WP-2020-039

Take home rations (THR) and cash transfers for maternal and child nutrition: A synthesis of evidence in India

Sudha Narayanan; Shree Saha

Indira Gandhi Institute of Development Research, Mumbai
December 2020

Take home rations (THR) and cash transfers for maternal and child nutrition: A synthesis of evidence in India

Sudha Narayanan; Shree Saha

Email(corresponding author): sudha@igidr.ac.in

Abstract

Devoting public resources to reducing micronutrient deficiencies in children is essential for improved health, and is associated with large economic returns in the long-run through better productivity, lower health costs, and intergenerational transmission of these benefits. The Government of India has a long history of interventions focused on maternal and child health, through cash and in-kind transfers of various types. A key component of the former has been the provision of food rations under the Integrated Child Development Services (ICDS) scheme's Supplementary Nutrition Program (SNP), established in 1975. Currently, as part of the SNP, pregnant women and mothers of children aged 6 months to 3 years receive monthly Take Home Rations (THR), and children aged 3-6 years receive a daily hot meal at the anganwadi (or crèche). Apart from this nationwide in-kind support, the central government also administers cash transfer programmes for pregnant women and lactating mothers. The Janani Suraksha Yojana (JSY) programme delivers cash conditional on an institutional birth. This study is a synthesis of existing evidence on both types of programmes, with a particular focus on ICDS/THR and JSY, along with a set of recommended policy actions. Existing data from large-scale datasets suggest that THR currently has a wider reach then cash and the prospect of transitioning to cash will likely exclude many current beneficiaries. Even as there is only limited evidence on the effectiveness of THR, there is little compelling evidence to date that warrants a shift away from THR to cash transfers. Most importantly, however, there has not been adequate attention to the possible of a combination of a cash and in-kind transfer. An approach that combines cash with in-kind (including "wet" meals) needs serious consideration.

Keywords: maternity, child nutrition, cash transfer, in-kind transfer, take home ration, nutrition, health, India

JEL Code: I13, I10, I38

Acknowledgements:

We thank Harold Alderman, Jean Drèze and Reetika Khera, Shahid Vaziralli for comments and suggestions and Shraddha Yadav for research support. We remain responsible for any errors and omissions. This research was supported financially by the International Growth Centre Contract #1-TJI-VIND-VXXXX-18016.

Take home rations (THR) and cash transfers for maternal and child nutrition

A synthesis of evidence in India[1]

Sudha Narayanan[2]

Shree Saha[3]

Abstract

Devoting public resources to reducing micronutrient deficiencies in children is essential for improved health, and is associated with large economic returns in the long-run through better productivity, lower health costs, and intergenerational transmission of these benefits. The Government of India has a long history of interventions focused on maternal and child health, through cash and in-kind transfers of various types. A key component of the former has been the provision of food rations under the Integrated Child Development Services (ICDS) scheme's Supplementary Nutrition Program (SNP), established in 1975. Currently, as part of the SNP, pregnant women and mothers of children aged 6 months to 3 years receive monthly Take Home Rations (THR), and children aged 3-6 years receive a daily hot meal at the anganwadi (or crèche). Apart from this nationwide in-kind support, the central government also administers cash transfer programmes for pregnant women and lactating mothers. The Janani Suraksha Yojana (JSY) programme delivers cash conditional on an institutional birth. This study is a synthesis of existing evidence on both types of programmes, with a particular focus on ICDS/THR and JSY, along with a set of recommended policy actions. Existing data from large-scale datasets suggest that THR currently has a wider reach then cash and the prospect of transitioning to cash will likely exclude many current beneficiaries. Even as there is only limited evidence on the effectiveness of THR, there is little compelling evidence to date that warrants a shift away from THR to cash transfers. Most importantly, however, there has not been adequate attention to the possible of a combination of a cash and in-kind transfer. An approach that combines cash with in-kind (including "wet" meals) needs serious consideration.

JEL: I13, I10, I38

Keywords: maternity, child nutrition, cash transfer, in-kind transfer, take home ration, nutrition, health, India

[1] We thank Harold Alderman, Jean Drèze and Reetika Khera, Shahid Vaziralli for comments and suggestions and Shraddha Yadav for research support. We remain responsible for any errors and omissions. This research was supported financially by the International Growth Centre Contract #1-TJI-VIND-VXXXX-18016. Some parts of this article draw heavily on the first author's previous work Narayanan (2011) published in the Economic and Political Weekly.

[2] Associate Professor, Indira Gandhi Institute of Development Research, Mumbai. sudha@igidr.ac.in

[3] Graduate Student, Dyson School of Applied Economics and Management, Cornell University, Ithaca. ss3898@cornell.edu

1. Introduction

The futures of young children are often overwhelmingly determined by chance. There is consensus that the 1000 days since conception are critical for a child's nutritional status and the environment in which children are born often shapes the inputs and investments they get during this formative period (Black, et al. 2013). Failure to secure a child's wellbeing during this Window of Opportunity could lead to irreversible negative long-term effects on physical and cognitive development, productivity and lifetime earnings (Lancet, 2013; Bhutta et al., 2013; Case et al., 2005). Economists have long emphasized that devoting resources to child nutrition and health, far from being mere sectoral advocacy, is associated with high returns (Alderman et al., 2006; Hoddinott et al., 2013a; Horton, 1999). Committing resources to reducing protein-energy malnutrition and micronutrient deficiencies in children is associated with large economic returns in the long run through better productivity, lower health costs and intergenerational transmission of these benefits. It is also well understood that the early interventions are more effective than later interventions and that interventions should align with the Window of Opportunity (Heckman, 2013). From a rights perspective, the United Nations' Convention on the Rights of Children emphasizes that rights of young children can only be implemented through the enforcement of rights to health, adequate nutrition, an adequate standard of living, a healthy and safe environment, and education, among others. The right to adequate nutrition is therefore a fundamental right for children, according to the Convention. The rationale and justification for state support to the nutritional wellbeing of young children is thus well established. There is however less agreement on the form(s) such support should take.

This issue has acquired resonance in India in recent years, where despite improvements, child malnutrition remains a stubborn problem. According to the National Family Health Survey (NFHS-4) in 2015-16, 38.4 per cent of children under the age of 5 years are stunted (41.2 in rural areas). This represents a ten-percentage point decline over the preceding decade, which saw GDP per capita grow at over 6.57% per annum.[4] Further, 35.8% of all children remain underweight and 21% are wasted.

The Government of India has a long history of interventions focussed on the first 1000 days – aimed at supporting pregnant and nursing mothers as well as young children. A few of these became legal entitlements as part of the "Right to Food Case" that began in 2001 and subsequently found place in the National Food Security Act 2013 (NFSA; Table 1).[5]

[4] Notwithstanding the controversies around the estimates of GDP in India, this implies a short run response of -0.15, which is in line with estimates from elsewhere. Ruel and Alderman (2013) find, for example, that a 10 per cent growth of GNP results in nearly a 10 per cent decline in poverty but only a 5.9 per cent decline in stunting. Smith and Haddad (2015) report an estimate of 6.3 percent.

[5] A petition by the People's Union of Civil Liberties in 2001 led to a prolonged "public interest

These interventions involve both in-kind and cash transfers. A key component of the former has been the provision of food rations under the Integrated Child Development Services scheme (ICDS)'s Supplementary Nutrition Program (SNP), established in 1975. Currently, as part of the ICDS's SNP, pregnant women and mothers of children aged 6 months to 3 years are to receive monthly Take Home Rations (THR) and children aged 3-6 years receive a daily hot cooked meal at the anganwadi or crèche (henceforth AWC). Apart from this nationwide in-kind support, since 2005, India has administered a cash transfer program under the National Rural Health Mission (the Janani Suraksha Yojana, JSY) for women who have institutional deliveries. These programs run in the context of other food-based programs, including the Mid Day Meal Scheme, that provides hot cooked meals for primary and upper primary children in government schools, and the Public Distribution System (PDS) that provides foodgrain (and often oil, sugar and pulses) at subsidized rates to eligible households. Additionally, since 1995, the national government has implemented a cash transfer called the National Maternity Benefit Scheme (NMBS, reframed first as the Indira Gandhi Matrtva Sahayog Yojana IGMSY in 2011 and more recently as the Pradhan Mantri Matru Vandana Yojana –PMMVY in 2017). Over the years, the forms, eligibility criteria and conditions associated with these programs have undergone several changes. Further, some states have their own in-kind/cash-transfer schemes, some of which predate the JSY and the NMBS (discussed later in this paper). Collectively, these social protection programs aim to ensure maternal and children's health and nutrition, even though the specific goals of the program might differ. As of 2018-19, the Government of India directed a total of Rs.195.48 billion to PMMVY, Anganwadi services (or Core ICDS) and the JSY, less than 0.12% of the estimated GDP. [6,7]

There have been extensive debates on in-kind versus cash transfers in India; in 2011, for example, a special issue of the popular Economic and Political Weekly was devoted entirely to this debate. However, most of those discussions focussed predominantly on replacing the distribution of subsidized food grain under the PDS with cash. Discussions on replacing THR remained peripheral at that time (Mehrotra, 2010). Indeed, children's rights advocates have repeatedly argued against replacing THR with cash transfers (Working Group for Children under Six, 2007). However, currently, there is increasing debate as to whether the THR component of the ICDS should be replaced with an equivalent cash transfer. These

litigation" (PUCL vs. Union of India and Others, Writ Petition [Civil] 196 of 2001). Supreme Court hearings were held since then at regular intervals and significant interim orders were issued by the court from time to time regarding the scope and implementation of eight food-related schemes of the Government of India that effectively converted many food-based transfers to entitlements. In 2013, this long process culminated in the National Food Security Act (NFSA).

[6] These estimates are from https://accountabilityindia.in , as accessed on 31st May, 2019 and use revised estimates of budgetary allocations.

[7] This excludes additional allocations by the states.

debates are ongoing both within and outside the Government, particularly in the context of a larger shift towards Direct Benefit Transfers (DBT).[8] On November 14, 2018, the National Council on India's Nutritional Challenges announced that it would pilot a cash transfer program in lieu of THR in selected blocks in two districts each in the states of Uttar Pradesh and Rajasthan. In this context, it is useful to assess the evidence so far, in the Indian context, of the ability of THR and cash transfers to support nutritional status of young mothers and children.

There are several reasons that the debate of in-kind versus cash to address child nutrition is distinctly different from the more general debate on in-kind versus cash, for example, in the Public Distribution System (PDS). Whereas the PDS is a household level entitlement, even if denominated per capita, the THR (and/or cash that replaces such THR) is a child's entitlement over which they have no control. Children's access to THR and cash both are mediated by adult family members, who then decide how to use it – whether or not other family members share what is meant for the child. Second, the objective of THR is more explicitly focussed on nutritional outcomes than, say, the PDS, which addresses food security concerns more generally. A comparison between cash and in-kind in this case, must therefore focus on the ability of a specific approach to translate into specific nutritional goals for children. One might argue that this should assume primacy when making comparisons on modalities, over cost considerations. Third, unlike the debates on the PDS, where discussions revolve around the issue of replacing the current in-kind food subsidy with cash, government interventions for pregnant and nursing women already have two components – cash transfers (with and without conditions) as well as THR in kind. This allows us to get a comparative perspective of the potential benefits and pitfalls of each of these schemes as they operate today. At the same time, since both programs are in place, existing impact evaluations of either program are necessarily in a context where the other is also offered, making it harder to isolate the impacts of a cash transfer vis-à-vis THR.

This paper synthesizes evidence on Indian programs targeting maternal and child nutrition. Much has been written on the comparisons between cash and in-kind transfers internationally and this paper does not profess to add evidence to that body of works. Nor does it seek to discuss the issue of cash versus in-kind in general terms. This paper focuses on the Indian experience of THR and cash transfers, diverse as this context is, targeted at pregnant/nursing women and young children below three years of age. The paper draws on

[8] DBT refers to paying beneficiaries directly into the bank account, electronically with or without *aadhar*. In the Government's words "With the aim of reforming Government delivery system by re-engineering the existing process in welfare schemes for simpler and faster flow of information/funds and to ensure accurate targeting of the beneficiaries, de-duplication and reduction of fraud Direct Benefit Transfer (DBT) was started on 1st January, 2013."https://dbtbharat.gov.in/page/frontcontentview/?id=MTc=

recent research over the past two decades and covers mainly but not exclusively peer-reviewed published research.

The first section provides an overview of types of transfers and the conceptual pathways through which THR and cash can impact child nutrition outcomes, drawing on existing evidence worldwide. The next section reviews and synthesizes evidence from India on cash versus in-kind programs and reviews evidence on the ICDS and the JSY and maternity benefit schemes. This section also draws on household data from the National Family Health Survey (NFHS)-4 (2015-16) and the District Level Household Survey (DLHS)-4 (2014-15) to document current patterns of use.[9] The final section highlights issues that need to figure prominently in the shaping of current policy.

2. Conceptual framework

Types of Transfers for Nutritional Goals

Support to infants and pregnant/nursing mothers can be of different forms.[10] Cash transfers describe a class of instruments through which beneficiaries are endowed with purchasing power to acquire specific goods or service rather than the good/service itself. Cash transfers can be unconditional or conditional. With an unconditional cash transfer (UCT), beneficiaries are free to decide how they wish to spend it and the underlying assumption is that the household knows its needs. These transfers can be universal or restricted (or targeted) to a specific sub-population, for example, the poor, elderly, nursing mothers or based on residence/geography. In the context of maternal and child nutrition in India, unconditional transfers have hitherto taken the form of maternity entitlements as part of the NMBS/IGMSY/PMMVY and some early state level programs like Tamil Nadu's Dr.Muthulakshmi Maternity Benefit Scheme (DMMBS); these either aimed to compensate for wage loss of mothers when they withdraw from work during maternity or to fund hospital expenses associated with childbirth. Conditional cash transfer (CCT) schemes transfer cash to target households, contingent on specific behavioral responses on the part of the household. CCTs are used to incentivize demand, and conditions associated with the transfer typically stipulate that households make pre-specified investments in the human capital of their children, use specific healthcare facilities, and so on.[11] The JSY in India, alluded to earlier, is

[9] The NFHS-4 is a nationally representative survey; the DLHS-4 does not cover the states of Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Orissa, Rajasthan and Assam, and hence covers states with relatively better maternal and child nutritional and health status indicators.
[10] This section draws heavily on Narayanan (2011), which reviewed cash and food transfer debates in India more generally.
[11] Workfare programs can also be regarded as conditional cash transfers although it is different because rather than a lumpsum transfer the beneficiary earns wages either as piece or time-rate.

an example of a CCT – where mothers receive cash conditional on institutional delivery at public or accredited private health centres.

In-kind or food transfers, in contrast to cash transfers, represent a real transfer of purchasing power so that the recipient receives the good/service itself; these may be free or it maybe provided at subsidized rates/ less than market price. Some commentators also include removal of fees for health services as a kind of transfer (Bassani et al., 2013). In India, access to the range of services under the ICDS for pregnant and nursing women and children is itself in-kind support for which beneficiaries do not pay a fee.

In-kind transfers too can be unconditional or conditional, and have restrictions on eligibility. An example of the former is food aid during humanitarian emergencies, and examples of the latter are food for education and food for work schemes. Among the food based programs in India that have been discussed in the context of cash transfers, the PDS in India involves a subsidy on grains (and sugar, pulses, edible oils) that has eligibility criteria but no conditionalities.[12] On the other hand, THR, represents an unconditional in-kind transfer with eligibility criteria – given that is targeted to pregnant and nursing women and children under the age of 3 years.[13] Also in this category are `spot' or `wet' feeding programs provided for pregnant and nursing mothers, such as the One Full Meal program (in Andhra Pradesh, Telangana and more recently, in Karnataka).

There could also be an overlap of these categories. These are best described as "cash-assisted kind" transfers implying a transfer of cash or purchasing power, but one that restricts its use to the purchase of pre-specified commodities or services (Narayanan, 2011). In essence, these are in-kind transfers, but mediated via a cash transfer that enables acquisition of particular goods or services. These "cash-assisted kind" transfers include vouchers, coupons or stamps. These are officially authenticated instruments that represent purchasing power to buy fixed quantities of a designated commodity (commodity-based vouchers) or a particular commodity for a fixed amount represented by the voucher (value-based vouchers). Both the commodity and the place of purchase can be unrestricted or restricted, say, to particular types of food or approved vendors. As of now, this type of support does not exist in India for food-based schemes, except for example in Karnataka.[14]

These varying forms of support can be combined. The Dr.Muthulakshmy Maternity Benefits Scheme (DMMBS) in Tamil Nadu, in its current form, is an example. It combines a cash component that is available on registration, a second cash component conditional on

[12] The PDS in Tamil Nadu is an exception since it entitles beneficiaries to free rice and wheat (since June 1, 2011), rather than at subsidized rates and would hence be an example of in-kind transfer.
[13] In principle the ICDS was universalized – but in practice each AWW enrolls pregnant and nursing women and sometimes rations out eligible beneficiaries.
[14] Early experiments with food coupons, in Bihar, for example, have been phased out. Karnataka implements a commodity-based food coupon system, but abandoned its brief experiment with cash coupons in lieu of the PDS rations in early 2017.

institutional delivery, a third cash component conditional on immunization and nutrition sessions plus two nutrition kits (that includes a range of both food and non-food items; Table 2).

