THE EFFECT OF ELIMINATING SUBSIDIES ON FOOD CONSUMPTION OF HOUSEHOLDS IN KERMANSHAH -IRAN

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Abstract

State subsidies are paid to aid households, especially the vulnerable ones. This study was conducted to determine the effect of targeted subsidies on food consumption of households in the city of Kermanshah.

This descriptive analytical study was conducted two years after implementing food subsidies elimination plan in 2013 on 250 households, randomly selected (multistage cluster sampling) from six districts in Kermanshah city. Data were collected using demographic and Food Frequency Questionnaire (FFQ), and analyzed in SPSS-16 using linear regression, Spearman's and Pearson's correlation coefficients, Chi-square, Choprov and t-tests.

A significant reduction was found in consumption of all nutrient groups including bread and cereals (P<0.001), protein and meat (P=0.01), dairy products (P=0.01), and fruits and vegetables (P<0.001) compared to previous two studies and before elimination of food subsidies.

A more than three-fold reduction was observed in daily consumption of milk compared to before elimination of subsidies (P<0.001). Household income was positively and significantly related to consumption of nutrient groups (P<0.001). Elimination of food subsidies had led to a reduction in consumption of essential foods in households. Given the relationship between income and consumption, it is recommended that special supports be provided by the state to improve nutritional status of low-income and vulnerable households.

Keywords:

Subsidies, nutrition pattern, food groups, dairy products

Introduction

Subsidy is cash or non-cash donations made by the state to directly or indirectly increase consumers' actual purchasing power and producers' selling power, and to make distribution of income more equitable, achieve economic stability, and compensate effects of state policies to maintain or improve social welfare (1). Consumable subsidies, paid to support vulnerable groups, comprise the biggest proportion of such aid (2). Reducing poverty is one of the main reasons for payment of subsidies (3). In Iran, implementation of support system and subsidies for certain essential items mainly aim to ensure intake of minimum nutritional needs by various social groups, especially low-income groups. However, in practice, inefficiency of distribution system or economic problems of low-income groups and their desire to have subsidies in cash form (usually in the most vulnerable groups) may deprive them of the minimum of anticipated subsidized items (4). It is not just Iran or developing countries that pay subsidies, and payment of subsidies in developed countries is much more widespread, which takes up a great proportion of their budget (5, 6).

Food subsidies can be highly effective in stabilizing food prices, transferring income to the poor, and maintaining political and social stability (7, 8). In the process of economic development, food is a major item, and prices are an important factor in access to food, and increasing food prices affects food security and supplies (9). In developing countries, consumption is regarded a preferred welfare index by economists (10). A study conducted in Morocco to assess effects of rising prices of essential goods on nutrition reported that in a non-targeted subsidy system, a large proportion of subsidies is steered toward economically better-off classes, and given that poorer groups use great part of their incomes on purchasing food, rising food prices hugely affects purchasing power and nutritional status of households (11). Gattner suggested that transfer of cash to poor families through targeted subsidies can help them in dealing with sudden rises in food price, and can lead to reduced poverty (12).

Assessment of consumption pattern is fundamental to understanding how nutritional needs are met, and also in identifying factors that reveal general risk of poor or excessive consumption of required nutrition among people or populations (13). In a study on pattern of food consumption in Kermanshah households (2010), mean consumption of bread and cereals per capita was reported 6.6±2.4 units/day, and milk and dairy products 1.93±1.21 units/day, where consumption per capita of milk alone was 1.24±1.1 units/day (14). In Iran, the most important items affected by elimination of subsidies included bread and cereals, and dairy products, especially milk. According to various studies, bread and cereals are considered the staple food and main source of nutritional energy in Iran (15). According to

various reports, daily consumption of milk compensates nutritional deficiencies and reduces subsequent complications and mortality rate (16). Price changes in these items can be hugely important.

