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Cash Transfer versus Staple Food Subsidies: An Effective Factor on Food Security and Expenditure of Urban Households in Iran

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ABSTRACT

Background: In 2010, food subsidy program implemented since 1979 was replaced by unconditional cash transfer (CT) in Iran. The present pre-and-post evaluation study aims to compare food security and expenditures of urban households during the implementation of food subsidy and CT programs. **Methods:** Using a stratified cluster sampling method, 266 households were selected from Tehran city. Data were collected in two phases: before (2009) and after (2012) implementing CT program using questionnaires including demographics; household expenditure; locally validated Household Food Insecurity Access Scale (HFIAS); and three consecutive 24-hours diet recalls. Seven focus group discussions (FGDs) with women were also held. **Results:** After implementing CT program, the households' food and total expenditures increased and their family size decreased. Mild, moderate, and severe food insecurity increased from 19.3%, 13.3%, and 11% to 28.4%, 15.5%, and 12.5%, respectively ($P < 0.001$). There was a significant decrease in consumption of fat and oils and sugary food groups (time effect $P < 0.05$). The consumption of fruits, meat, and dairy products was lower in the food insecure women than in the food secure ones (group effect $P < 0.05$). However, the food secure and insecure households behaved differently in terms of only sugar consumption (time group effect $P < 0.05$). Based on the FGDs, relative deprivation and social gaps increased. **Conclusion:** Considering the reduction in welfare index, targeting poor/vulnerable groups, as well as conditional CT could be considered in Iran.

Keywords: Food assistance; Social support; Food security; Food access.

Introduction

Considering the first goal of Sustainable Development Goals (SDGs), ending poverty,

the world has accepted poverty reduction strategies as the highest priority for development. Social

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protection systems have been designed to empower individuals, families, and communities against the effects of stresses and shocks to their livelihoods and reduce their adverse effects (Michelle, 2008). Such programs, if implemented correctly, can also help community development processes by strengthening infrastructure, increasing support for livelihood activities, and improving nutrition, health, and education of children and adults. Many developing countries have used food subsidy and cash transfer (CT) as two main strategies to improve the nutritional status and food security of low socio-economic populations (Mahendra, 2009); however, there are discrepancies about the effect and impact of CT as a poverty alleviating strategy .

There are few research studies on the short term as well as long-term impacts of this strategy, which have shown positive impacts on income and human capital (Aber and Rawlings, 2011); however, there is not much data available on the achievement of broader goals. A review conducted by the World Health Organization (WHO) on several CT programs provided strong evidence about their positive impact on the use of health services, as well as nutritional status and health. It is hard to attribute these positive effects to the cash incentives specifically, since other components may also contribute (Fiszbein *et al.*, 2009, Lagarde *et al.*, 2009). While CTs have been associated with some unanticipated negative consequences, such as increased birth rates and obesity among women, evidence from national-level randomized controlled trials and quasi-experimental methods shows that CTs reliably secure welfare gains. For example, a CT program was associated with an increase in household consumption, empowering women, and reduction of poverty. No doubt, these effects are dependent on formulation and implementation methods as well as on the social and economic contexts in which they are implemented (Forde *et al.*, 2012).

The most important potential advantages of CT programs include modifying consumption patterns, reducing government's interference in the price system, increasing consumer welfare, efficiency,

and productivity, reducing inequity and waste of resources, and encouraging and expanding investments. There are disadvantages including executive failures, increased liquidity, and consequently, rise in inflation rates, disturbance in the household basket, increase of production costs for enterprises, promotion of non-optimal consumption patterns, weakening of the competitive strength of domestic production units against external competitors (Tootoonchi-Maleki, 2008, Vafaei-Yeganeh *et al.*, 2011).

In Iran, different social protection programs have been implemented over the last 30 years. Food subsidy program was implemented in 1979 mostly on bread, rice, oil, sugar, and milk. In 2010, food subsidy program was replaced by unconditional CT. Through CT, almost all Iranians are provided a monthly allowance (450,000 *Rial* equivalent to 4.5\$ in 2009) with wide eligibility criteria, unconditionally and regardless of how they spent it or whether they receive other aids. (Soltanpanah *et al.*, 2013). The goal of the subsidy reform plan was to replace subsidies on food and energy with CT, in accordance with a Five Year Economic Development Plan and a move towards free market prices (Hasani, 2010, Vafaei-Yeganeh *et al.*, 2011).