Transfers can also take the form of layered interventions with complementary inputs involving behavioural change communications (BCC) and nutrition and health promotion sessions that may or may not be part of conditionalities but are bundled with the transfers. These have been implemented in Bangladesh as part of the Transfer Modalities Research Initiative (TMRI) (Ahmed et al., 2014) and in Nepal under the Participatory Learning and Action (PLA) program in government mandated women's group to address the problem of low birth weight (Saville et al., 2018). The ICDS in India too has monthly nutrition and health awareness sessions and has recently become a condition for maternity entitlements.

Many programs also have supply side design features that include worker incentives associated with programmatic goals. The JSY in India, designed to incentivize institutional deliveries, rewarded health workers with cash for each institutional delivery. The use of new technologies to support the monitoring and enforcement of conditionalities, supply chain innovations for in-kind food distribution and innovations to facilitate cash and in-kind transfers are increasingly features that are now incorporated in social protection programs to enhance program effectiveness.

Pathways from transfers to healthy nutritional outcomes

The translation of transfers into nutritional outcomes depends on several contextual factors. Figure 1, adapted from Alderman (2016), illustrates the broad set of issues, although there are several other ways of conceptualizing these pathways (see for example, De Groot et al., 2015; Fernald et al., 2012; Glassman et al., 2013). Assuming that the supply side issues from a programmatic perspective are in place, i.e., the transfer modalities work, a transfer is mediated by three key factors – income, prices, and household behaviors. These influence the extent to which families choose to invest in nutrition and health and the ways in which they do so. Some authors recognize that one lens for understanding pathways from cash transfers to nutrition, health and development is the `human capital investment' model. Also relevant is a `human stress' model, wherein the transfer enables better care for children by improving the psychological wellbeing of caregivers (Fernald et al., 2012). With both in-kind and cash transfers, there are also broader social norms and values that drive household decisions; ultimately the available technology, markets and quality of services for promoting health and nutrition could constrain the translation of the transfers to positive nutritional outcomes.

The theoretical issue of interest is whether one form of transfer offers a better vehicle than the other to achieve desired nutritional outcomes. Early theoretical work in economics

proclaimed pure cash transfers to be superior (Narayanan, 2011). Thurow (1974), for example, wrote "while it is not axiomatically true that cash transfers always dominate restricted transfers, the general economic case for cash transfers is strong enough that the burden of proof should always lie on those who advocate restricted transfers". Southworth (1945) had however predicted earlier, in the context of food stamps, that households would spend the same amount of additional resources on food whether these resources came from food stamps or cash as long as the transfer was inframarginal. A transfer is "inframarginal" when the transfer is less than what the household would have consumed without the transfer; an "extramarginal" transfer is one where the transfer is greater than the amount the household would have consumed without the transfer. Empirical evidence has often defied the Southworth hypothesis, not so much in favor of the Thurow's view but its opposite (Barrett, 2002; Beatty & Tuttle, 2014). [15] For example, the "cash-out puzzle" shows that there is a higher marginal propensity to consume food with food stamps than with cash income and this has prompted new theoretical work that has sought to address these empirical "anomalies" (Parke and Ranney, 1996, for example). In general, with a cash transfer for food security and nutritional outcomes, one would not expect the entire transfer to be devoted to the desired food bundle, unless the marginal propensity to consume out of additional income is one. Insights from behavioral economics point to many factors that influence the extent to which cash transfers are directed to food. For example, mental accounting – dedicating portions of the budget to specific needs – might matter (Thaler, 1999), so that labeling becomes important to nudge beneficiaries in ways that are consistent with program objective. Gender-based differences over food preferences and prioritizing expenditure might also be important factors, calling for earmarking transfers for women. Overall, the theoretical rationale for unconditional cash transfers is more equivocal today than the early works suggested (see for example, Breunig et al., 2005; Currie & Ghavari, 2008; Mookherjee & Ray, 2008).

Much of the theoretical concern with cash transfers pertains to whether or not it serves as additional income or crowds out non-transfer incomes – especially those derived from labour supply and to a lesser extent remittance. This would be a concern especially if cash transfer prompts withdrawal from the active labour force (Jensen 2004; Cox, Hansen, & Jimenez, 2004). There is little evidence to suggest this might be happening and as Alderman

[15] In terms of food versus cash, Ninno and Dorosh (2003) find that in Bangladesh the marginal propensity to consume (MPC) out of wheat transfers in-kind is significantly higher than the MPC out of cash transfers. While food and cash incentives both contribute to a comparable increase in enrolment, cash did not increase a family's food consumption whereas take-home rations did (Ahmed, 2009). A study of the Programa de Apoyo Alimentario (PAL), a food assistance program for the poor in Mexico (Skoufias & Gonzalez-Cossio, 2008) find that in-kind performs comparably to cash transfers in increasing food expenditure. More recently, a four-country study by IFPRI comparing cash versus food transfer in Ecuador, Niger, Yemen and Uganda found that cash enhanced household food security more than food transfers but food transfers have greater impacts on calorie acquisition (Hoddinott et al., 2013b; Hidrobo et al., 2014).

(2015) emphasizes this is an unwarranted concern for social protection programs.[16] Empirical work suggests that reductions in overall adult labor supply attributable to safety nets are minor (Alderman & Yemtsov, 2014; Banerjee et al., 2017; Grosh et al., 2008). That said, it has been observed in Brazil that labour was reallocated away from formal sector employment to the informal sector since the latter was not a focus of means-testing whereas the former was. (De Brauw et al., 2015, for Brazil's Bolsa Familia)

The other concern is that these transfers might not "stick". This concern is highlighted for both cash transfers as well as in-kind. An individual receiving a transfer may pass some of the assistance or use the cash for other family members or to neighbors. If households reallocate food away from the direct recipient in response to the transfer, this too can be considered indirect sharing since it would enable non-beneficiaries to augment their intakes. This might limit the impact on direct beneficiaries. There could however be positive impacts overall if, for example, the cash/in-kind transfer is shared with others who are also malnourished, while not leaving the intended beneficiary worse off. Discussions on sharing in `wet feeding' suggest either that this might be limited (see Jacoby (2002) for school feeding in the Philippines; Afridi (2010), for India), or when it exists, it can be nutritionally beneficial and have impacts on malnourished siblings (Kazianga et al., 2014 for Burkina Faso).

While sharing is one aspect of whether or not the intended recipient benefits fully from the THR, an analogous concern with unconditional cash transfers is that it might be directed to items that do not augment nutritional status even if these are socially desirable goods. Regular claims of cash transfers being diverted to temptation goods are not supported by actual evidence (Evans & Popova, 2017; Handa et al., 2018). However, that such concerns are routinely articulated in surveys especially by women (Khera (2014), OPM (2017), Hirvonen and Hoddinott (2020), for example) point to the complex role of intra-household control over these transfers, even if these are earmarked for women.

From the perspective of programs targeting maternal and child health, when the focus is on promoting the consumption of high-quality food and in investments in health, how the transfer is spent becomes crucial in contrast to a cash transfer aimed more broadly at poverty alleviation. In fact, not only is it important that the cash is directed to appropriate purchases from a nutritional standpoint but specifically whether the increased purchases after receiving a transfer are greater than the expected increase of purchases that would have occurred at that income level, but without the transfer (Alderman, 2016).

Thus, while cash transfers allow beneficiaries freedom to direct the benefit to particular household needs, the empirical question is whether or not this leads to a more

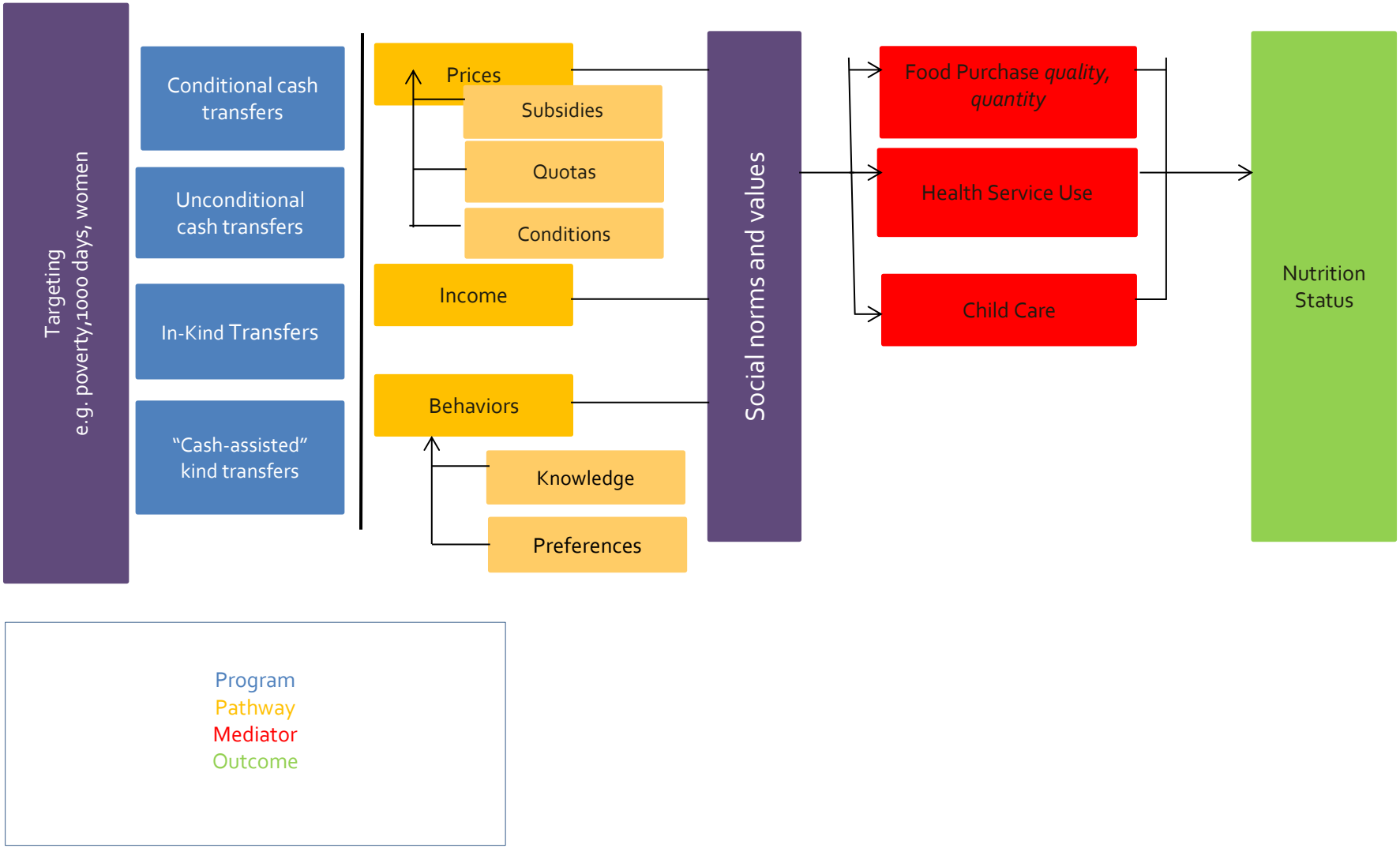
[16] Alderman et al. (2017) for example points out that this concern might have come from superposing the experience of social insurance programs that showed impacts on labour supply.

diverse and nutritionally appropriate diet that fits the preferences and tastes of the beneficiary. This depends on several factors.

The first assumption is that the beneficiary, especially if they are women, are able retain control over how to spend it, know which food items to buy to forward the child's nutritional status as well as their own and be able to acquire these and feed the child. There is evidence that where cash has been specifically targeted at women it gave them greater intra-household control (Adato et al., 2003; Attanasio & Lechene, 2002; Schady & Rosero, 2008). If the amount is not high enough, it might be inadequate to overturn norms within and outside the household. Cash might also provoke more household conflict regarding expenditure priorities than might be the case with in-kind assistance, depending on the agentive capacity of women within the household, although currently there is encouraging evidence from TMRI in Bangladesh that cash with BCC counselling might reduce intimate partner violence (IPV) (Roy et al., 2017). Some worry too that the time burden on women could increase consequent to conditionalities associated with CCTs. That said, with both cash and in-kind transfers, intra-household allocation of food and resources and costs remain a critical barrier.

Second, if nutritional knowledge is poor, beneficiary households might unwittingly purchase inappropriate foods – foods they perceive to be beneficial but in fact are not or to food items that do not compare well nutritionally with either take home rations (THR) or

Figure 1: Conceptual pathways from transfers to nutritional outcomes



what is optimally required. Labeling and earmarking recipients (women, for example) are integral to the design of such transfers (See Alderman (2016) for a discussion of this). Complementary efforts such as BCC or nutrition counseling can also ensure that the nutritional goals of the transfer program are not sacrificed (Ahmed et al. (2014) in Bangladesh).

Even with the requisite knowledge, there is a larger question of whether food environments of these households enable the acquisition of nutrient-rich foods. Local markets, for example, might not support the acquisition of nutrient rich diets –the prices may be so volatile or high that cash transfers do not adequately or consistently compensate consumers should they choose to buy these foods. While on the one hand cash is deemed to have multiplier effects that stimulate the local economy and support development of markets, it can also contribute to localised inflation, where markets function poorly to start with (Cunha et al., 2017). Local markets are likely to develop when the cash infusion is large enough and directed to specific commodities; if the proportion of beneficiaries is too small it is unlikely that suppliers step in to service demand. The evidence on these issues is however mixed and thin. Filmer et al. (2018) finds that a 9% increase in village income in the Philippines consequent to a cash transfer led to a 15% price increase of foods that lasted 2.5 years; specifically it led to a 6-8% increase in the price of protein rich foods like eggs and fresh fish. Stunting among non-beneficiary households increased. Cunha et al. (2017) document price increases associated with PROGRESA transfers but they did not increase in ways that affected non-beneficiaries and occurred only in remote locations – in fact, the ones that were furthest among a sample of villages all of which were too far to be included in PROGRESA.

In general, income elasticities suggest that a cash transfer would have positive impact on purchase of higher quality calories. Almas et al. (2019), for example, use a randomized controlled trial to estimate the impact of an unconditional cash transfer on the food share of expenditures and consumption of calories among poor households in rural Kenya. The average food expenditure elasticity to the one-time income transfer was 0.78, 0.60 for calories, and 1.29 for protein and are unaffected by spillover effects and larger than cross-sectional estimates in most other contexts.

A key advantage of THR is that it can be tailored specifically for the nutritional goals of the program. THR distribution can be a particularly useful vehicle for nutrition sensitive transfers, especially involving fortified food (Alderman et al., 2017). In general, even if the transfer is infra-marginal and/or the foods distributed in-kind are those that would have been purchased from the market anyway, if such foods in the market are not enriched, such transfers could result in higher consumption of micronutrients by beneficiaries (Cunha, 2014; Fiedler et al., 2012). Furthermore, even if similarly enriched foods are available in the market,

it is not clear if beneficiaries would in fact purchase these. That said, even as the potential for THR to deliver the required nutrients to beneficiaries is large, they need to be produced in conditions that are safe and hygienic. In that sense, in-kind transfers rely on strong institutional systems and political will to ensure that rations/food is reliably and promptly delivered to beneficiaries. This raises the question of what types of supply chains for THR are able to provide appropriate, adequate, safe and palatable food. In general, cash transfers too require strong delivery systems and services. Since cash transfers mainly aim to incentivize demand, they fail when conditionalities involve poor supply of health services or food environments do not support the acquisition of nutrient rich food. Weak institutions to monitor and enforce the conditionalities or oversee payments can similarly undermine program goals, a well-recognized constraint with transfers

More generally, however, cash transfers are recognised to be relatively more cost-effective than in-kind transfers since they have lower transaction costs and avoid the problem of having to ship, store, transport and distribute commodities and oversee quality at each stage Further, the marginal cost of augmenting the transfer per beneficiary is very low. This is in contrast to in-kind transfers that involve high program costs and are also associated with larger marginal costs of expanding the transfer bundle. Four randomized trials supported by the World Food Program found that it cost roughly $3 per cash transfer, between $2.89 per transfer in Niger and $3.24 per transfer in Uganda (Margolies & Hoddinott, 2015). In contrast, the cost per food transfer ranged from $6.41 (Uganda) to $11.46 (Ecuador). They estimate that replacing all the food to cash transfers can in principle increase program coverage by 12.7 percent in Niger, 13.06 percent in Yemen, 19.7 percent in Ecuador, and 23.5 percent in Uganda (Margolies & Hoddinott, 2015).

