. For example theories that may be drawn on, as per the Owusu-Addo et al[14] realist evaluation are capability theory (Sen[60]), empowerment theory (Kabeer[61]) and self-determination theory (Ryan and Deci[62]). These theories will be consistent with the behavioural and structural

mechanisms that have been identified in the causal pathways of the underlying determinants of child nutrition. Literature will be located through searches of social science and health databases, as well reviewing the reference lists of included papers and our own libraries. Searches of the literature will be undertaken purposively and iteratively, with the main criterion the ability to refine our programme theories. Search terms for this stage will be developed with the research team based on the key concepts and processes suggested to have explanatory power within the key programme theories identified.

Based on the review and analysis, the CMO configurations and aspects of programmes theories considered to be the most influential and/or important for nutrition outcomes will be identified, to be tested in research to be undertaken following this review involving primary data collection and consultation with experts and key programme stakeholders.

Step 5: Dissemination

The findings from the review will be presented in accordance with the RAMESES guidelines as recommended by Wong et al [37]. Findings will be published in a peer-reviewed journal. The results will be disseminated to policymakers, external donors, relevant governments, and research institutes (e.g. IFPRI), through formal or informal presentations, conferences and reports.

Discussion

Cash transfer programmes are inherently complex, involving numerous programme components, systems for implementation, aiming to produce a variety of outcomes. They are heterogeneous interventions, ranging from conditional cash transfers to cash and in-kind assistance (e.g. food aid distribution), provided in a diverse range of settings to a variety of recipients. In theory, CTPs should be able to achieve positive nutrition outcomes through their ability to influence the determinants of nutrition status and CTPs are rapidly replacing traditional food security programmes, as a strategy to alleviate chronic poverty for households vulnerable to economic shocks and to improve both food security and nutrition resilience. Evidence suggests CTPs have a positive impact on household food consumption and asset holdings. However, child nutrition outcomes are not routinely achieved through social protection programmes[4] and there are gaps in knowledge of how they can be optimally implemented to consistently influence child nutrition status.

One of the key contributions of this review, in relation to other CTP impact evaluations and systematic reviews is our focus on how the various CTP programme elements and implementation structures can be implemented synergistically to improve nutrition status, rather than evaluating the impact effect on nutrition through the cash transfer itself. Our initial review of the literature indicates an existing and current evidence base related to CTP impact on both child nutrition indicators and proximal outcomes, such as household food consumption and maternal childcare practices. However, evaluations that also consider the influence of implementation structures and processes have been limited. To our knowledge this is the first realist review of CTPs impact on child nutrition status. The use of this approach in conjunction with other methods for data analysis and synthesis, will offer a deeper understanding of the mechanisms and contextual factors required to address the various determinants of child nutrition status throughout CTP implementation processes.

The realist review method has limitations and findings may not be easily reproduced where disciplinary perspectives and judgement differs across research teams in terms of relevance and quality of literature identified. We have sought to address this through clear specification of criteria, use of validated approaches (such as the MMAT tool) and maintaining an audit trail throughout the review process to support structured and reproduceable decision-making. The

strength of the realist review method is its ability to be flexible and adaptable, which suits the complexity of cash transfer programmes with nutrition objectives.

The research will inform the development of strategies to be included in CTP project design and implementation guidelines to help optimise nutrition impact in contexts where cash transfer programmes are implemented with short or long term objectives.

[Figure 1 near here]

Ethics and dissemination

This stage of the study will not involve primary research; however, ethical clearance has been sought through the University of Queensland for the next steps of the research project. Findings will be presented in accordance with RAMESES guidelines and published in a peer-reviewed journal.

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Author Contributions:

All authors have contributed to the conception and design of the study, protocol and manuscript. HF wrote the first draft. JD and GM critically reviewed it and provided comments to improve the manuscript. All authors read and approved the final manuscript.

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Competing Interests:

None to declare

Data Statement:

This paper describes a protocol for undertaking a literature review. As such data are not yet available for lodging with a repository

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Figure Captions

Figure 1: Theoretical framework domains

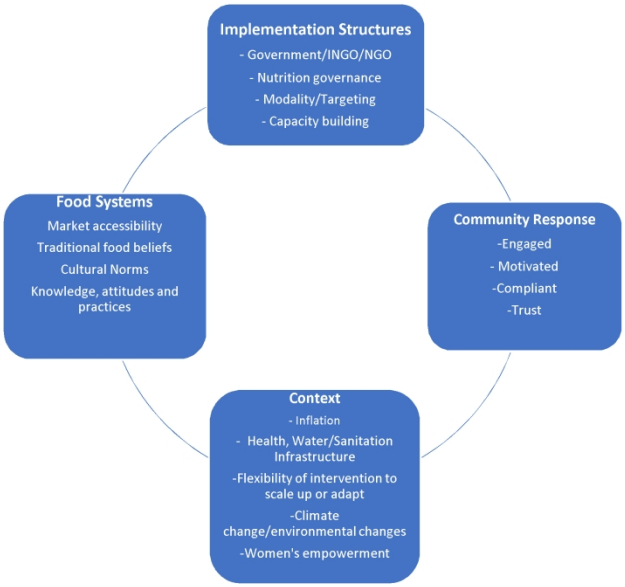

Figure 1: Theoretical Framework Domains

209x297mm (300 x 300 DPI)

Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the PRISMA-P reporting guidelines, and cite them as:

Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. Syst Rev. 2015;4(1):1.

		Reporting Item	Page Number
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	N/A

	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	1
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the guarantor of the review	13
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N/A
Sources	#5a	Indicate sources of financial or other support for the review	13
Sponsor	#5b	Provide name for the review funder and / or sponsor	N/A
Role of sponsor or funder	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s), if any, in developing the protocol	N/A
Rationale	#6	Describe the rationale for the review in the context of what is already known	5
Objectives	#7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	7
Eligibility criteria	#8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such	8

		as years considered, language, publication status) to be used as criteria for eligibility for the review	
Information sources	#9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	8
Search strategy	#10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	8
Study records - data management	#11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	11
Study records - selection process	#11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	9
Study records - data collection process	#11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	11
Data items	#12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	10

Outcomes and prioritization	#13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	12
Risk of bias in individual studies	#14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	11
Data synthesis	#15a	Describe criteria under which study data will be quantitatively synthesised	N/A
	#15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I2, Kendall's τ)	N/A
	#15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	N/A
	#15d	If quantitative synthesis is not appropriate, describe the type of summary planned	12
Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	11
Confidence in cumulative evidence	#17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	6