Limited data is available on the effect of targeting subsidy through CT program in Iran on Iranian households' quality of life and nutritional status (Doshmangir *et al.*, 2015, Esmaeili *et al.*, 2013, Hajipour and Fallsolyman, 2016, Hosseini and Charvadeh, 2017). Subsidies to essential commodities imposed a high cost on the government of Iran before the targeting subsidy through CT program. Therefore, the effects of CT should be compared with food subsidies. Therefore, the aim of the present study was to assess the food security and food expenditure of urban households in Tehran during the implementation of food subsidy (2009) compared to when the CT program was implemented (2012).

Materials and Methods

Design and sampling: This pre- and post-program evaluation study was conducted in the

framework of a joint research project entitled “Effectiveness of subsidy targeting through CT on the food security and nutritional status of urban population in Tehran: Evaluation of a program” by National Nutrition and Food Technology Research Institute (NNFTRI) and Academy of Medical Sciences in Iran.

Food security and expenditures data on each household were collected in 2009 and 2012, before and after implementing the policy, respectively. Two hundred and sixty-six households from six districts of Tehran city (out of 22 districts) were selected using a stratified cluster sampling (a combination of stratified and cluster sampling) method. First, the districts as strata were chosen based on the socio-economic status (SES) of residents provided by the municipality. The highest SES groups in Tehran were selected from residents of districts 1–3. Based on the same approach, districts 10 and 12 were chosen as medium SES (middle income), and 18 and 20 as low-SES districts. As simple random sampling within each district or stratum would have been impractical and expensive, a two stage cluster sampling process was used within each district and clusters were selected randomly based on the population density of that district.

A sample size of 400 households was estimated in the first phase based on estimating the prevalence of food insecurity in Tehran (Ghassemi *et al.*, 1996). Given the 3-year interval between the two phases of the study and high mobility of urban households, there were difficulties in finding the same households, thus the respond rate of more than 60% and the sample size of 260 were considered adequate for detecting the impact of replacing CT with food subsidy program in Tehran city (power of the study >0.80). All Iranian households selected as a sample and were willing to participate in the study completed the questionnaires.

Data collection: Data were gathered in both periods through interviews at the subjects' homes by trained nutritionists. Data collected from each respondent and the tools were as follows:

A) SES and household expenditure: Age, sex, educational and occupational levels of the head and other members of the household, family size, income, expenditure and some characteristics of residency, and living conditions were asked using a questionnaire.

B) Household food security status: Food security status of the households was assessed by validated and locally adapted Household Food Insecurity Access Scale (HFIAS) (Coates *et al.*, 2007, Deitchler *et al.*, 2010, Mohammadi *et al.*, 2011, Salarkia *et al.*, 2014). This 9-item scale measures the household's experience regarding food security during the month prior to the study, including experiences related to anxiety about the household food supply, insufficient quality of food, insufficient food supply, food intake, and physical consequences (Swindale and Bilinsky, 2006).

C) Dietary intake: A 24-hour recall questionnaire was used to assess the respondents' three consecutive days' intake (two week days and one holiday) through interviewing. In order to improve the precision of 24-hour dietary recalls, the interviewers were trained in a one-day workshop. Through the interviews, they asked the respondents to remember in detail all the food and drink they consumed during a period of the study and checked the dietary information for omission or errors.

D) Anthropometric measurements: Height, weight, and waist circumference (WC) of one woman in the household (mostly the wife or mother responsible for preparing and cooking foods) were measured based on standard protocols (National Institute of Health, 1998) and her body mass index (BMI) was computed. Then, the weight status of adult women (preferably the women responsible for food preparation aged 20 years or older) was defined based on the cut-off values recommended by National Institute for Health (NIH) as follows: underweight: $BMI < 18.5$; normal weight: $18.5 < BMI < 24.9$; overweight: $25.0 < BMI < 29.9$; and obese: $BMI \geq 30$ kg/m². WC ≥ 88 cm was considered as abdominal obesity in women (National Institute of Health, 1998).