There are however several caveats to the cost advantages of cash transfers. First, the cost advantages of cash transfers generally erode in inflationary conditions if the transfer is indexed to inflation (Edirisinghe, 1987; Kebede, 2006). In general, cash only makes sense where markets are deep and function effectively (Harvey, 2005; Kebede, 2006). Simulation models using Social Accounting Matrices (SAM) too offer such cautionary predictions (Gelan (2006) for example). Where markets are underdeveloped, there is a danger that injection of cash leaves beneficiaries worse off, owing to lack of access to food and also because of local inflationary pressures, as in Ethiopia (Kebede, 2006).

Second, when cash transfers are conditional, verifying compliance can entail large costs; it accounted for 2% to 24% of total administrative costs (excluding transfers) in Mexico (Progresa), Honduras (PRAF II), and Nicaragua (RPS pilot) (Caldés & Maluccio, 2005; Caldés et al., 2006). In Zambia, it was 73% of the cost of transfers (Chiwele, 2010). In general therefore there is a trade-off between reducing monitoring costs and cost effectiveness

(Adato & Bassett, 2009; Handa & Davis, 2006).

Third, cash transfers assume that the recipient is able to access the cash transfer at minimal costs and with least uncertainty and presumes financial inclusion. If this is not the case, the costs of a cash transfer might merely be transferred to the beneficiary and be misrepresented as program savings. Margolies and Hoddinott (2015) note, for example, that depending on the location of the distribution sites, some costs are shifted from the government to consumers for waiting and for transport. In the Indian case, existing evidence from the DBT experiment in India's three Union Territories, Pondicherry, Chandigarh and Dadra & Nagar Havel find that it costs beneficiaries more (in time and money) to travel to banks (to access cash) and markets (to use cash) than in collecting food rations. However, those who used ATMs to access cash spent less time and money on DBT and market purchases than under the PDS, but only 37% of beneficiaries possess ATM cards for the bank in which DBT is received (Niti Aayog, 2017). This fear is articulated often by beneficiaries in household surveys –that withdrawing cash and then purchasing appropriate food from the market would result in loss in time and foregone wages (Aadil & Singh, 2016; Khera, 2014). Also in the Indian context, many estimates of savings from biometric based payments are wrongly attributed to reduced costs, when in fact the savings on programme expenditure are on account of excluding many eligible beneficiaries.

Fourth, there is also a fear with in-kind distribution that there is often high leakage, theft, wastage and corruption.[17] While many in-kind transfers have been redesigned to reduce these leakages (the PDS innovations in Chhattisgarh are a case in point) proponents of cash often associate cash transfers with less corruption and leakage. This is especially with recent innovations and developments in financial technology and the use of formal financial institutions (for example, the use of smartcards in the NREGA, Muralidharan et al., 2016). But observers suggest cash transfers too can engender corruption. In the Indian context, despite the expansion of bank-based payments, there are several last mile issues (Dhorajiwala et al., 2019; Khera, 2017). It can also take unexpected forms. In Karnataka's brief experiment with a cash-coupon, for example, beneficiaries were denied entitlement by dealers unless they also spent on other commodities the shop stocked (Kapoor & Ravi, 2017). In general, therefore, sophisticated tracking and monitoring systems are required even with cash transfers (Devereux & Vincent, 2010), which increase the costs of administering cash transfers.

International evidence on cash versus THR

[17] This does not include elite capture and nepotism in the identification of beneficiaries, which is a pitfall of all targeted programmes and common to both cash and kind.

Current reviews of programs to improve child nutrition recognise that each type of transfer has its pros and cons and the success of one or the other depends not only on the goals but also on the contexts in which they operate (for instance, Alderman et al., 2017; Gentilini, 2014, 2015; Farrington et al., 2006). Consequently, there is some agreement today that the question is not whether one should use cash transfers or in-kind transfers but when is it best to provide food instead of cash and how these can be designed to make them more nutrition-sensitive (Alderman et al., 2017; Gentilini, 2015). These collectively suggest that the empirical basis for one form of social assistance or another is both goal and context-dependent.

There is an expansive literature on the impact of cash transfers. However only a subset of these focus explicitly on a comparison between cash and in-kind programs (Gentilini, 2015). Fewer still address cash versus THR for maternal and child nutrition, especially for children under three years of age. In general, reviews of the efficacy of cash transfers to influence child nutrition, health and development suggest that conditional transfers have impacts on `first order outcomes' – increase uptake of health services and awareness – and perhaps also some `second order outcomes' augmenting consumption and increasing dietary diversity and behaviour change (Levere, et al., 2016 in Nepal). Of the range of `third-order outcomes', i.e., anthropometric measures, cash transfers (with /without) conditions impact birth weight positively, but their impacts on stunting are more limited. (Bassani, et al., 2013; Bastagli, et al., 2016; De Groot et al., 2015; de Walque, 2017; Fernald et al., 2012; Glassman, A, 2013; LeRoy, 2009; Ma ̈lqvist et al., 2013; UNICEF-ESARO, 2015; Owusu-Addo & Cross, 2014). Other meta-analysis of CCT and UCT seem to indicate that despite their proven ability to transfer purchasing power to low-income families and to encourage increased utilization of health services (Lagarde et al., 2007; Ranganathan & Lagarde, 2012; Gaarder, Glassman, & Todd,, 2010), on average the impact of CCTs and UCTs on anthropometric measures of nutritional status is small (Ruel & Alderman, 2013; Manley, Gitter and Slavchevska 2013). Similarly, a significant reduction in anemia was found in only one of the three country programs reviewed by Leroy et al. (2009).

Most reviews are unified in their view that there is not enough research to uncover the pathways through which cash transfers can impact child nutrition and development and few have assessed the consequences beyond a few years, on children's cognitive development (Fernald et al., 2012). Reviewers posit many reasons for this. The amount of transfer might not be adequate or the duration of these transfers might not be long enough. They may also not be timely in the sense of targeting households with children in the most vulnerable 1000-day period from conception to a child's second birthday. In other words, eligibility does not doesn't always coincide with the period of greatest growth velocity and hence transfers miss the window of opportunity. Most importantly, for conditional cash transfers, the quality of

services for meeting conditions might be inadequate to make an impact on anthropometric outcomes.

We know far less about the potential of THRs in these settings, since most lessons learnt from cash transfers compare these transfers to `no transfers'. Further, even established cash transfer programs such as the Bolsa Familia, included in-kind supplementary nutrition or vitamin tablets and it is not clear that the impact evaluations of these programmes isolated the impact of these in-kind components from the cash components.

In this context, a relevant recent study comes from Bangladesh's TMRI, focussing on transfer modalities, which finds that the most impact comes from combining cash with BCC sessions but both food and cash transfers improved household expenditure, calorie intake and diet quality for children. Cash amounts were large and regular, and the BCC provision was high (48 hours a year). There is some evidence from India that counselling alone has mixed effects (Nair et al., 2017) Another useful study from Nepal focusing on maternal interventions found that food supplements in pregnancy with PLA women's groups increased birthweight more than PLA plus cash or PLA alone. However they found that differences were not sustained which lead the authors to recommend nutrition interventions throughout the thousand-day period. (Saville et al., 2018).

3. The Indian Experience with Cash versus Food for Mothers and Children

Research on impacts of replacing THR with cash in India is scarce. Whereas some studies evaluated pilot DBTs for fuel subsidies and the PDS, and food coupons (Aadil & Singh, 2016; Gangopadhyay et al., 2015; Giri et al., 2016; Kapoor & Ravi, 2017; SEWA Bharat & UNICEF 2014; Sewa Bharat & UNDP, 2012; Standing, 2014), there is only one published result from a quasi-experiment conducted on cash for maternal and child nutrition (OPM, 2017) and is described below.

The Bihar Child Support Program (BCSP) was a conditional cash transfer pilot undertaken by the Government of Bihar in two blocks in Gaya district, covering 261 AWCs, for two years, reaching out to 9000 beneficiaries. One treatment arm involved four conditions: monthly attendance at VHSN – Village Health Sanitation and Nutrition Days, weight gain monitoring during pregnancy, child growth monitoring and correct treatment of diarrhoea. The anganwadi worker (AWW) received a mobile phone-based monitoring system. Another arm involved four additional conditions – receipt of IFA supplements, birth registration, exclusive breastfeeding under 6 months and measles vaccination. Here too, the AWWs received a mobile phone-based monitoring system. There were two controls - the first involved only a supply side intervention, where THR was provided and AWWs had mobile based monitoring and the second, where this was absent and mothers continued to receive

THR. The endline suggested that three-quarters of all of the eligible women were aware of the programme but only 49.6% of eligible women were enrolled in the BCSP. The reasons for non-enrollment include missing the registration window due to migration, awareness of being pregnant, not having an account, high processing fees and distance/cost of reaching the nearest bank. Of those enrolled, 71% were able to meet the conditions. The study demonstrated positive impacts on service uptake but limited impact on behavioural change. Cash was predominantly allocated to food and calories that were more expensive and on health expenses, thanks to mental labelling. Nutritional outcomes such as dietary diversity showed improvements. For children, it appeared to reduce incidence of wasting and underweight, but did not do so for stunting. Indications are that the impacts were driven by regular weight monitoring of pregnant women and children, and improved nutrition sensitive behaviors such as increased attendance of VHSND meetings, increase in receipt and intake of iron and folic acid tablets, and increase in exclusive breastfeeding. The evidence from the BCSP suggests however that improvements in breastfeeding occurred in the arm which did not have it as a conditionality and conversely conditionalities on breastfeeding did not seem to play a role in increasing breastfeeding rates. The BCSP's impacts are not significantly different from international experience; it also emphasizes the challenges in implementation and design and reinforces the key role of counselling and awareness sessions to ensure that conditionalities are effective.

The serious paucity of experimental trials on THR versus cash transfer comparisons on a larger scale can be overcome somewhat by evaluating India's experience with existing programs – the THR with ICDS and cash transfer programs such as the JSY and other maternity entitlements.

Studies that evaluate the impacts of the ICDS program suggest that it is associated with small but statistically significant gains in height for children. Kandpal (2011) finds that ICDS increases average HAZ scores by approximately 6% with bigger impacts in poorer areas; Jain (2015) finds that girls 0–2 years old receiving supplementary feeding intensely are at least 1 cm (0.4 z-score) taller than those not receiving it in rural India. The estimates are similar for boys aged 0–2 but less robust. On the other hand, Lokshin et al. (2005) find that the ICDS had limited impact.[18] The JSY's impacts too are widely debated. There is agreement that while uptake of institutional delivery for women increased (Gopalan & Varatharajan, 2012; Lim et al., 2010; Powell-Jackson et al., 2015; Rahman & Pallikadavath, 2018) for Odisha), particularly among poor and marginalized women, and on immunization rates (Carvalho et al., 2014) and breastfeeding (Powell-Jackson et al., 2015), its impacts on stillbirths and deaths in the first week of life or perinatal mortality (PMR) and deaths within

[18] There is also some evidence on ICDS impacts on cognitive development (Vikram & Chindarkar, 2020).

the first 28 days or neonatal mortality (NMR) are less clear and more controversial (Joshi & Sivaram, 2014; Lim et al., 2010; Ng et al., 2014; Powell-Jackson et al., 2015). As for other programmes, Mohanan et al. (2016) find no impacts on institutional delivery rates or maternal health outcomes in similar cash programs in Gujarat (Chiranjeevi Yojana) and Karnataka (Thayi Bhagya Yojana). A recent study on the Mamta scheme in Odisha that is targeted at pregnant and lactating women found that CCTs can increase the likelihood of receiving ante-natal services, folic acid tablets and decrease household food security (Raghunathan et al., 2017). The limited effectiveness of these CCTs on child anthropometry is believed to be on account of significant barriers to access these conditionalities and the poor quality of services (see Gupta et al., 2018 for example).

Data from the NFHS-4 and DLHS4 both indicate that the ICDS programme (including THR for mothers) has a much broader reach than the JSY (Table 3). While the former reaches around half of all eligible pregnant women, the JSY reaches around a third of eligible women. Around 30% all women received both supplementary nutrition from the ICDS and the JSY payments.[19] Both programs are moderately pro-poor and the proportion of eligible women who access these programs declines with the wealth index generated from survey data (Figure 2). Although the coverage and reach is pro-poor both in the NFHS and DLHS samples, there is some evidence that the poorest are left out of these programs, both within the ICDS (Gragnolati, et al., 2006; Raghunathan, 2017) and JSY (Randive et al., 2014; Thongkong et al., 2017). Some studies have recorded discrimination on the basis of caste, while location of the anganwadi and identity of the AWW also seem to matter significantly in who accesses these services (CIRCUS, 2006 for example). We know less about whether cash transfers also entail exclusion on the basis of caste but the BCSP shows evidence that those who did not enrol had a similar distribution of castes as the communities studied (OPM, 2017)

Within the ICDS, Supplementary Nutrition Program (SNP) has often been regarded as the most widely used service by pregnant women. By comparison, health checkups and nutrition and health counselling have been relatively less diligently implemented (Figure 3). Even within the SNP, the distribution of food for younger children is relatively less regular and the coverage less relative to those for older children (Gragnolati et al., 2006; CIRCUS, 2006: CAG, 2013, Figure 4). The data from NFHS-4 suggest that for children, immunization services reach the most, with supplementary nutrition and health check-ups having a comparable reach.

Take Home Rations and the ICDS

[19] The relatively low rates of JSY could reflect greater use of private medical facilities or higher birth order children in states where the JSY is restricted to 2 births and merits further examination.

There are currently two major issues with THR in ICDS. First, there is widespread evidence that THR is routinely shared with other family members, although this evidence comes from small samples in very specific locations. For example, unpublished studies from IFPRI, from several Indian states suggest across states, sharing is common. However, most women consume at least some of the THR meant for them (71-91% consumed at least some THR, except MP and UP, where it was lower) when they receive it during pregnancy and lactation. In contrast, fewer children do (except in Odisha) and Uttar Pradesh has the lowest consumption with 25-40%.[20] The THR is commonly shared with other family members in Odisha, MP and Bihar. An unpublished scoping study for a THR evaluation in Karnataka by St.John's Research Institute, Bangalore, too suggests that although THR was distributed to 95% of the beneficiaries (6-36 months), only 26% of it was consumed by the beneficiary. The rest was typically shared by the whole family. In Telangana, Leyvarez et al. (2016) found that nearly all caregivers (93.7%) had heard of Balamrutham and 86.8% had already received the product for the target child. Among the children surveyed, 57.2% consumed the product regularly. The authors record respondents saying that they consumed it because it was tasty, good for them and came free. As elsewhere, it was shared with other household members, including caregivers and other children. Despite sharing, the THR was estimated to provide the target children with significant proportions of the daily requirements of macro- and micronutrients. Another study by Talati et al. (2016) find in Gujarat that only 19% of the children (7 months to 3 years) who received Balbhog (Energy dense Micronutritient Fortified Extruded Blended Food) ate it and 90% shared it with other family members. Mothers too tended to share these with other family members and only around 12-15% ate these exclusively.

Despite these fears that THR might be shared, in general, many in India advocate providing good quality THR over cash for younger kids and mothers (Working Group on Children Under Six, 2007, for example). Interestingly, in response problem of THR-sharing, several states have moved towards including spot feeding and wet meals for pregnant and lactating mothers. Telangana and Andhra Pradesh, for example, launched "wet" meals for pregnant and nursing women in 2013, as part of the Arogyalakshmi and Indiramma Amrutha Hastham scheme schemes, respectively. These meals include eggs, milk and green leafy vegetables, among others (Sethi et al., 2019) and aims to meet 40-45% of the daily calorie requirement and as much of recommended protein and calcium intakes for pregnant and

[20]These are studies of PWWINGS in Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, West Bengal, of ICT RTM in Madhya Pradesh, Bihar and the Maternal nutrition pilot in Uttar Pradesh.

nursing women (Parasar & Bhavani, 2018).[21] Karnataka too has recently introduced the Mathru Purna Yojana (MPY) (CBPS, 2017). Tamil Nadu had introduced similar meals for pregnant and nursing mothers, but reverted to THR, since many mothers preferred THR. These women typically worked well into late pregnancy and return to work soon after childbirth and were unable to take time off from work to access these meals (Parasar & Bhavani, 2018). In some of these states, the meal is provided in addition to the THR. In general, the experience of these states has been that spot feeding opens up possibilities of dovetailing other services, such as supervised intake of supplements and nutrition and health counselling (Parasar & Bhavani, 2018). At this time, these programmes that are quite popular with the beneficiaries, but have not been comprehensively assessed for the range of nutritional impacts.

A second issue with THR is that the fortified pre-mixes often fall short of international recommendations and also fall short of norms prescribed by the Indian Council of Medical Research (Schwartz et al., 2018a; Vaid et al., 2018). In general, states follow centrally established guidelines on nutrient composition of THR (Vaid et al., 2018). There is however a large variation across states in the modalities for procurement, provision, composition and quality. Currently, the ICDS stipulates that THR, which is a fortified premix, should include 50% of the ICMR-recommended RDA for nine micronutrients – iron, calcium, folic acid, zinc, and Vitamins A, B1, B2, B3, and C. Schwartz et al. (2018a) analyse the THR composition for five states – Uttar Pradesh, Andhra Pradesh, Odisha, Rajasthan and Kerala and make several recommendations. First, the ICMR guidelines themselves are at variance with World Health Organisation (WHO) recommendations and should be reviewed and revised to incorporate the most updated micronutrient and macronutrient guidance. They also advocate differentiated THR products for children (6 to 36 months old) with a second product for pregnant and nursing women rather than the current standard mix. To ensure that the THR meets the required standards, governments need to ensure that the micronutrient pre-mix is accessible to all producers of THR in all states and ensure that the THR composition complies with the recommended guidelines. In terms of nutrients, Schwartz et al. (2018a) recommend increasing the content of iron, folate, and zinc, incorporating additional micronutrients such vitamins B6, B12, and D, into THR formulation, including high-quality protein (per Protein digestibility-corrected amino acid score or PDCAAS) and reducing sugar content significantly to improve nutritive value.

[21] The one full meal consists of Rice, Dal with leafy Vegetables/sambar, vegetables for a minimum of 25 days, boiled Egg and 200ml. milk for 30 days in a month. Along with the meal, Iron Folic Acid (IFA) tablet is to be administered.

Historically, maintaining quality has been a key challenge and there have been scams where unscrupulous private contractors (for example, Ponty Chadha in UP[22]) supplied poor quality THR. Centralized systems of THR procurement are especially vulnerable to nepotism. Several surveys too record beneficiary dissatisfaction with THR. In the IFPRI studies, for example, of the women and children not consuming any of the food received or did not consume the entire food supplement citing poor quality. In other states, however, such issues do not seem to arise, for example with the Balamrutham in AP/Telangana. In some cases, even if beneficiaries express dislike for the THR, they say consume it because it is good for them (Parasar & Bhavani, 2018).

A series of innovative studies on THR supply chains identifies the challenges and tradeoffs of providing THR that is of appropriate quality (Flannagan et al., 2018; Parasar & Bhavani, 2018; Schwartz, et al., 2019; Schwartz, et al. 2018b &c). Like innovations in food delivery as part of the PDS, many states have modernized and reformed the THR delivery system (Schwartz, et al. 2018b). Some states are already starting to implement guidelines that aim to improve the quality and modality of THR delivery. Odisha has developed guidelines that improve contracting, quality management, and monitoring of THR access for beneficiaries. Madhya Pradesh has revised and updated their THR recipe, improving formulation and composition, in consultation with the National Institute of Nutrition. Gujarat has adopted a barcoding system to better oversee production and distribution processes. Centralized production in Telangana has successfully utilized micronutrient fortification, and Kerala's Kudumbashree system has implemented quality testing for THR. The authors point out that these initiatives address some crucial failures in the THR delivery via the ICDS and deserve to be documented and studied.

Several studies also document significant improvements in the implementation of the ICDS especially in states that have poorer nutritional status (Chakrabarti et al., 2019). There has been a rapid improvement in THR reach over the past decade and much of the improvement has come from states where it is needed most (Chakrabarti et al., 2019). This is reassuring since in many social protection programmes, states that need it most also have poor capacity to implement these whereas the better off states tend to implement these better.

The Janani Suraksha Yojana and other maternity benefits

By many accounts, the JSY has an impressive reach and is pro-poor in most states in India but its implementation has been far from encouraging, as has been the case with other maternity

[22] https://timesofindia.indiatimes.com/city/lucknow/Pontys-Chadhas-firm-served-substandard-meal-panjeeri-Report/articleshow/17513262.cms

entitlements (Sinha et al. (2016) for example). Many people face significant delays in receiving the cash. In the early cash programs such as the DMMBS in TN, launched in 1987 many beneficiaries did not make an effort to obtain the amount, citing that the effort was not worth it and that delays were a deterrent (PHRN, 2010). Balasubramanian and Ravindran (2012) note delays and non-receipt of DMMBS in their study, with several eligible beneficiaries mentioning that they were unable to produce the requisite documents. They note that those not receiving the payments tend to be disproportionately from marginalized communities. This appears to have changed over the years however in the case of DMMBS. For the JSY, our estimates suggest that for those who receive the cash within a month, the mean time is 11 days after birth for NFHS and 12 days for the DLHS sample. However around 27.95-35.55% of those who identified themselves as beneficiaries did not receive it even after a month following delivery (Figure 5, Table 3). There is anecdotal evidence from maternity benefit programs that some people receive it more than a year after childbirth (Falcao et al., 2015). The Bihar THR versus cash experiment too recorded delays in payment receipts, in a program that otherwise had automated and timely payments (OPM, 2017). Falcao et al. (2015) point out that the delays in funds flow are often not a last mile issue, but emanate right from the ministry.[23] This calls for improvements in the fund flow mechanisms as in the case of BCSP and MGNREGA (Banerjee et al., 2016; OPM, 2017). Further, several did not receive the full amount that they were entitled to. Data from NFHS-4 and DLHS-4 report a range of figures that are hard to interpret because they are very noisy. This is true of the JSY itself but also of other cash transfers such as the IGMSY (Sinha et al., 2016). Some reports suggest that a substantial portion of the shortfall is in fact directed to non-regular payments as bribes etc. (Bell, 2011; Falcao et al., 2015).

The record of the new PMMVY is not too different. A recent report suggests that although 83.5% of the registered beneficiaries received the first instalment, only 22% were paid within 150 days of the Last Menstrual Period the average number of days was 45. As much as 28% of all Aadhar-based payments (3.129 million), that constitutied 66% of all such payments, were directed to the wrong bank account (Niti Aayog, 2019). A small scale survey of 98 women in Jharkhand showed that while 51% of the respondents were eligible for PMMVY, only 37% were aware of the scheme, 30% had applied, and none had actually received PMMV benefits at the time of interview. (Kalra and Priya, 2019)

[23] The experience with the MGNREGA wage payments too is mainly on account of delays in disbursement at the national level. Evidence exists of a discouraged worker effect that discourages workers from seeking work under the program consequent to such delays (Narayanan & Gerber, 2017)

How much cash is cash enough? Even when the amount accrues fully, studies suggests that this is inadequate to cover the costs it is meant to. The mean expense incurred on a delivery in a public institutional facility is Rs.3197 as per the NFHS survey data (Rs.2946 and 3913 in rural and urban areas). In contrast, the JSY only provides Rs.1400 for rural institutional deliveries (Rs.500 for home deliveries for Below Poverty Line) and Rs.1000 for urban areas. Our estimates based on the NFHS-4 suggest that for those who receive the JSY, for only 39.32% of the beneficiaries does the transfer cover the out of pocket expenses associated with a delivery (institutional or not). The figure is even lower at 11.12% for DLHS-4 sample (Table 3). Several primary surveys too confirm this (Gopalan & Varatharajan, 2012; Govil et al., 2016,). One view is that even if the transfer does not cover the full costs, the transfer merely needs to act as an incentive for institutional use and in that sense is a discount on services that are valuable to the beneficiaries This reinforces the importance of ensuring that services that represent conditionalities need to be of good quality and not leave the beneficiary spending on poor quality services that might leave them worse off.

Other forms of cash transfers too do not seem to have the effect the program designers hoped for, in part because the programs were not appropriately designed to achieve their stated objectives. The IGMSY for example provided maternity benefits as wage compensation. It aimed "to provide partial compensation for the wage loss so that the woman is not under compulsion to work till the last stage of pregnancy and can take adequate rest before and after delivery" (Government of India, 2011: 5). The amount of Rs.4000 was a "part wage loss compensation of approximately 40 days Rs.100 per day, given as maternity benefit, for ensuring mother takes the much-required rest before delivery and soon after delivery for taking better care of herself and her young infant" (Government of India 2011: 7). In practice, the compensation was not enough to incentivize the women to withdraw from work to be able to rest and the women continue to participate in market work often in conditions that compromise their health (PHRN, 2010; Sinha et al., 2016). In general, the marginal propensity to consume leisure out of a lump sum transfer is not generally so high as to lead complete withdrawal from the work force.[24]

Conditionalities and complexity There is also a significant problem with the enforcing conditionalities and inconsistent implementation between states (Glassman et al., 2013). JSY had relatively simple conditionalities and worker incentives to strengthen adherence to conditionalities. It is unclear whether the incentives to workers mattered more than the incentives to prospective mothers in increasing uptake of services (see Debnath, 2018, for example). Often many state governments in India face capacity constraints. In the PMMVY, a

[24] Indeed, in a more general cash transfer, if a transfer were so large or the propensity to consume leisure so high, this would lead to justifiable fears of dependency.

government evaluation found that as on February 18, 2019, two years after its launch, only 42% and 26% of the sanctioned recruitments had been successfully completed at State and District levels respectively (Niti Aayog, 2019). Despite this, there is evidence that the condition of institutional delivery was not adhered to in ways that were anticipated. More worryingly however, there has been extensive documentation of poor quality of institutions where such deliveries were to take place. These public facilities are poorly equipped and the care provided often extends to mistreatment of patients (Coffey, 2014; Jeffrey & Jeffrey, 2010; Vellakal, et al., 2017). This reinforces the concern that incentivizing demand via cash transfers is predicated on good quality of supply of services, in the absence of which conditionalities can leave beneficiaries worse off.

Many researchers highlight that for conditional cash transfers, conditionalities typically need to be simple and easy to monitor. It would seem that Indian CCTs addressing maternity have gone the opposite way. More recent programs such as the IGMSY and the PMMVY after that entail a bewildering set of conditionalities with an enforcement system that seems sure to fail.[25] Indeed, existing evidence suggests that many beneficiaries do not fully understand the conditionalities. In Indian programs, cash transfers to pregnant mothers have been variously identified as covering out of pocket expenses associated with delivery (DMMAS), as incentives (JSY), as wage compensation and as support to enable consumption of nutritious foods and access certain public services (IGMSY, PMMVY). Without proper labelling or framing it is not clear that women would be nudged to utilize the cash transfer in the best way possible, even if they direct it to appropriate channels. In this respect, evidence from cash transfers in Bangladesh are instructive in that it was when the cash transfer was accompanied by high intensity Behavioural Change Counselling (BCC) that the transfer had the most impact (Ahmed et al., 2014) as was the case with cash and PLA program in Nepal (Saville et al., 2018).

The existing evidence on nutrition and health counselling is somewhat discouraging. As per the NFHS-4 data – although over 52% of the mothers accessed the ICDS during the last pregnancy for supplementary nutrition only 39% did so for nutrition counselling. Given the current levels of nutritional knowledge (as evidenced in other surveys), it is not clear that the current institutional system has the capacity to provide sustained high-quality intensive training. By many accounts, the AWWs even if they obtain regular training are often overworked and unable to routinely and consistently implement counselling or awareness sessions (CIRCUS, 2006). Rationalizing their work burden and salary structures might be just as important as providing worker incentives as with JSY.

[25] The PMMVY has as many as nine conditionalities over the period starting the second trimester to the sixth month after delivery.

How do beneficiaries spend the money? Existing evidence from India suggests that women are able to direct these payments to beneficial goods (OPM, 2017; SEWA Bharat & UNDP, 2012). An early report on the DMMBS in Tamil Nadu showed that most beneficiaries survey used the money for health expenditures, savings and food for themselves and their child (PHRN, 2010). Around 58% of the respondents mentioned that they used the money for medical expense and 44% mentioned food items. Many women were also able to take loans during delivery as they are sure of reimbursement by the scheme. The recent Niti Aayog (2019) report on the PMMVY found that 29% of the beneficiaries saved the money, 12 % directed the benefits to other uses, but a majority reported using it for food and health expenses – 17% for food and 42% for health expenses.

However, when the cash transfer accrues to women's accounts it is unclear whether or not they have the ability and freedom to withdraw the money and then direct it to expenses of their choosing. This is especially a relevant concern when the beneficiary is a pregnant or nursing woman who is more likely to face taboos and other constraints than women who are not. Data from the NFHS-4 suggests that women who are most likely to be the beneficiaries of the JSY are also disproportionately less likely to have a bank account and also less likely to have the freedom to visit the market, health care centre and travel out of the village (Figure 6). The BCSP evaluation reported that less than 50% of the women were able to travel by themselves to collect the cash (OPM, 2017). On the one hand, a high enough cash transfer can catalyse a change in these norms and not remain an obstacle. OPM (2017) reports that more women accessed bank accounts although the cash transfer did not enhance the decision-making power of women within the household (OPM, 2017)

As for the consumption of nutritious foods, there is no rigorous evidence that maps current transfers to what it can buy. On average, a rural household in India spent 10.9% and 52.9% of the monthly household expenditure on cereals and food respectively (NSS 68th, 2011-12). In urban areas, the figures were 6.6% and 42% of monthly household expenditures. Food expenditures in a month totalled Rs.756 and Rs.1121 per capita in rural and urban areas respectively. As Coffey and Hathi (2016a) point out, a JSY transfer of Rs.1400 in rural areas allows pregnant women to expand their consumption – double it for a month. Whether or not that happens depends on both the food environment of the household and intrahousehold sharing norms. Women often eat least and last and cut back in response to household shortages to a greater extent than other members of the household (Lentz et al., 2019). Pregnant and nursing women also face a number of restrictive dietary norms that come from resilient beliefs and taboos, some of which undermine the nutritional needs of pregnant and nursing women (Vallianatos, 2006; Nag, 1994). These too can act as barriers for women who wish to direct benefits to purchasing appropriate foods.

It is well known that income elasticity of nutrient rich foods is higher relative to cereals so that an implicit transfer could in theory expand the basket of foods purchased by the beneficiaries. At the same time, the demand for nutrient rich foods is very price sensitive and consumers substitute away from these when their prices rise. In the rural Indian context, while there has been significant diversification of consumption it has been pointed out that the quality of diets is poor due to the high cost of healthy diets (Meenakshi, 2016).[26] More rigorous research is required to understand how high the transfer needs to be in order to fully fund the THR-equivalent or ideal basket. There is less evidence in the Indian context on general equilibrium effects and whether replacing THR would prompt local inflation. However, since the THR targets only a fraction of households, its impact is likely to be limited.

4. Take home rations or cash or both?

While experiments assessing the relative efficacy of THR versus cash have been welcomed in several quarters, this section outlines concerns that should figure prominently in choosing the way forward – issues that perhaps need to find a place in future research on cash transfers versus THR in India.

Legislation

A social protection program targeting maternal and child nutrition would need to conform in letter and spirit with the National Food Security Act, 2013 which provides a set of legal entitlements forwarding the right to food of citizens. Currently, while it allows experiments with cash, it also guarantees that "for children below the age of 6 months: exclusive breastfeeding will be promoted; an age-appropriate "meal" which meets specified nutritional norms will be provided free of charge through the local anganwadi" and that "every anganwadi shall have facilities for cooking meals, drinking water and sanitation." Similarly, the Act guarantees "every pregnant and lactating mother (during pregnancy and six months after child birth) a free meal at the local anganwadi" and "maternity benefits of at least Rs 6,000 in instalments." While there are qualifications and exceptions, in principle, the law recognizes explicitly a role for both in-kind and cash support. Recent efforts at altering the maternity benefits system in fact violate the provisions of the Act (Drèze (2018) for example).[27] The expansion of conditionalities too has contributed to weakening of these rights.

[26] India's food inflation in the past decade was in fact termed "protein inflation" since prices of protein rich foods seemed to drive inflation (Gokarn, 2011)

[27] As Drèze (2018) points out the IGMSY and PMMVY made maternity benefits conditional, but the PMMVY also restricted benefits to the first living child.