Views and understanding: In order to explore the views and understanding of urban women in Tehran about the program and household coping strategies (aspects not captured by the above quantitative methods), seven focus group discussions (FGDs) were planned, which were held with women (mother, wife or daughter) from different districts who were not necessarily subjects of the quantitative section.

Sample selection for the FGDs was based on open sampling with the aim of maximum variation of the participants' experiences; thus, three socio-demographically diverse districts from north, centre and south of Tehran metropolis were selected. All the FGDs were audio recorded and transcribed verbatim. Data collection and analysis were done simultaneously using the constant comparative methods in the qualitative research.

Ethical considerations: This study was conducted according to the guidelines laid down in the Declaration of Helsinki, and approved by Ethics Committee of NNFTRI (No.47.25.1911). Before each interview, informed consents from both the head of the household and the person responsible for food preparation (mainly the wife) were obtained. At the end of each interview, a gift with the logo of NNFTRI was provided to the respondent.

Data analysis: The level of the households' FI was determined on the basis of the number of affirmative responses they had provided to the statements on more severe conditions and/or experiences (Coates *et al.*, 2007). The HFIAS scores categorized the households into four levels of FI: food secure, mildly food insecure, moderately food insecure, and severely food insecure.

The intake of nutrients was calculated by using the revised edition of the Iranian food composition table (Sarkissian *et al.*, 1980). The mean intake of food groups consumed was calculated for each female participant during the 3 days of interview.

Statistical analyses were performed using the Statistical Package for the Social Sciences, version 21 (SPSS Inc., Chicago, IL, USA). Chi-squared test was used for analyzing differences in

qualitative variables. Differences in quantitative variables were analyzed using paired t-test before and after the targeted subsidy policy implementation. Repeated measures ANOVA was employed to detect differences in the means of groups during the period of the study after adjusting for educational and occupational levels, district, per capita floor area, and total expenditure.

Results

The socio-economic characteristics of 420 participants in phase 1 were not different from those of remaining 263 households who participated in phase 2. Household food, total expenditure and income increased and family size decreased during three years of the study (**Table 1**). Total household expenditure rose significantly from 6100 ± 431 thousands *Rial* in 2009 to 8692 ± 869 thousands *Rial* in 2012 ($P < 0.001$). US\$ exchange rates were 10,308 *Rial* and 24,774 *Rial* in 2009 and 2012, respectively; so the equivalent figures for total monthly expenditure and income would be estimated as \$592 in 2009 and \$351 in 2012. However, food expenditure constituted nearly half of the total expenditure in both phases; share of rent decreased and share of energy and other expenditure increased significantly (**Figure 1**). The ratio of expenditure/income before the implementation of CT program was 0.92 ± 0.35 , which increased to 1.02 ± 0.57 post-CT program ($P < 0.05$).

Table 2 reveals the changes in household food insecurity status after CT program in Tehran. Comparison of the households' food security status pre-and post-CT program showed that the frequency of food security declined from 56.4% to 43.5%, while mild FI increased from 19.3% to 28.4%, moderate FI rose from 13.3% to 15.5%, and severe FI from 11% to 12.5% in the second measurement ($P < 0.001$). It was also found that the response rates in different districts of Tehran were similar.

Figure 2 shows that the mean and standard deviation of weight, waist, and BMI of women increased significantly after 3 years ($P < 0.01$); however, the frequency of overweight (from 41.5

to 42.7%) and obesity (from 35.1 to 37.9%) remained almost unchanged ($P=0.275$).

Table 3 reveals that there was a significant decrease in consumption of fat and oils and sugar groups after changing the commodity subsidy program to CT in the studied women in Tehran (time effect $P<0.05$). The consumption of fruits, meats and dairy products as high-elastic food groups was lower in the food insecure women than in the food secure ones in both phases of the study (group effect $P<0.05$). However, the food secure and insecure households behaved differently in terms of only sugar group consumption (time group effect $P<0.05$). In other words, fat and oils group in all households decreased after CT; however, the consumption of sugar group decreased only in food secure and severe food insecure households after CT initiation.