Many argue that cash should be additional to in-kind, rather than replacing it.[28] In this respect, Tamil Nadu's DMMBS is an interesting example – this bundles in-kind and cash contribution – as of 2019 each mother is entitled to Rs.18000. The DMMBS is an invitation to consider the possibility of a combination – given the positive evidence on cash cum kind (Ahmed et al., 2014) in several contexts this is an option worth examining. As mentioned earlier, even in the successful cash transfer programmes of Latin America that document positive effects on child nutrition and health (Fernald et al., 2012) these transfers also included supplementation (vitamin and supplementary nutrition) and in general these reviews do not always isolate the impact of the cash and in-kind components. A good example is the study by Behrman and Hoddinott (2005). While they found no overall impact on nutritional status of PROGRESA based on program eligibility, after controlling for unobserved heterogeneity correlated with actual access to the program's supplementary food component (not all eligible children had such access), there was a significant positive and fairly substantial reduction in stunting among children 12 to 36 months old who received the supplements.

States such as Telengana, Andhra Pradesh and Karnataka offer nutritious wet meals to pregnant and lactating women at the AWCs, in addition to THR (Balamrutham) as weaning food. An advantage of wet meals and in-kind THR is that it also encourages women to meet at the AWC and the contact can be leveraged effectively for counselling and information sessions, perhaps as effectively as cash with conditionalities.

Fiscal space and Centre-state relations

In India, states have often led with innovations in the design and delivery of social protection programs, often going beyond federal mandates. States such as Tamil Nadu for example, have long developed their own bundled programs for maternal and child nutrition (as with the DMMBS) as have Andhra Pradesh and Telangana with the Indiramma Amrutha Hastham and Arogya Lakshmi programs. The federal fiscal structure can sometimes limit the fiscal capacity of states to implement such programs (Prasad et al., 2017). Following the adoption of the recommendations of the 14th Finance Commission in India, the centre devolves more funds to states that are untied funds with a reduction in tied funds that are dedicated to specific programs. Thus, a larger responsibility for spending on nutrition now rests with the states (Shrivastava, 2016). Currently, maternity entitlements (PMMVY) and the JSY, for example, are shared 60:40, except for the Himalayan and north-eastern states where it is 90:10. SNP costs in ICDS are shared equally. However since 2017-18, salaries for key higher level staff for CDPO and supervisor is now disproportionately borne by the states in the ratio

[28] Coffey and Hathi (2016b) argue that neither programme (ICDS and maternity benefits) is sufficient as standalone support for pregnant women.

25:75 (Centre:State) (Accountability Initiative, Budget briefs various). Leaving the funding for social protection for maternity and child health disproportionately to the states opens up the risk that states that need to invest most, for example, the poorer states, might also have poorer fiscal and implementation capacity. The implications of these are not well understood and can be complex.

Leakages

Amongst efforts to plug leakages in existing cash transfer schemes in India, the use of *aadhar*, India's unique biometric identity project is the elephant in the room. In the Indian context, the emergence of new technologies, with the stated objective of reducing leakages and corruption, have had a controversial impact (Dhorajiwala, et al., 2019; Khera, 2017). Although some studies claim that smart cards and biometric based payments reduce leakages and ghost beneficiaries, they find that gains in these schemes in terms of speedier payments are perhaps due to other institutional innovations (Muralidharan et al., 2016). In general, *aadhar*-enabled payments systems (AEPS) have caused considerable disruption in social protection programs. For example, a study based on proprietary data from a payments enabler suggests that 34.03% of the transactions fail. 17.03% of failures are a result of biometric mismatch, 3.71% are due to other technical reasons (failures such as bank system failures, internet connectivity issues) and the remaining 13.3% are because of non-technical reasons (Padmanabhan et al., 2019). Non-biometric technical failures (lack of sufficient balance, invalid amount entered, etc.)[29] Early studies on DBT pilots for other schemes such as PDS and Fertilizer subsidies document similar problems (Aadil & Singh 2016; Niti Aayog, 2017). [30] The BCSP study lists virtually the same problems in the context of cash payments in lieu of THR (OPM, 2017). A Niti Aayog report based on a process evaluation conducted by JPAL suggest that only two-thirds of all beneficiaries were able to confirm receiving DBT; in contrast administrative records suggest a failure rate of 1%. The reason for this gap was attributed to errors in directing the money to the appropriate account, lack of awareness of the beneficiaries and so on. Such impediments entail a significant cost to the beneficiaries (Muralidharan, et al., 2020). These could be transitional issues that improve with time and it is too early to tell if this is indeed the case.

[29] If repeated attempts are excluded, the overall failure rate reduces to 31.29%, biometric failure rate to 15.28%, technical failure rate to 3.47% and other non- technical failure rate to 12.55%. According to the authors, with experience users learn how to key in numbers and swiping the fingers. They also learn that some fingers work better than the others and the fact that keeping the fingers dry and clean helps. Beneficiaries start seeking information on bank's IT systems functioning and it also appears that there are exact locations and times of the day during which the connectivity is better.

[30] For a debate on the costs and benefits of using aadhar in welfare programs the EPW published a series of exchanges on the study "A Cost-Benefit Analysis of Aadhaar" conducted by the National Institute of Public Finance and Policy which was discussed in the EPW of 2 February 2013 (Chandrashekaran et al., 2013).

In general, with THR it is challenging to quantify the leakages and there are no available estimates on leakages of supplementary nutrition in the form of THR.[31] Recent efforts at streamlining the THR supply chains however hold promise, at least when it comes to large-scale diversion of THR (Schwartz et al., 2018b& c; Schwartz, et al., 2019).[32] There have also been several simple innovations in the PDS and otherwise in different states such as Chhattisgarh of doorstep delivery of grain, easily recognizable trucks painted yellow to carry the rations, GPS based tracking, designating specific days for supplies to reach the AWCs, information boards all of which increase the transparency of the program and strengthen the ability of beneficiaries to make demands on the system (Drèze & Khera, 2010)

People's preferences

Recently there have been suggestions that India should adopt a choice-based transfer system where beneficiaries opt for cash or in-kind transfers. While in principle this sounds like an attractive and reasonable suggestion, it would present formidable administrative challenges to implement (Alderman et al., 2019). In general, eliciting people's preferences can be challenging and in most studies that do need to grapple with status-quo and endowment bias; some studies also suffer from framing problems. Preferences can also systematically vary across gender, with women often preferring food over cash. Some surveys report that where in-kind transfers do not work, people seem to prefer cash (Khera, 2014). This perhaps also explains the high preference of cash in IFPRI's surveys ranging from 66% in Odisha to 97% in Bihar. Likewise, DBT pilots in India suggested that in the context of problems with cash people preferred in-kind (Aadil & Singh, 2016). A JPAL process evaluation too found that beneficiary preference for DBT over in-kind PDS benefits grew over time. At the start of monitoring less than 35% preferred receiving cash, this increased to 65% as the ability to deliver improves over time. It is hard to interpret these results since in Puducherry for example, in-kind transfers had been reinstated. Ghatak et al. (2016) observe that people's preferences are driven by demand side issues – on their own perception as to whether the amount of cash received is adequate relative to purpose. With the DBT experiment with the PDS in Union Territories, beneficiaries spent extra money per household buying the same amount of grain in the market out of their own pocket, mainly because they purchased higher quality grains. The JPAL surveys show that this led to many DBT beneficiaries consequently complained that the DBT was inadequate (Niti Aayog, 2017). Khemani et al., (2019) reports

[31] A study of THR leakage under the ICDS in Bihar puts this figure at 38%, with children getting 77% of the stipulated calories and protein The study compares allocation and expenditures and attributes the entire difference to diversion (Fraker, Shah & Abraham, 2013) and does not distinguish from underutilization of allocations.

[32] In the case of the Public Distribution System, the two broad approaches to estimate leakages have been to get estimates of PDS-sourced purchases from nationally representative consumption expenditure surveys and compare it with the offtake reported by state governments. The other approach has been to compare the quantity purchased as reported in household surveys with beneficiary entitlements under the NFSA.

differently from a recent survey from Bihar that people seem to value well-functioning public services over cash, which is unsurprising; they caution that our focus on cash transfers should not detract us from the provision of public services.

Assessing costs

A key driver of debates on cash versus THR has been with respect to costs and many arguments speak in terms of savings that can be achieved with switching from THR to Cash. For a program that aims to reduce maternal and child nutrition, however, the key concerns should be the cost effectiveness of a program and the relative cost effectiveness of cash and THR. Cost effectiveness relates to the cost of delivery per unit of benefit. This may be significantly high for THR, enough to justify such expenditure. Kandpal (2011) estimates a benefit-cost ratio for the ICDS and suggests it offers a 3.75-fold return.[33] Comparable figures from cash schemes are not available. A cautionary note is that these cost-benefit estimates are tricky and require careful assessment.

The other aspect is the relative cost effectiveness – can cash transfers deliver the same benefit at lower cost? There is almost universal agreement that the costs of delivering cash are significantly lower than delivering in-kind transfers. At the same time few studies in the Indian context have been able to estimate this with any rigour and most of these pertain to the PDS – the cost of transferring cash often does not fully account for the systems in place to effect such transfer – these include investments in PoS machines, authentication charges, etc. On the other hand, estimates of THR or in-kind transfers often neglect that the costs of acquisition of foodgrains for distribution. When it is from far-off locations, it can be costly. At the same time, such purchases also represent a transfer to the farmers/producers (Desai et al., 2014). Where local procurement is the norm, it can yield both savings in costs as well as positive income spillovers to local producers. Odisha is a leading example of local procurement of materials from SHGs.

5. Concluding Remarks

This paper is an effort to synthesize existing evidence relevant to the current Indian debates on whether THR in the ICDS programme should be replaced with cash. The review of evidence suggests that there is no clear way forward. Despite the potential savings associated with cash transfers and its demonstrated impact on certain first and second order outcomes – such as access to services and improved diets – there is less evidence that it

[33] The cost norms for THR are currently Rs.9.50 per woman per day and for children between 6 months and 72, it is Rs.8 and 12 for normal and severely malnourished. These were increased from previous levels of 7, 6 and 9, respectively. In states such as Telangana, Andhra Pradesh and Karnataka, that include a full meal for pregnant and lactating women, the allocation was Rs.21/beneficiary per day.

improves infant and neonatal mortality and stunting among children. Researchers agree that there are several barriers that might prevent the translation of such cash transfers into desirable nutritional outcomes, notably the quality of services that are associated with conditionalities. Existing evidence suggests too that conditionalities might not work, unless they are minimal and easy to understand.

The current performance of existing cash transfers in India has been underwhelming at best, especially in the context of challenges in delivering cash to the right beneficiary in a timely manner and in ways that they can access without difficulty. It is unclear if the significant implementation challenges can be overcome in the short run. The bigger barrier with cash in lieu of THR however pertains to the relatively low agency of young mothers, the intended recipients of the transfer. Their limited capacity to access banks, freedom to visit the market and their restricted role in intra-household decision making are likely profound barriers, especially in contexts where such programs are most needed. Labelling, earmarking money to women and counselling can strengthen these impacts to some extent, but cannot be expected to overturn deeply entrenched norms.

On the other hand, all is not well with THR either. It is apparent that the quality of THR and modalities of procurement and distribution leave much to be desired – in terms of content and reliability and efficiency of supply chains as well as distribution. Heavily centralized systems in general appear to have greater scope for corruption and nepotism, often at the expense of quality. Recent innovations in supply chain management of THR merit study to assess if these are effective in addressing the critical problems with THR distribution. It remains to be seen how improvements in either THR delivery or similar improvements in delivering cash would affect the relative effectiveness and cost advantage of the two programs.

Existing data from large-scale datasets suggest that THR currently has a wider reach then cash and the prospect of transitioning to cash will likely exclude many current beneficiaries. Access to the ICDS supplementary nutrition via an anganwadi centre also opens an opportunity to engage women in nutrition and health sessions, something that cash transfers can achieve likely only if cash comes with conditionalities.

This paper points to a set of issues that need more study in the Indian context. For example, although it has been rightly recognized that there is little that we know about the effectiveness of cash transfers for maternal and child nutrition, we know just as little about the impact and effectiveness of THR. Indeed, recent work on supply side innovations with THR delivery underscore the need for more research. Likewise, while there is some work on providing worker incentives, we know little about best practices in funds flow mechanisms that have the potential to improve delivery of benefits.

Most importantly, however, there has not been adequate attention to the possible of a combination of a cash and in-kind transfer. This is particularly puzzling since both these components are already in place to promote maternal and child health and nutrition. State schemes such as Tamil Nadu's DMMBS offer an opportunity to examine this possibility. Nor has there been any systematic study to assess the impacts of wet meals and spot feeding offered to pregnant and lactating women. An approach that combines cash with in-kind (including "wet" meals) needs serious consideration. This approach would not only help leverage existing institutions but also conform to the National Food Security Act (NFSA) in spirit and letter.

References

Aadil, A and Singh , L K (2016) Endline Assessment of DBT Pilots in TPDS: Some success and Few Issues, Microsave India Focus Note 132, Microsave, April, 2016

Adato, M, B de la Briere, D Mindek and A R Quisumbing (2003): The Impact of Progresa on Women's Status and Intrahousehold Relations in A R Quisumbing (ed.), Household Decisions, Gender, and Development: A Synthesis of Recent Research, Washington DC: International Food Policy Research Institute.

Adato, M., & Bassett, L. (2009). Social protection to support vulnerable children and families: the potential of cash transfers to protect education, health and nutrition. AIDS care, 21(sup1), 60-75.https://doi.org/10.1080/09540120903112351

Afridi, F. (2010). Child welfare programs and child nutrition: Evidence from a mandated school meal program in India. *Journal of development Economics*, 92(2), 152-165. https://doi.org/10.1016/j.jdeveco.2009.02.002

Ahmed, A. U., Quisumbing, A. R., Nasreen, M., Hoddinott, J., & Bryan, E. (2009). Comparing food and cash transfers to the ultra poor in Bangladesh (No. 604-2016-40164, p. 1). http://purl.umn.edu/92803

Ahmed, A. U., Sraboni, E., & Shaba, F. K. (2014). Safety nets in Bangladesh: which form of transfer is most beneficial. Washington D.C.: International Food Policy Research Institute.

Alderman, H., Hoddinott, J., & Kinsey, B. (2006). Long term consequences of early childhood malnutrition. Oxford economic papers, 58(3), 450-474. https://doi.org/10.1093/oep/gpl008

Alderman, H., & Yemtsov, R. (2013). How can safety nets contribute to economic growth?. The World Bank. https://doi.org/10.1596/1813-9450-6437

Alderman, H. (2016). *Leveraging Social Protection Programs for Improved Nutrition : summary of evidence prepared for the Global Forum on Nutrition-Sensitive Social Protection Programs, 2015*. Global Forum on Nutrition-Sensitive Social Protection Programs. Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/462981467040874717/Leveraging-Social-Protection-Programs-for-Improved-Nutrition-summary-of-evidence-prepared-for-the-Global-Forum-on-Nutrition-Sensitive-Social-Protection-Programs-2015

Alderman, H., Gentilini, U., & Yemtsov, R. (Eds.). (2017). *The 1.5 Billion People Question: Food, Vouchers, Or Cash Transfers?* Washington D.C.: The World Bank. https://doi.org/10.1596/1813-9450-6437

Almås, I., Haushofer, J., & Shapiro, J. P. (2019). The Income Elasticity for Nutrition: Evidence from Unconditional Cash Transfers in Kenya (No. w25711). National Bureau of Economic Research. DOI: 10.3386/w25711

Attanasio, O., & Lechene, V. (2002). Tests of income pooling in household decisions. *Review of Economic Dynamics*, 5(4), 720-748. https://doi.org/10.1006/redy.2002.0191

Balasubramanian, P., & Ravindran, T. (2012). Pro-Poor Maternity Benefit Schemes and Rural Women: Findings from Tamil Nadu. *Economic and Political Weekly, 47*(25), 19-22. Retrieved March 17, 2020, from www.jstor.org/stable/23215026

Banerjee, A. V., Hanna, R., Kreindler, G. E., & Olken, B. A. (2017). Debunking the stereotype of the lazy welfare recipient: Evidence from cash transfer programs. *The World Bank Research Observer*, *32*(2), 155-184. https://doi.org/10.1093/wbro/lkx002

Banerjee, A., Duflo, E., Imbert, C., Mathew, S., & Pande, R. (2016). E-governance, accountability, and leakage in public programs: Experimental evidence from a financial management reform in India (No. w22803). National Bureau of Economic Research. DOI: 10.3386/w22803

Barrett, C B (2002): Food Security and Food Assistance Programs in Bruce Gardner and G Rausser (ed.), Handbook of Agricultural Economics, Vol 18, Amsterdam.

Bassani, D.G., Arora, P., Wazny, K., Gaffey, M.F., Lenters, L. and Bhutta, Z.A. (2013) Financial incentives and coverage of child health interventions: a systematic review and meta-analysis. *BMC Public Health*, 13(3), p.S30. https://doi.org/10.1186/1471-2458-13-S3-S30

Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., Schmidt, T., & Pellerano, L. (2016). Cash transfers: what does the evidence say. *A rigorous review of programme impact and the role of design and implementation features. London: ODI*.

Beatty, T. K., & Tuttle, C. J. (2014). Expenditure response to increases in in-kind transfers: Evidence from the Supplemental Nutrition Assistance Program. *American Journal of Agricultural Economics*, *97*(2), 390-404. https://doi.org/10.1093/ajae/aau097

Behrman, J. R., & Hoddinott, J. (2005). Programme evaluation with unobserved heterogeneity and selective implementation: The Mexican PROGRESA impact on child nutrition. *Oxford Bulletin of Economics and Statistics*, 67(4), 547-569. https://doi.org/10.1111/j.1468-0084.2005.00131.x

Behrman, J. R. (2009). Early life nutrition and subsequent education, health, wage, and intergenerational effects. *Health and Growth*, 6:167-183. https://doi.org/10.1111/j.1468-0084.2005.00131.x

Bell, R. T. (2011). *A Baseline Study Exploring Rural Maternal Health Practices and Services in Relation to the IGMSY Conditional Maternity Benefit*, Master's thesis, University of Utrecht. Accessed April 20, 2019.

Bhutta, Z. A., Das, J. K., Rizvi, A., Gaffey, M. F., Walker, N., Horton, S., Webb,P., Lartey, A. Black, R (2013). Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*, *382*(9890), 452-477. https://doi.org/10.1016/S0140-6736(13)60996-4

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M, Grantham-McGregor, S, Katz, J, Martorell, R & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427-451. https://doi.org/10.1016/S0140-6736(13)60937-X

Bloom, S. S., Wypij, D., & Gupta, M. D. (2001). Dimensions of women's autonomy and the influence on maternal health care utilization in a north Indian city. *Demography*, *38*(1), 67-78. https://doi.org/10.1353/dem.2001.0001

Brennan, L., McDonald, J., & Shlomowitz, R. (2004). Infant feeding practices and chronic child malnutrition in the Indian states of Karnataka and Uttar Pradesh. *Economics & Human Biology*, *2*(1), 139-158. https://doi.org/10.1016/j.ehb.2003.09.003

Breunig, R., Dasgupta, I., Gundersen, C., & Pattanaik, P. (2005). Do Intra-Household Effects Generate the Food Stamp Cash-Out Puzzle?, *American Journal of Agricultural Economics*, 87(3):552–568, https://doi.org/10.1111/j.1467-8276.2005.00747.x

Caldes, N., & Maluccio, J. A. (2005). The cost of conditional cash transfers. *Journal of International Development*, *17*(2), 151-168. https://doi.org/10.1002/jid.1142

Caldés, N., Coady, D., & Maluccio, J. A. (2006). The cost of poverty alleviation transfer programs: a comparative analysis of three programs in Latin America. *World development*, *34*(5), 818-837. https://doi.org/10.1016/j.worlddev.2005.10.003

Carvalho, N., Thacker, N., Gupta, S. S., & Salomon, J. A. (2014). More evidence on the impact of India's conditional cash transfer program, Janani Suraksha Yojana: quasi-experimental evaluation of the effects on childhood immunization and other reproductive and child health outcomes. *PLoS One*, *9*(10), e109311. https://doi.org/10.1371/journal.pone.0109311

Case,A., Fertig, A., & Paxson, C. (2005). The lasting impact of childhood health and circumstance. *Journal of health economics*, *24*(2), 365-389. https://doi.org/10.1016/j.jhealeco.2004.09.008

Center for Budget and Policy Studies (2017) An ethnographic study of the Mathru Poorna Yojana (One Full Meal) pilot project for pregnant and lactating mothers in two blocks of two districts in Karnataka, Bangalore: Centre for Budget and Policy Studies, October 2017

Chakrabarti, S., Raghunathan, K., Alderman, H., Menon, P., & Nguyen, P. (2019). India's Integrated Child Development Services programme; equity and extent of coverage in 2006 and 2016. *Bulletin of the World Health Organization*, *97*(4), 270. doi: 10.2471/BLT.18.221135

Chandrashekaran S, Shekhar H Kumar, Smriti Parsheera, Ila Patnaik, Madhavi Pundit, Suyash Rai, Ajay Shah (2013) A debate on the study A Cost-Benefit Analysis of Aadhaar, *Economic and Political Weekly*. 48(10):78-80

CIRCUS (2006) FOCUS: Focus on Children Under Six, Report by the Citizen's Initiative for the Rights of Children Under Six.

Coffey, D. (2014). Costs and consequences of a cash transfer for hospital births in a rural district of Uttar Pradesh, India. *Social science & medicine*, *114*: 89-96. https://doi.org/10.1016/j.socscimed.2014.05.035

Coffey, D., & Hathi, P. (2016a). Maternity entitlements for healthier babies. *Ideas for India*, July 7, https://www.ideasforindia.in/topics/human-development/maternity-entitlements-for-healthier-babies.html

Coffey, D., & Hathi, P. (2016b). Underweight and Pregnant: Designing Universal Maternity Entitlements to Improve Health. *Indian Journal of Human Development*, *10*(2), 176–190. https://doi.org/10.1177/0973703016662095

Cox, D., Hansen, B. E., & Jimenez, E. (2004). How responsive are private transfers to income? Evidence from a laissez-faire economy. *Journal of Public Economics*, *88*(9-10),2193-2219. https://doi.org/10.1016/S0047-2727(03)00069-0

Cunha, J. M. (2014). Testing Paternalism: Cash vs. In-Kind Transfers. American Economic Journal: Applied Economics, 195-230. DOI: 10.1257/app.6.2.195

Cunha, J.M., Giorgi, G.D., Jayachandran, S (2018) The Price Effects of Cash Versus In-Kind Transfers, *The Review of Economic Studies*, Volume 86, Issue 1, January 2019, Pages 240–281, https://doi.org/10.1093/restud/rdy018

Currie, J. and Gahvari, F. (2008). Transfers in Cash and In-Kind: Theory Meets the Data. *Journal of Economic Literat*ure, 46(2), 333-383. DOI: 10.1257/jel.46.2.333

De Brauw, A., Gilligan, D. O., Hoddinott, J., & Roy, S. (2015). Bolsa Família and household labor supply. *Economic Development and Cultural Change*, 63(3), 423-457. https://doi.org/10.1086/680092

de Groot, R., Palermo, T., Handa, S., Ragno, L.P. and Peterman, A. (2015). *Cash Transfers and Child Nutrition: What we know and what we need to know*, Innocenti Working Paper No.2015-07, UNICEF Office of Research, Florence.

de Walque, D., Fernald, L., Gertler, P. and Hidrobo, M (2017) Cash Transfers and Child and Adolescent Development. In Child and Adolescent Health and Development. 3rd edition. The International Bank for Reconstruction and Development/The World Bank.

Debnath, S. (2018) Improving Maternal Health Using Incentives for Mothers and Health Care Workers: Evidence from India. *Economic Development and Cultural Change*. DOI: 10.1086/703083

Desai, B. M., D'souza, E., & Namboodiri, N. V. (2014). Food Subsidy. *Economic & Political Weekly*, 49(52), 37.

Dhorajiwala, S, Drèze, J, Wagner, N (2019) A Bridge to Nowhere, The Hindu, March 27, 2019 https://www.thehindu.com/opinion/lead/a-bridge-to-nowhere/article26646131.ece Accessed March 27, 2019

Devereux, S., & Vincent, K. (2010). Using technology to deliver social protection: exploring opportunities and risks. *Development in Practice*, 20(3), 367-379.

Drèze, J (2018) Maternity entitlements on hold: How the government has undermined women's and children's rights, Times of India, January 11, 2018. https://timesofindia.indiatimes.com/blogs/toi-edit-page/maternity-entitlements-on-hold-how-the-government-has-undermined-womens-and-childrens-rights/, Accessed May 5, 2109.

Drèze, J and Khera, R. (2010) Chhattisgarh shows the way, The Hindu, November 13, 2010. https://www.thehindu.com/features/magazine/Chhattisgarh-shows-the-way/article15685530.ece

Edirisinghe, Neville (1987) *The Food Stamp Scheme in Sri Lanka: Costs, Benefits, and Options for Modification*, Washington DC: International Food Policy Research Institute.

Evans, D.K. and Popova, A. (2017) Cash transfers and temptation goods. *Economic Development and Cultural Change*, 65(2):189-22. https://doi.org/10.1086/689575

Falcao, V.L., J. Khanuja, S.Matharu, S.Nehra and D.Sinha (2015) *Report on the Study of the Indira Gandhi Matritva Sahyog Yojana: To Enhance Inclusion and Preparedness to Implement Provisions under the NFSA 2015* http://centreforequitystudies.org/wp-content/uploads/2015/06/Maternity-Entitlement-Report_CES_29.05.pdf. Accessed November, 2015.

Farrington, J, P Harvey and R Slater (2006) *Cash Transfers in the Context of Pro-Poor Growth*, Overseas Development Institute, London.

Fernald, L, Paul J. Gertler, and Melissa Hidrobo (2012) Conditional Cash Transfer Programs: Effects on Growth, Health, and Development in Young Children *The Oxford Handbook of Poverty and Child Development* 2012 DOI: 10.1093/oxfordhb/9780199769100.013.0032

Fiedler, John L., Sunil Babu, Marc-Francois Smitz, Keith Lividini, and Odilia Bermudez. 2012. Indian Social Safety-Net Programs as Platforms for Introducing Wheat Flour Fortification: A Case Study of Gujarat, India. *Food and Nutrition Bulletin* 33 (1): 11–30. https://doi.org/10.1177%2F156482651203300102

Filmer, D., Friedman, J., Kandpal, E., & Onishi, J. (2018). *General equilibrium effects of targeted cash transfers: nutrition impacts on non-beneficiary children*. Policy Research Working Paper, Washington D.C.:The World Bank. https://doi.org/10.1596/1813-9450-8377

Flanagan, K. F., Soe-Lin, S., Hecht, R. M., & Schwarz, R.K. (2018). THR Production and Distribution Models- Challenges and Opportunities for Improvement. Policy Brief 4. Pharos Global Health Advisors.

Fraker, A., Shah, N. and Abraham, R. (2013) Quantitative Assessment: Beneficiary Nutritional Status and Performance of ICDS Supplementary Nutrition, Working Paper, International Growth Centre.

Gangopadhyay, S Lensink R & Yadav B (2015) Cash or In-kind Transfers? Evidence from a Randomised Controlled Trial in Delhi, India, *The Journal of Development Studies*, 51:6, 660-673, DOI: 10.1080/00220388.2014.997219

Gaarder, Marie M., Amanda Glassman, Jessica E. Todd. 2010. Conditional Cash Transfers and Health: Unpacking the Causal Chain. *Journal of Development Effectiveness* 2: 6–50. https://doi.org/10.1080/19439341003646188

Gelan, A (2006) Cash or Food Aid? A General Equilibrium Analysis for Ethiopia, *Development Policy Review*, 24(5):601-24. https://doi.org/10.1111/j.1467-7679.2006.00350.x

Gentilini, U. (2014) Our Daily Bread : What is the Evidence on Comparing Cash versus Food Transfers? Social Protection and Labor Discussion Papers, World Bank.

Gentilini, U. (2016) Revisiting the Cash versus Food Debate: New Evidence for an Old Puzzle?, *The World Bank Research Observer*, Volume 31(1): 135-167, https://doi.org/10.1093/wbro/lkv012

Ghatak, M., Kumar, C. and Mitra, S. (2016) Cash versus kind. *Economic & Political Weekly*, 51(11), p.51.

Giri, A., Aadil, A, Malhotra, R, Rautela, R, Sharma V P, Roy S (2016) Assessment of AeFDS Aadhaar enabled Fertilizer Distribution System Pilot MicroSave . Available here. Accessed October 4, 2018.

Glassman, A., Duran, D., Fleisher, L., Singer, D., Sturke, R., Angeles, G., Charles, J., Emrey, B., Gleason, J., Mwebsa, W. and Saldana, K. (2013). Impact of conditional cash transfers on maternal and newborn health. *Journal of health, population, and nutrition*, 31(4 Suppl 2), p.S48.

Gokarn, S. (2011). The price of protein. *Macroeconomics and Finance in Emerging Market Economies*, 4(2), 327-335.

Gopalan, S. S., & Varatharajan, D. (2012). Addressing maternal healthcare through demand side financial incentives: experience of Janani Suraksha Yojana program in India. *BMC health services research*, *12*(1), 319.

Government of India (2011) *IGMSY Implementation Guidelines for State Governments/UT Administrations*, Ministry of Women and Child Development, Government of India, New Delhi.

Government of India (2011) *Evaluation study of the National Rural Health Mission in Seven States, Volumes 1 & 2* Programme Evaluation Organisation, Report 217 Planning Commission, Government of India.

Government of India. (2017) *Quick Evaluation Study on Indira Gandhi Matritva Sahyog Yojana (IGMSY),* Development Monitoring and Evaluation Office (DMEO) NITI Aayog, Government of India, April 2017

Govil, D., Purohit, N., Gupta, S.D. and Mohanty, S.K. (2016) Out-of-pocket expenditure on prenatal and natal care post Janani Suraksha Yojana: a case from Rajasthan, India. *Journal of Health, Population and Nutrition*, 35(1), p.15.

Gragnolati, M., Bredenkamp, C., Gupta, M.D., Lee, Y.K. and Shekar, M. (2006) ICDS and persistent undernutrition: Strategies to enhance the impact. *Economic and Political Weekly*, 41(12): 1193-1201.

Grosh, M., Del Ninno,C., Tesliuc,E., and Ouerghi,A. (2008). *For Protection and Promotion: The Design and Implementation of Effective Safety Nets*. Washington, DC: World Bank.

Gupta, A., Fledderjohann, J., Reddy, H., Raman, V.R., Stuckler, D. and Vellakkal, S. (2018) Barriers and prospects of India's conditional cash transfer program to promote institutional delivery care: a qualitative analysis of the supply-side perspectives. *BMC health services research*, 18(1), p.40. https://doi.org/10.1186/s12913-018-2849-8

Lagarde, M., Haines, A., & Palmer, N. (2007). Conditional cash transfers for improving uptake of health interventions in low-and middle-income countries: A systematic review. *Jama*, *298*(16), 1900-1910. doi:10.1001/jama.298.16.1900

Jacoby, H. G. (2002). Is there an intrahousehold 'flypaper effect'? Evidence from a school feeding programme. *The Economic Journal*, *112*(476), 196-221., https://doi.org/10.1111/1468-0297.0j679

Handa, S and B Davis (2006): The Experience of Conditional Cash Transfers in Latin America and the Caribbean, *Development Policy Review*, 24 (5):513-36. https://doi.org/10.1111/j.1467-7679.2006.00345.x

Handa, S., Daidone, S., Peterman, A., Davis, B., Pereira, A., Palermo, T., & Yablonski, J. (2018). Myth-busting? Confronting six common perceptions about unconditional cash transfers as a poverty reduction strategy in Africa. *The World Bank Research Observer*, 33(2): 259-298. https://doi.org/10.1093/wbro/lky003

Harvey, P. (2005). Cash and Vouchers in Emergencies: An HPG Discussion Paper. *Humanitarian Policy Group, Overseas Development Institute*.

Heckman, J. J. (2013). *Giving kids a fair chance*. A Boston Review Book, Boston: MIT Press.

Hidrobo, M., Hoddinott, J., Peterman, A., Margolies, A., & Moreira, V. (2014). Cash, food, or vouchers? Evidence from a randomized experiment in northern Ecuador. *Journal of development Economics*, *107*, 144-156. https://doi.org/10.1016/j.jdeveco.2013.11.009

Hirvonen, Kalle Valtteri; Hoddinott, John. 2020. *Beneficiary Views on Cash and In-Kind Payments : Evidence from Ethiopia's Productive Safety (English)*. Policy Research working paper; no. WPS 9125. Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/568961580228524626/Beneficiary-Views-on-Cash-and-In-Kind-Payments-Evidence-from-Ethiopias-Productive-Safety

Hoddinott, J., Alderman, H., Behrman, J. R., Haddad, L. and Horton, S. (2013a) The economic rationale for investing in stunting reduction. *Maternal and Child Nutrition*, 9 (52): 69–82

Hoddinott, J., Gilligan, D., Hidrobo, M., Margolies, A., Roy, S., Sandström, S., Schwab, B. and Upton, J. (2013b). *Enhancing WFP's capacity and experience to design, implement, monitor, and evaluate vouchers and cash transfer programmes: Study summary.* Washington, DC: International Food Policy Research Institute.