Most of the women reported that they used strategies like loaning or borrowing from family and friends and spending their savings to compensate the increased prices of food and other things such as transportation and fuel:

"I borrowed some money from my son, and then gave it back to him. I normally use what I have at home. We don't spend money too much. We don't have many relatives gathering together."

The results of this qualitative study confirmed that the families purchase less milk and dairy products, red meat, fish and, nut groups after CT program. The participants in all SESs also believed that although CT program composes a significant amount in the household budget, it is not equivalent to the amount of the previous food

subsidies.

"We used to buy milk when it was subsidized by the government and it was cheaper, but now, we buy less milk [due to higher prices]."

"Our consumption of red meat has decreased, the same thing has happened with fish, which is very expensive now."

"We buy fruits no matter how much the price is, since we need them, but we can't afford to buy nuts. We used to give walnuts to children, but now we cannot, since they are too expensive."

FGDs showed that the social observability and participation of the members of Iranian households in social events have decreased as the major components of social capital:

"Our relatives no longer come to meet us as they know our situation. Family gatherings are completely canceled. No one will come to our house as they don't want to trouble us because of financial issues."

"We have to cut back on many things, for example, traveling or going out".

Moreover, most of the participants believed that the dependency ratio has gone into reverse in urban households in Iran, and couples in reproductive age have ever-increasingly become dependent on aged members of their families for managing their livelihood. Some believed that this program has increased domestic violence and their concern about the future of their children. This, in turn, could lead to lower interest to have children, which may ultimately lead to lower population growth. In contrast, some women perceived it as a good program, which was not implemented well.

Table 1. Socio-economic characteristics of the studied households before (2009) and after (2012) cash transfer program in Tehran.

Socio-economic variables	Total (N=420)	Before (N=266)	After (N=266)	P-value ^c
Age of the household head (years)	49.74±0.70 ^a	42.70±9.95	45.84±8.35	0.05
Family size	3.82±0.07	3.86±0.09	3.75±0.08	<0.001
Per capita floor area (m ²)	29.96±1.02	31.61±1.40	32.10±1.38	0.67
Per capita number of rooms	0.81±0.02	0.83±0.03	0.86±0.10	0.43
Food expenditure (<i>Rial</i>)	2655±83	2670±107	4050±170	<0.001
Total expenditure (<i>Rial</i>)	6211±316	6100±431	8692±869	<0.001
Income (<i>Rial</i>)	8185±600	7907±827	13028±2756	<0.001
Educational level of the household head				
Illiterate	27 (6.5) ^b	21 (7.9)	21 (7.9)	0.71
Primary school	76 (18.3)	56 (21.1)	56 (21.1)	
Secondary school	130(31.3)	80 (30.2)	80 (30.2)	
Diploma and higher	183(44.0)	108 (40.8)	108 (40.8)	
Occupation of the household head				
Unemployed, student	48 (11.6)	21 (8.6)	21 (8.6)	0.58
Laborer, farmer, animal husbandry	68 (16.4)	42 (17.2)	42 (17.3)	
Freelancer, shopkeeper, driver	157(37.9)	92 (37.7)	92 (37.5)	
Employee, teacher/tutor	105(25.4)	72 (29.5)	72 (29.6)	
Manager, doctor, pilot, employer	36 (8.7)	17 (7.0)	17 (7.1)	

^a: Mean ± SE; ^b: N (%) Figures in parentheses are column percent; ^c: P-values were computed only in 263 subjects with completed data in both phases.

Table 2. Frequency of different degrees of household food insecurity before (2009) and after (2009) cash transfer program in Tehran.

SES	Districts of Tehran	Before					After					P-value ^b
		Food secure	Mild FI	Moderate FI	Severe FI	Total	Food secure	Mild FI	Moderate FI	Severe FI	Total	
Low	1	53(73.6) ^a	6(8.3)	9(12.5)	4(5.6)	72(100)	25(62.5)	6(15.0)	7(17.5)	2(5.0)	40(100)	0.03
	3	44(75.9)	7(12.1)	6(10.3)	1(1.7)	58(100)	23(63.9)	11(30.5)	2(5.6)	0(0.0)	36(100)	0.02
Medium	10	40(56.5)	15(21.7)	5(7.2)	10(14.5)	70(100)	12(26.1)	18(39.1)	13(28.3)	3(6.5)	47(100)	0.01
	12	36(61.0)	7(11.9)	9(15.2)	7(11.9)	59(100)	16(48.5)	11(30.3)	1(3.0)	6(18.2)	34(100)	<0.001
High	18	21(27.6)	20(26.3)	16(22.4)	18(23.7)	75(100)	16(29.1)	18(32.7)	6(10.9)	15(27.3)	55(100)	<0.001
	20	43(50.0)	19(22.0)	15(17.1)	9(11.0)	86(100)	23(42.6)	12(22.2)	12(22.2)	7(13.0)	54(100)	0.003
Total		236(56.3)	73(17.5)	60(14.4)	49(11.8)	420(100)	115(43.6)	76(43.6)	41(15.5)	33(12.5)	266(100)	<0.001

^a: N (row percent); ^b: P-values were computed only in 263 subjects with completed data in both phases by Chi-square test; FI: food insecurity; SES: Socio-economic status.

Table 3. Mean (\pm SE) of food group consumption of the studied women before (2009) and after (2012) cash transfer program in Tehran based on their household food security status pre- cash transfer program.

Food groups consumption (g/day)		Food security status				Total (n=266)	P value ^a		
		Food secure (n=115)	Mild FI (n=76)	Moderate FI(n=41)	Severe FI(n=34)		Time	Group	Time*Group
Bread and cereals	Before	310.0 \pm 11.7	334.5 \pm 9.1	308.5 \pm 9.1	307.4 \pm 9.2	320.5 \pm 8.6	0.40	0.24	0.14
	After	254.4 \pm 12.7	363.7 \pm 81.1	308.1 \pm 29.1	334.5 \pm 41.7	304.1 \pm 24.8			
Vegetables	Before	235.9 \pm 10.4	209.4 \pm 18.4	188.2 \pm 21.5	209.6 \pm 27.7	221.4 \pm 8.0	0.79	0.42	0.06
	After	224.8 \pm 12.9	204.0 \pm 33.9	164.1 \pm 11.9	183.6 \pm 21.1	213.0 \pm 11.9			
Fruits	Before	262.0 \pm 10.7	214.2 \pm 17.3	202.4 \pm 15.4	246.2 \pm 27.6	252.2 \pm 6.7	0.04†	<0.001	0.99
	After	254.4 \pm 12.7	263.7 \pm 81.1	208.1 \pm 29.1	234.5 \pm 41.7	204.1 \pm 24.8			
Meats	Before	62.3 \pm 3.6	50.7 \pm 4.5	50.9 \pm 5.7	40.6 \pm 5.9	56.1 \pm 2.4	0.96	0.04	0.20
	After	46.8 \pm 3.6	41.3 \pm 3.4	38.3 \pm 5.7	36.2 \pm 5.9	42.6 \pm 2.2			
Milk and dairy products	Before	252.7 \pm 15.5	240.0 \pm 27.5	234.9 \pm 25.8	183.2 \pm 48.1	240.9 \pm 11.9	0.89	0.02	0.70
	After	199.2 \pm 13.2	193.9 \pm 18.6	171.9 \pm 25.1	124.6 \pm 19.2	184.0 \pm 9.1			
Fat and oils	Before	24.8 \pm 1.2	28.7 \pm 2.5	28.8 \pm 3.2	28.0 \pm 3.2	25.0 \pm 1.0	0.004	0.23	0.23
	After	22.3 \pm 2.6	24.8 \pm 2.4	20.4 \pm 2.2	24.1 \pm 3.0	23.0 \pm 1.4			
Sugar	Before	20.4 \pm 1.4	21.9 \pm 2.3	19.6 \pm 2.6	27.1 \pm 3.6	21.4 \pm 1.1	0.02	0.71	0.02
	After	16.9 \pm 1.4	23.4 \pm 2.0	20.8 \pm 3.3	17.2 \pm 2.3	19.4 \pm 1.0			

^a: Adjusted for educational and occupational levels, district, floor area, and total expenditure; FI: Food insecurity.