Horton, S. (1999). *Opportunities for investments in nutrition in low-income Asia*. Asian Development Bank http://hdl.handle.net/11540/5393.

Jain, M. (2015) India's Struggle Against Malnutrition—Is the ICDS Program the Answer? *World Development*, 67:72-89. https://doi.org/10.1016/j.worlddev.2014.10.006

Jeffery, P., and Jeffery, R. (2010) Only when the boat has started sinking: A maternal death in rural north India. *Social Science & Medicine*, 71: 1711-1718. https://doi.org/10.1016/j.socscimed.2010.05.002

Jensen, Robert T (2004) Do Private Transfers 'Displace' the Benefits of Public Transfers? Evidence from South Africa. *Journal of Public Economics* 88 (1): 89–112. https://doi.org/10.1016/S0047-2727(02)00085-3

Joshi, S. and Sivaram, A. (2014). Does it pay to deliver? An evaluation of India's safe motherhood program. *World Development*, 64: 434-447. https://doi.org/10.1016/j.worlddev.2014.06.004

Kalra, Aarushi and Priya, Aditi, Birth Pangs: Universal Maternity Entitlements in India (November 14, 2019). Available at SSRN: https://ssrn.com/abstract=3486671 or http://dx.doi.org/10.2139/ssrn.3486671

Kandpal, E., (2011) Beyond average treatment effects: distribution of child nutrition outcomes and program placement in India's ICDS. *World Development*, 39(8) 1410-1421. https://doi.org/10.1016/j.worlddev.2010.12.013

Kapoor, A and Ravi,V. (2017) Understanding Karnataka's Food Coupon System, Microsave India Focus Note 141, Microsave, May, 2017

Kazianga, H., de Walque, D., & Alderman, H. (2014). School feeding programs, intrahousehold allocation and the nutrition of siblings: evidence from a randomized trial in rural Burkina Faso. *Journal of Development Economics*, *106*, 15-34. https://doi.org/10.1016/j.jdeveco.2013.08.007

Kebede, E. (2006). Moving from emergency food aid to predictable cash transfers: Recent experience in Ethiopia. *Development Policy Review*, *24*(5), 579-599. https://doi.org/10.1111/j.1467-7679.2006.00349.x

Khemani, S. Habyarimana J Noorudin, I (2019) What do poor people think about direct cash transfers? https://www.brookings.edu/blog/future-development/2019/04/08/what-do-poor-people-think-about-direct-cash-transfers/

Khera, R. (2014). Cash vs. in-kind transfers: Indian data meets theory. *Food Policy*, 46, 116-128. https://doi.org/10.1016/j.foodpol.2014.03.009

Khera, R (2017) The impact of *aadhar* on welfare programmes, *Economic and Political Weekly*, December 16, 2017 No 50

Lancet (2013): Giving Children a Chance, *Lancet*, 381(507), http://doi.org/10.1016/S0140 6 73 6 (13) 60261–5

Leroy, J. L., Ruel, M., & Verhofstadt, E. (2009). The impact of conditional cash transfer programmes on child nutrition: a review of evidence using a programme theory framework. *Journal of development effectiveness*, *1*(2), 103-129. https://doi.org/10.1080/19439340902924043

Lentz, E. C., Narayanan, S., & De, A. (2019). Last and least: Findings on intrahousehold undernutrition from participatory research in South Asia. *Social Science & Medicine*, *232*, 316-323. https://doi.org/10.1016/j.socscimed.2019.05.024.

Levere, M., Acharya, G., & Bharadwaj, P. (2016). The Role of Information and Cash Transfers on Early Childhood Development: Evidence from Nepal. NBER Working Paper. doi:10.3386/w22640.

Leyvraz, M., Wirth, J. P., Woodruff, B. A., Sankar, R., Sodani, P. R., Sharma, N. D., & Aaron, G. J. (2016). High coverage and utilization of fortified take-home rations among children 6–35 months of age provided through the integrated child development services program: findings from a cross-sectional survey in Telangana, India. *PloS one*, *11*(10), e0160814. https://doi.org/10.1371/journal.pone.0160814

Lim, S. S., Dandona, L., Hoisington, J. A., James, S. L., Hogan, M. C., & Gakidou, E. (2010). India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. *The Lancet*, *375*(9730), 2009-2023. https://doi.org/10.1016/S0140-6736(10)60744-1

Lokshin, M., Das Gupta, M., Gragnolati, M., & Ivaschenko, O. (2005). Improving child nutrition? The integrated child development services in India. *Development and Change*, *36*(4), 613-640. https://doi.org/10.1111/j.0012-155X.2005.00427.x

Målqvist, M., Yuan, B., Trygg, N., Selling, K., & Thomsen, S. (2013). Targeted interventions for improved equity in maternal and child health in low-and middle-income settings: a systematic review and meta-analysis. *PLoS One*, *8*(6), e66453. doi:10.1371/journal.pone.0066453

Manley,J.,Gitter,S., Slavchevska,V (2013) How Effective are Cash Transfers at Improving Nutritional Status? *World Development*,48: 133-155, https://doi.org/10.1016/j.worlddev.2013.03.010.

Margolies, A., & Hoddinott, J. (2015). Costing alternative transfer modalities. *Journal of Development Effectiveness*, *7*(1), 1-16. https://doi.org/10.1080/19439342.2014.984745

Ng, M., Misra, A., Diwan, V., Agnani, M., Levin-Rector, A., & De Costa, A. (2014). An assessment of the impact of the JSY cash transfer program on maternal mortality reduction in Madhya Pradesh, India. *Global health action*, *7*(1), 24939. DOI: 10.3402/gha.v7.24939
Meenakshi, J.V. (2016) Trends and patterns in the triple burden of malnutrition in India *Agricultural economics*, 47(S1):115-134. https://doi.org/10.1111/agec.12304

Mehrotra, S. (2010). Introducing conditional cash transfers in India: A proposal for five CCTs. *The Indian Economic Journal*, *58*(2), 140-161.

Mohanan, M, Miller, G, La Forgia, G, Shekhar, S and Singh, K (2016). Improving maternal and child health in India: evaluating demand and supply strategies, 3ie Impact Evaluation Report 30. New Delhi: International Initiative for Impact Evaluation (3ie).

Mookherjee, D., & Ray, D. (2008). A Dynamic Incentive-Based Argument for Conditional Transfers. *Economic record*, *84*, S2-S16. https://doi.org/10.1111/j.1475-4932.2008.00479.x

Muralidharan, K., Niehaus, P., & Sukhtankar, S. (2016). Building State Capacity: Evidence from Biometric Smartcards in India. *American Economic Review*, 106(1): 2895-2929. DOI: 10.1257/aer.20141346

Muralidharan, K., Niehaus, P., & Sukhtankar, S. (2020). *Identity verification standards in welfare programs: experimental evidence from India* (No. w26744). National Bureau of Economic Research. Doi:10.3386/w26744

Nag, M (1994) Beliefs and Practices about Food during Pregnancy: Implications for Maternal Nutrition, Economic and Political Weekly, 29 (37): 2427-2438

Nair, N., Tripathy, P., Sachdev, H. S., Pradhan, H., Bhattacharyya, S., Gope, R., ... & Roy, S. S. (2017). Effect of participatory women's groups and counselling through home visits on children's linear growth in rural eastern India (CARING trial): a cluster-randomised controlled trial. *The Lancet Global Health*, *5*(10), e1004-e1016. https://doi.org/10.1016/S2214-109X(17)30339-X PMID: 28911749

Narayanan, S (2011) A case for reframing the cash transfer debate in India, *Economic and Political Weekly*, 66(21): 41-48.

Narayanan, S., & Gerber, N. (2017). Social safety nets for food and nutrition security in India. *Global food security*, 15, 65-76. https://doi.org/10.1016/j.gfs.2017.05.001

Ninno, C. D., & Dorosh, P. (2003). Impacts of in-kind transfers on household food consumption: Evidence from targeted food programmes in Bangladesh. *The Journal of Development Studies*, *40*(1), 48-78. https://doi.org/10.1080/00220380412331293667

NIPFP (2012): A Cost-Benefit Analysis of Aadhaar, MacroFinance Group, National Institute of Public Finance and Policy, 9 November, available online at http://macrofinance.nipfp.org.in/FILES/ uid_cba_paper.pdf

NITI Aayog (2017), Evaluation Report on Direct Benefits Transfer in Food Results from one year of Process Monitoring, Development Monitoring and Evaluation Office, July 2017 , Government of India.

NITI Aayog (2019), Government of India NITI Bhawan, Sansad Marg, New Delhi-1 Transforming Nutrition in India: Poshan Abhiyan, A Progress Report, September 2019

Owusu-Addo, E., & Cross, R. (2014). The impact of conditional cash transfers on child health in low-and middle-income countries: a systematic review. *International journal of public health*, *59*(4), 609-618. doi: 10.1007/s00038-014-0570-x

Oxford Policy Management. (2017). Bihar Child Support Program. Oxford Policy Management Limited .

Balasubramanian, P., Chandra, S. R., Murlidharan, A., & Tantri, P. (2019). Fintech For The Poor: Do Technological Failures Deter Financial Inclusion?.

Parasar, R., & Bhavani, R. V. (2018). Supplementary Nutrition Programme under ICDS: Case study of Telangana and Tamil Nadu.

Wilde, P., & Ranney, C. (1996). The distinct impact of food stamps on food spending. *Journal of Agricultural and Resource Economics*, 174-185. https://www.jstor.org/stable/40986906

PHRN, MSSRF, FORCES (2010) Towards Universalisation of Maternity Entitlement: An Exploratory Case Study of the Dr. Muthulakshmi Maternity Assistance Scheme, Tamil Nadu

Prasad, V., Sinha, D., Sengupta, S., & Shukla, A. (2017). Inept Fiscal Transitions and Budgetary Disruptions in Nutritional Services for Women and Children. National Human Rights Commission India, 160.

Powell-Jackson, T., Mazumdar, S., & Mills, A. (2015). Financial incentives in health: New evidence from India's Janani Suraksha Yojana. *Journal of health economics*, 43, 154-169. https://doi.org/10.1016/j.jhealeco.2015.07.001

Raghunathan K, Chakrabarti S, Avula R, Kim SS (2017) Can conditional cash transfers improve the uptake of nutrition interventions and household food security? Evidence from Odisha's Mamata scheme. *PLoS ONE* 12(12): e0188952. https://doi.org/10.1371/journal.pone.0188952

Rahman, M. M., & Pallikadavath, S. (2018). How much do conditional cash transfers increase the utilization of maternal and child health care services? New evidence from Janani Suraksha Yojana in India. *Economics & Human Biology*, *31*, 164-183. https://doi.org/10.1016/j.ehb.2018.08.007

Randive, B., San Sebastian, M., De Costa, A., & Lindholm, L. (2014). Inequalities in institutional delivery uptake and maternal mortality reduction in the context of cash incentive program, Janani Suraksha Yojana: results from nine states in India. *Social Science & Medicine*, *123*, 1-6. https://doi.org/10.1016/j.socscimed.2014.10.042

Ranganathan, M., & Lagarde, M. (2012). Promoting healthy behaviours and improving health outcomes in low and middle income countries: a review of the impact of conditional cash transfer programmes. *Preventive medicine*, *55*, S95-S105. https://doi.org/10.1016/j.ypmed.2011.11.015

Roy, S., Hidrobo, M., Hoddinott, J., & Ahmed, A. (2017). Transfers, behavior change communication, and intimate partner violence: Post-program evidence from rural Bangladesh. *Review of Economics and Statistics*, (0), 1-45. https://doi.org/10.1162/rest_a_00791

Ruel, M. T., Alderman, H., & Maternal and Child Nutrition Study Group. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?. *The lancet*, *382*(9891), 536-551. https://doi.org/10.1016/S0140-6736(13)60843-0

Saville, N. M., Shrestha, B. P., Style, S., Harris-Fry, H., Beard, B. J., Sen, A., ... & Paudel, P. (2018). Impact on birth weight and child growth of Participatory Learning and Action women's groups with and without transfers of food or cash during pregnancy: Findings of the low birth weight South Asia cluster-randomised controlled trial (LBWSAT) in Nepal. *PloS one*, *13*(5), e0194064. https://doi.org/10.1371/journal.pone.0194064

Schady, N., & Rosero, J. (2008). Are cash transfers made to women spent like other sources of income?. *Economics Letters*, 101(3), 246-248. https://doi.org/10.1016/j.econlet.2008.08.015

Schwarz, R., Hecht,R., Flanagan,K. and Sankar,R. (2019) How India can improve its Take-Home Rations program to boost child and maternal nutrition Monday, October 1, 2018, https://www.brookings.edu/blog/future-development/2018/10/01/how-india-can-improve-its-take-home-rations-program-to-boost-child-and-maternal-nutrition/ Accessed April 30, 2019

Schwarz, R. K., Briskin, E. A., Flanagan, K. F., Dodd, N., Soe-Lin, S., & Hecht, R. M. (2018a). ICMR and ICDS Guidelines; THR Formulation and Composition – Challenges and Opportunities for Improvement. Policy Brief 2. Pharos Global Health Advisors.

Schwarz, R. K., Flanagan, K. F., Soe-Lin, S., & Hecht, R. M. (2018b). ICDS programmatic governance, accountability and performance management, and quality assessment – Challenges, and Opportunities for Improvement. Policy Brief 3. Pharos Global Health Advisors.

Schwarz, R. K., Flanagan, K. F., Soe-Lin, S., & Hecht, R. M. (2018c). Opportunities & Challenges in the Integrated Child Development Services' Take-Home Rations program – Overview. Policy Brief 1.
Pharos Global Health Advisors.

Sethi, V., Tiwari, K., Sareen, N., Singh, S., Mishra, C., Jagadeeshwar, M., ... & Sachdev, H. P. S. (2019). Delivering an Integrated Package of Maternal Nutrition Services in Andhra Pradesh and Telangana (India). *Food and nutrition bulletin*, 0379572119844142. https://doi.org/10.1177/0379572119844142

SEWA Bharat & UNDP. (2012). An experimental cash transfer pilot in Delhi.

SEWA Bharat & UNICEF. (2014). A little more, how much it is… piloting basic income transfers in Madhya Pradesh, India. *January, Sewa Bharat and UNICEF, New Delhi*.

Shrivastava, S. (2016). Public Spending for Nutrition in the New Fiscal Architecture in India. *TRACK*, 66.

Sinha, D, Nehra, S, Matharu, S, Khanuja, J, Falcao (2016), V Realising Universal Maternity Entitlements: Lessons from Indira Gandhi Matritva Sahyog Yojana, *Economic and Political weekly*, August 20, 2016, 51(34): 49-55

Skoufias, E., Unar, M., & González-Cossío, T. (2008). *The impacts of cash and in-kind transfers on consumption and labor supply: Experimental evidence from rural Mexico*. The World Bank. https://doi.org/10.1596/1813-9450-4778

Smith, L. C., & Haddad, L. (2015). Reducing child undernutrition: past drivers and priorities for the post-MDG era. *World Development*, *68*, 180-204. https://doi.org/10.1016/j.worlddev.2014.11.014

Southworth, H. M. (1945). The economics of public measures to subsidize food consumption. *Journal of Farm Economics*, *27*(1), 38-66. DOI: 10.2307/1232262

Standing, G. (2014). From cash transfers to basic income: An unfolding Indian Agenda. *Indian Journal of Labour Economics*, *57*(1), 111-137.

Talati, K. N., Nimbalkar, S., Phatak, A., & Patel, D. (2016). Take Home Ration In ICDS Programmes: Opportunities For Integration With Health System For Improved Utilisation Via Mamta Card and E-Mamta. https://gh.bmj.com/content/bmjgh/1/Suppl_1/A7.full.pdf

Thaler, R. H. (1999). Mental accounting matters. *Journal of Behavioral decision making*, *12*(3), 183-206.https://doi.org/10.1002/(SICI)1099-0771(199909)12:3%3C183::AID-BDM318%3E3.0.CO;2-F

Thongkong, N., Van de Poel, E., Roy, S. S., Rath, S., & Houweling, T. A. (2017). How equitable is the uptake of conditional cash transfers for maternity care in India? Evidence from the Janani Suraksha Yojana scheme in Odisha and Jharkhand. *International journal for equity in health*, 16(1), 48. https://doi.org/10.1186/s12939-017-0539-5

Thurow, L. C. (1974). Cash versus in-kind transfers. *The American Economic Review*, *64*(2), 190-195. https://www.jstor.org/stable/1816041

UNICEF-ESARO/Transfer Project (2015), 'Social Cash Transfer and Children's Outcomes: A Review of Evidence from Africa'.