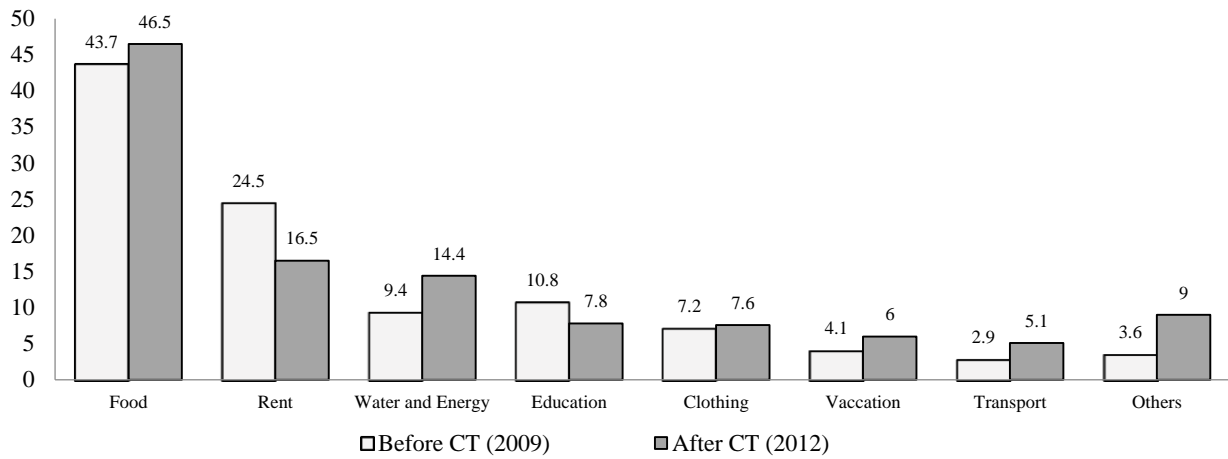


Figure 1. Share of various household expenditures from total expenditure before and after cash transfer (CT) program in Tehran

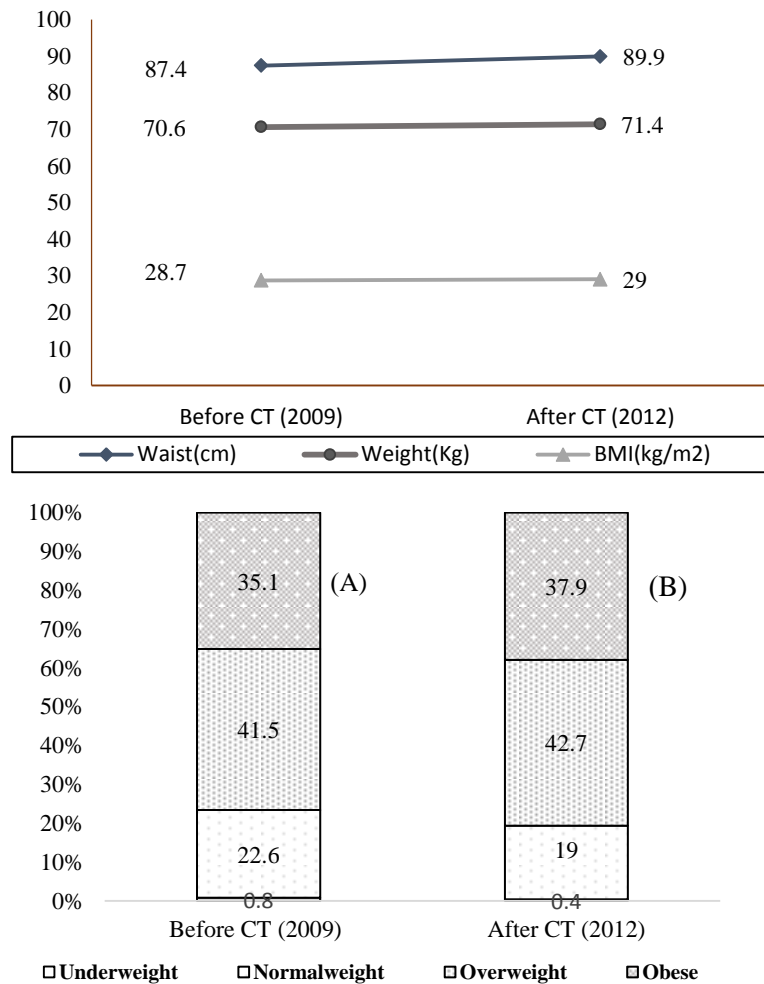


Figure 2. Anthropometric characteristics of studied women before and after cash transfer (CT) program in Tehran: A) Mean of waist, weight and BMI; B) Frequency of underweight, normal weight, overweight, and obesity.