Vaid, A., Avula, R., George, N. R., John, A., Menon, P., & Mathews, P. (2018). *A review of the Integrated Child Development Services' Supplementary Nutrition Program for Infants and Young Children: Take home ration for children*(Vol. 7). Intl Food Policy Res Inst.

Vallianatos, Helen. (2006). *Poor and pregnant in New Delhi*. Alberta, Canada: Qual Institute Press.

Vellakkal, S., Reddy, H., Gupta, A., Chandran, A., Fledderjohann, J., & Stuckler, D. (2017). A qualitative study of factors impacting accessing of institutional delivery care in the context of India's cash incentive program. *Social Science & Medicine*, *178*, 55-65. https://doi.org/10.1016/j.socscimed.2017.01.059

Vikram, K. & Chindarkar, N (2020) Bridging the gaps in cognitive achievement in India: The crucial role of the integrated child development services in early childhood, *World Development*,127 https://doi.org/10.1016/j.worlddev.2019.104697.

Table 1: Entitlements under NFSA and related programs

Target Group	Scheme	Act	Entitlements	Eligibility	Type of Assistance
Pregnant and lactating mothers	Janani Suraksha Yojana	-	Rs. 1400 (700) in LPS (HPS) in rural areas, Rs. 1000(600) in urban areas for the mother and Rs.600 (200) for ASHA workers. Conditionality: delivery in Government health centres or accredited private institutions.	JSY: All SC and ST women in both LPS and HPS delivering in a government health centre or accredited private institutions. In Low Performance states, all pregnant women in HPS States BPL pregnant women, aged 19 years and above.	Cash transfer with conditionality.
	Maternity entitlements	NFSA (Chapter 2)	Not less than Rs. 6000 [IGMSY implemented on a pilot basis, expected to be universalized under the NFSA]	Excepting all pregnant women and lactating mothers in regular employment with the Central or State Governments or Public Sector Undertakings or those who are in receipt of similar benefits under any law for the time being in force.	Cash transfer with eligibility criteria.
	ICDS	NFSA	Take home rations 600 cal, 18/20 gms of protein, pregnancy and until 6 months after childbirth	Identified by the anganwadi	In-kind transfers
Pre-school children	ICDS	NFSA	For 6 mths to 3 years Take home rations 500 cal, 12/15 gms of protein For 3/6 years Morning Snack and Hot Cooked Meal. 500 cal, 12/15 gms of protein. If malnourished, then take home rations additionally, 800 calories, 20-25 gms protein.	Attending anganwadi State differences in the implementation	In-kind transfers

Source: Narayanan and Gerber (2017)

Table 2: Dr.Muthulakshmi Maternity Benefit Scheme

Installment/Kind benefit	Conditionality	Amount
I Installment	Antenatal registration on or before 12 weeks	Rs.2,000/-
Kind benefit	First Nutrition Kit Completion of third month (Kind benefit)	Rs.2,000/-
II Installment	After 4 months	Rs.2,000/-
Kind benefit	Second Nutrition Kit (Kind benefit)	Rs.2,000/-
III Installment	After delivery	Rs.4,000/-
IV Installment	After completion of all 3rd doses of OPV/Rota/Pentavalent and 2 doses of IPV.	Rs.4,000/-
V Installment	After completion of Measles Rubella vaccination between 9th and 12th month of their infants.	Rs. 2,000/-
Total		**Rs.18,000/-**
The Nutrition Kit		
	Health Mix Powder for Pregnant Mothers	1 kg
	IFA Syrup	3 Nos
	Dates	1 Kg
	Protein biscuits	500 gms
	Aavin Ghee	500gms
	T.Albendazole	3 Nos
	Towel	1 Nos

Eligibility Condition

The pregnant mother should have completed 19 yrs of age

The eligible mother will receive all 5 Installments for Two deliveries only

HOB and Migrant mothers will receive 1st and 5th installments on certain conditions

Procedure to obtain the benefit/Service

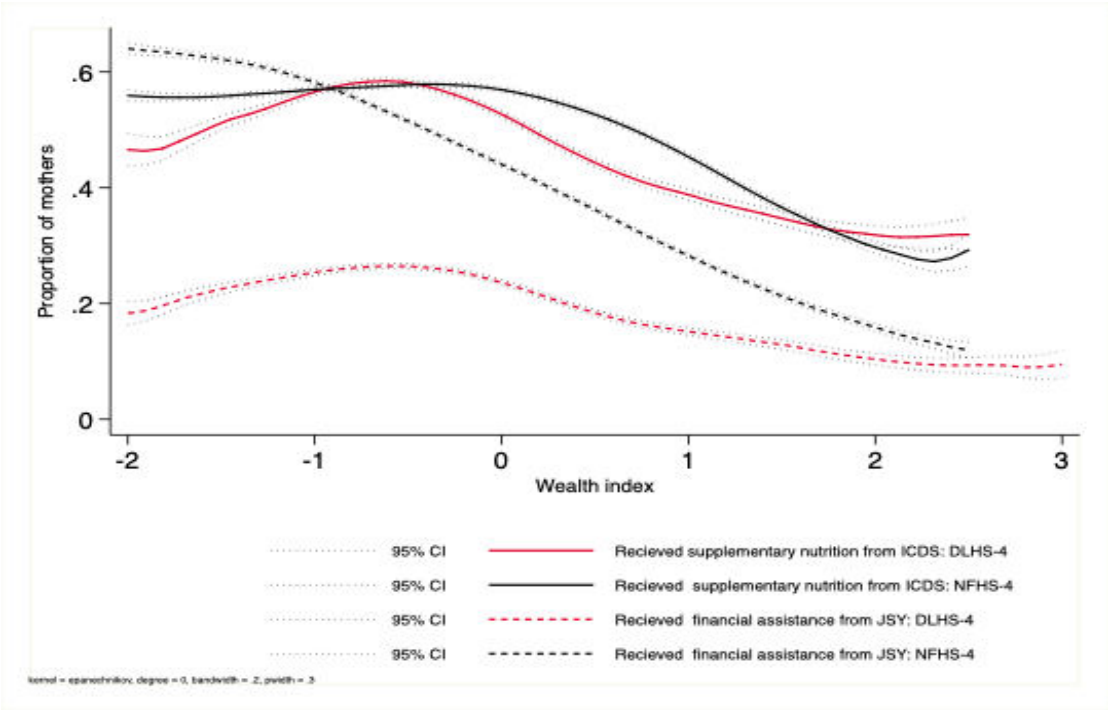
The Pregnant mother should register her pregnancy before 12 weeks with the VHN / UHN or she should have pre – registered her pregnancy before 12 weeks.

Table 3: ICDS use and JSY beneficiaries based on household surveys

	DLHS-4* (select states)	NFHS-4*
Received JSY benefits for the last birth (within the past five years)		
- as proportion of all women who gave birth in the past five years	19.93	29.35
- as proportion of those who had valid responses	21.78	36.70
Proportion of those who received JSY who had not received it a month after birth of the child		
- as proportion of all women who gave birth in the past five years	27.95	30.18
- as proportion of those who had valid responses	27.95	35.55
Proportion of those who received JSY for whom the JSY covered out of pocket expenses	11.12	39.32
Received Supplementary Nutrition from ICDS while pregnant (most recent birth)		
- as proportion of all women who gave birth in the past five years	48.56	52.48
- as proportion of those who had valid responses	50.41	52.51
Received both JSY and supplementary nutrition from ICDS for the last birth		
- as proportion of all women who gave birth in the past five years	28.39	30.18
- as proportion of those who had valid responses	28.39	35.55
Nutrition and health awareness[a]		
- as proportion of all women who gave birth in the past five years	-	39.03
- as proportion of those who had valid responses	-	39.05
Proportion with a bank account[b]	-	52.99
Proportion who have the freedom to travel alone to the market, health centre and outside the village[c]	-	40.54

Computed by author based on unit level data.
Estimates for NFHS-4 is generated using national weights, while DLHS-4 estimates are unweighted
a.Proportion of women who received nutrition and health awareness education while they were pregnant with their last child.
b.Proportion of women having a bank account and using it themselves.
c. Calculated as a proportion of women having freedom to travel alone to each of the mentioned locations (market, health centre and outside the village).

Figure 2: ICDS and JSY use according to NFHS-4



Notes: *As proportion of all women who gave birth in the 6 years before the survey that had non-missing response to the question on financial assistance (program use for the last child)*

Figure 3: Use of ICDS services by children (born in or after January 2011)

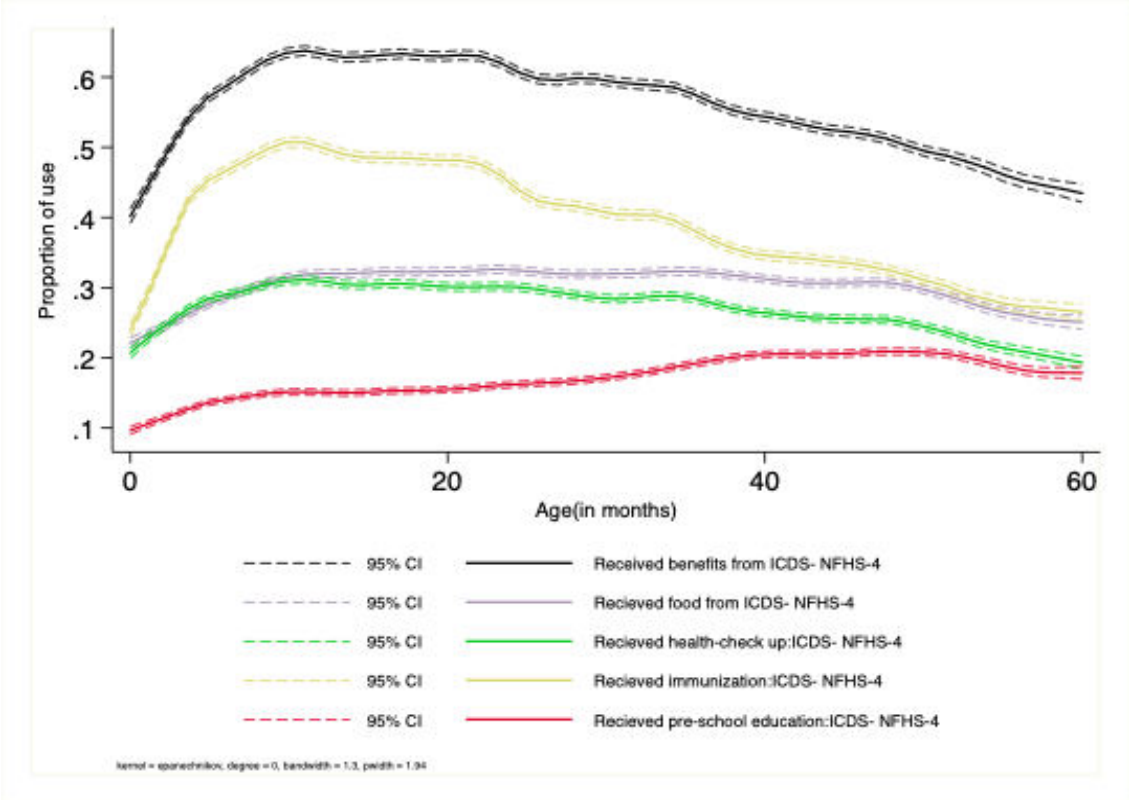


Figure 4: Use of ICDS services by pregnant mothers (for the most recent birth)

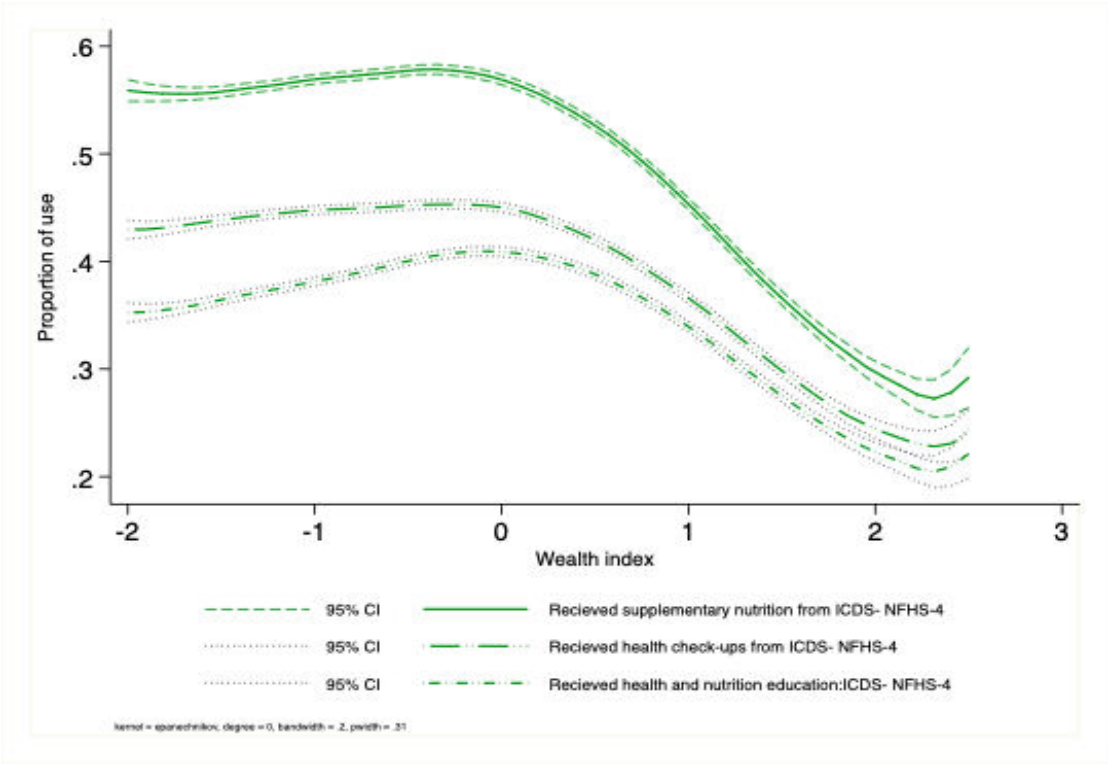


Figure 5: Days taken for the JSY payments

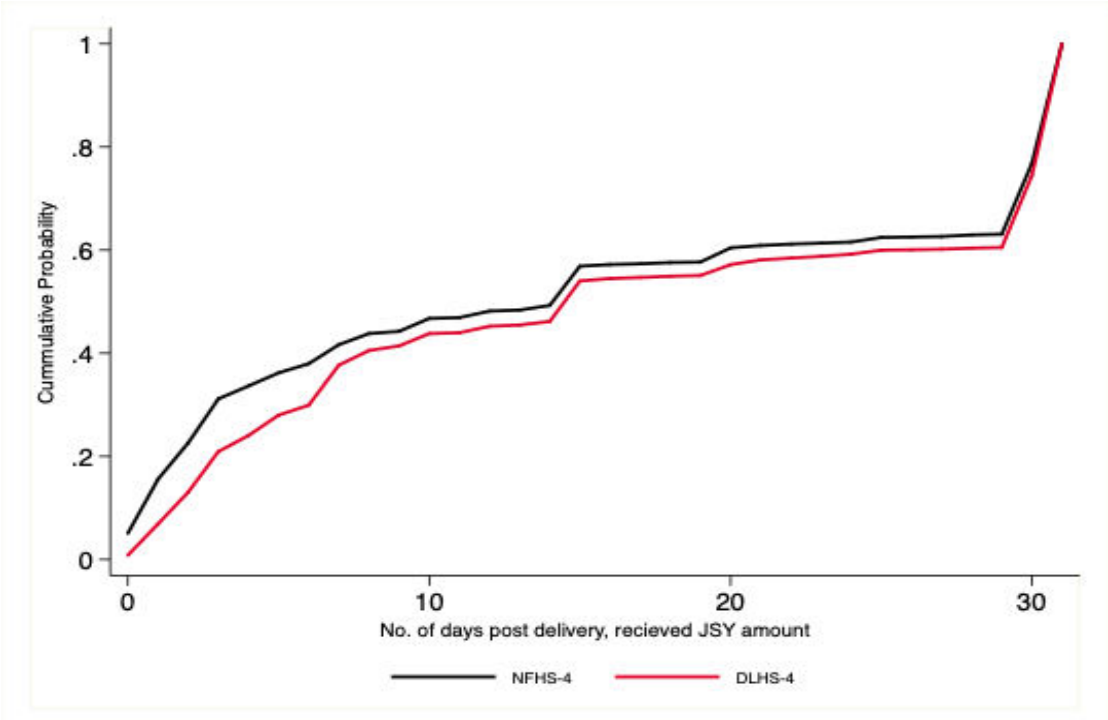


Figure 6: Access to bank account and freedom of movement of beneficiaries, NFHS-4