Discussion

The present study describes a mixed method research design to evaluate the impact of unconditional CT program on the households' food security in Tehran city. The findings of quantitative phase suggest that replacement of staple food subsidies by CT has increased the households' food insecurity, especially marginal or mild food insecurity. Moreover, the total expenditure of the households has significantly increased, which is an indicator of decreasing welfare index. The studied women also reported the reduction of highly elastic food groups consumption.

Based on the FGDs, the implementation of CT program has raised negative viewpoints among the women of Tehran due to food price rise and its effect on household expenditures. However, some of the participants believed that it had also positive effects such as waste reduction. Considering the initial manifest goals of supportive programs, i.e. subsidy, it is intended to reduce social inequalities and poverty at multiple levels; however, this program has increased the relative deprivation and social gaps in the residents of Tehran metropolis.

Major large-scale evaluations of CT programs have been undertaken quantitatively and qualitatively in Mexico, Nicaragua, Turkey, Colombia, and Jamaica (Michelle, 2008). In the meantime, some studies in Brazil and Honduras have used only quantitative methods. The impact of CTs on hunger has been mostly observed in low-income countries, where poverty is generally more prevalent. In these settings, households receiving additional income are more likely to spend it on improving the quantity and/or quality of food consumed. Reducing hunger and FI is accounted as one of the strongest and most consistent findings regarding the impact of CT programs. Regardless of the form of transfer, households receiving CTs are more likely to spend it on the consumption of food (Mohammadi-Nasrabadi, 2016).

CTs can potentially affect all four dimensions of food security. Households with increased economic access to food can buy more food and

more diverse products. In addition, regular household income may stabilize food consumption over time and reduce food gaps throughout the year (Hjelm, 2016). While CTs have sometimes been associated with unanticipated negative consequences, such as an acceleration in obesity rates among women in Mexico (Fernald *et al.*, 2008) and Colombia (Forde *et al.*, 2011), robust evidence from national-level randomized controlled trials and quasi-experimental methodologies shows that CTs reliably secure welfare gains (Forde *et al.*, 2012). In Colombia, a CT program was associated with 15% increase in household consumption and a decrease in the rates of acute diarrheal diseases and stunting (Attanasio and Mesnard, 2006). Inconsistently, studies on CT in Iran have not shown positive effects on welfare, food security, and consumption (Esmaili *et al.*, 2013, Hajipour and Fallsolyman, 2016, Hosseini *et al.*, 2017). Some studies have shown the effectiveness of food subsidy program in Iran, which has been presented before CT, in promoting the food consumption of low socio-economic groups (Saeediankia *et al.*, 2023).

Evaluation of Brazil's Bolsa Familia Programme (BFP), which is the world's largest conditional CT program showed better nutritional outcomes in children aged 12-59 months and a significant reduction in overall infant mortality rates (9.3%) (Paes-Sousa *et al.*, 2011, Shei, 2013). Inconsistent with the present study, consumption of all food groups mainly cereals, processed foods, meat, milk and dairy, beans and sugar increased in Brazilian households (de Bem Lignani *et al.*, 2010). However, some opportunities missed due to the exclusion of qualitative methods where IFPRI researchers considered including them, but discussions with the government failed to gain priority and were not undertaken. Studies based on quantitative data alone attempt to explain reasons for survey outcomes by offering plausible hypotheses, whereas qualitative research actually establish whether the hypotheses are correct (Michelle, 2008).

The mixed studies in Nicaragua have affected the program design in later phases though it is

difficult to exactly attribute this impact, as policy changes are often the result of the interaction of many factors (Michelle, 2008). Most of the lived experiences and viewpoints of Iranian women in the present study were negative (such as the relative deprivation, social gaps, and reduction of hope to the future of the next generation); however, analysis of these viewpoints and perceptions can be useful in conducting the future steps of the program (Khoshfetrat *et al.*, 2015). The purposes of a CT evaluation could be described as follows: a) Determining the effectiveness and the efficiency of the program; b) Identifying the items that need to be modified in design and implementation; c) Understanding how people see and respond to the program; d) Increasing the government transparency and accountability.

The review conducted by Owusu-Addo *et al.* (Owusu-Addo *et al.*, 2018) reported that CTs can be effective in improving nutrition, dietary diversity, and child deprivation as well as financial poverty, education, household resilience, child labour, social capital, and involvement in community decision-making in sub-Saharan Africa. Such positive effects on household consumption and investment was also reported in another systematic review on economic impacts of CCT programs (Kabeer and Waddington, 2015). These beneficiaries for nutrition were not found from CT program in the present study, likely due to different socio-economic conditions in Iran and implementation of staple food subsidy before starting the program. However, nutrition outcomes of a CT program in a deprived district of Pakistan which is more similar to our country, indicated that these interventions are highly cost-effective (Trenouth *et al.*, 2018). Moreover, the cost of implementing the program for most of Iranians in the current form with wide eligibility criteria is substantially high and imposes a lot of pressure on the government.

Quantitative evaluation is important to make measurable change for informed decisions about continuing financial support. Qualitative methods are used to understand the effects of the programs,

which are difficult to measure quantitatively, such as changes in social communication (for example, intra-household, gender, and society), how resources are allocated internally, institutional and political dynamics, the implications of economic, social, and cultural attributes to the subjects and its consequences; how people perceive, view and interest the program; and how and why they respond to the design, incentives, training, and other aspects related to the program (Michelle, 2008).

The present study not only can help the policy makers in high grade decision making, but also provides a critical apprise of food insecurity and the effect of targeting subsidy through CT program on households' quality of life and nutritional status in Iran. However, Iran has experienced increasing global food prices, loss of national currency value against US\$, ever increasing nuclear-related sanctions, and targeted subsidy program during 2009-2012, concurrently. Studies in different countries exposed to sanctions indicate deteriorating the food security and nutritional status of the people particularly poor and vulnerable groups (x). These confounding contemporaneous factors resulted in high inflation coupled with a non-experimental design were among the major limitations of this study, making it difficult to attribute the differences in food security and consumption during the period to targeted subsidy program, exclusively. Since the program was implemented simultaneously throughout the country, the pre-post design with no comparison group did not allow disentangling the effects of the program from the maturation effect that happens over time.

The lack of data on other cities, as well as on rural areas in different provinces, made it difficult to generalize the findings of the study to the nation or at least rural areas or even small towns. Therefore, doing similar studies in rural or small urban areas is suggested. Under-reporting of income and household expenses is also a common limitation in such studies that reduces the validity of the differences in the two phases of the study.

Conclusion

Although CT programs appear to have many advantages over in-kind transfers, the recent evidences show that CTs might be inappropriate in weak economies, and most CT programs have been unable to increase payment rates in line with price inflation. Qualitative and quantitative data in Indian rural households highlighted the significance of context in choosing between cash and in-kind transfers. Some arguments confirm existing theory (e.g., paternalism, fungibility), but others (e.g., self-control, transition costs) are not incorporated in existing theory on the advantages of in-kind transfers. In Iran, fine tuning and targeting poor/vulnerable groups, as well as conditional CT could be considered.

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Authors' contributions

Author contribution was added as follows: Mohammadi-Nasrabadi F and Omidvar N were involved in conception, designing, and supervising the project. Khoshfetrat MR and Zerafati-Shoae N contributed in data gathering and administrative phase. Vedadhir A, Houshyar-Rad A, and Abdollahi M analyzed and interpreted qualitative and quantitative data and reviewed the manuscript, Mehrabi Y was the statistical consultant. All authors read the manuscript and approved it for publishing.

Conflict of interest

The authors declared that they have no conflict of interest.

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