Food purchasing rate can be adjusted by price changes through taxation, subsidies or both. Adjustment of prices is possible through gradual reduction and elimination of subsidies. This makes measurement of changes in citizens' welfare highly important for providing subjective compensatory support systems (17, 18). In 2010, elimination of subsidies of certain essential food items was witnessed across the country, including bread and cereals, and milk and diary products. Two years after implementation of targeted subsidies program and elimination of food subsidies, the present study was conducted to determine the effects on consumption pattern among households in Kermanshah.

Materials and methods

This descriptive-analytical study was conducted on 250 households in Kermanshah, selected by a two-stage (cluster and simple random) sampling method. It should be explained that a study was conducted in 2011 titled "nutrition pattern and consumption of food groups in Kermanshah residents) before implementation of targeted subsidies program on 500 households that were selected as follows: population of each of the six districts was divided by 5 (mean household size) to find mean number of households in each district. A number of neighborhoods were randomly selected from each district as clusters, and a number of households in each neighborhood were questioned. The number of households in each district was divided by 344 (ratio of total population of Kermanshah to a sample of 500) to find the number of study households in each district (14).

In the present study, 250 households were randomly selected from the 500 in the above-mentioned study using a two-stage sampling method (cluster and simple random). Data were collected using demographic (containing questions about age, gender, parents' education and occupation, monthly income, and household size) and Food Frequency Questionnaire (FFQ), given to participants to complete with the guidance of questioners. Economic status was categorized as good, moderate and poor depending on households' monthly incomes.

The usual nutritional pattern of people was assessed using FFQ, whose validity and reliability for the Iranian population had been previously confirmed (19). FFQ contains 168 food items and the standard portion for each. Although frequency of consumption of a food item per year is intended, questions were asked according to type of food item in terms of frequency of consumption per day, week or month.

The amounts of each food item consumed were converted into consumption per day. In the present study, the number of units from food groups was determined using the Ministry of Health recommended food pyramid guide (20),

which provided recommended units from each food group per day as follows: bread and cereals 6-11, fruits 2-4, vegetables 3-5, meat and pulses 2-3, and milk and dairy products 2-3 units, and negligible amounts of miscellaneous groups.

After a final check of accuracy, the data were entered into SPSS-16 software. Independent t test, linear regression and Spearman's and Pearson's correlation coefficients were used to determine the relationship between quantitative variables, and Chi-square and Choprov tests were used to assess the relationship between qualitative variables. $P<0.05$ was assumed significant in all tests.

Results

Women comprised 71.8% of respondents to the questionnaires. In this study, 250 households took part, of which 20.4% had good economic status, 32.5% moderate, and 47.2% low. Mean number of employed people in a household was 1.2, and mean household size was 4.1. Education level in women and men in these households was as follows: illiterate 18.2% and 9.4%, high school education 39.3% and 37%, high school diploma 32.6% and 33.2%, and university education 9.9% and 20.4%, respectively.

This study showed a significant reduction in consumption of all food groups after elimination of food subsidies, and this reduction was significantly higher in fruit and vegetable group (Table 1).

In this study, 37% of households consumed bread and cereals less than the recommended amount (Table 2), and 48% consumed meat and pulses less than recommended amount (this was 34.7% before elimination of subsidies). Consumption of dairy products less than the recommended amount was found in 52% and 44% of households before and after elimination of food subsidies, respectively.

A significant difference was observed in mean consumption of milk before (1.24±1.1 units/day) and after (0.35±0.3 units/day) elimination of food subsidies ($P<0.001$). This reduction was also significant in other dairy products such as yoghurt ($P<0.001$), yoghurt drink (dooq) ($P=0.01$), and cheese ($P=0.01$).

Household monthly income and size were found negatively related to consumption of bread and cereals, and significantly to consumption of diary products. Consumption of meat and pulses showed a significant relationship with father's occupation, monthly income, household size and mother's education (Table 3).

A significant relationship was also observed between consumption of miscellaneous group and monthly income ($P<0.001$) and household size ($P<0.001$).

Table -1: Consumption of different food groups before and after elimination of food subsidies (in standard units).

Food Groups	Survey 2011 Mean± S.D	Survey 2013 Mean± S.D	P.value
Breads and Cereals	6.6±2.4	4.1±1.2	0.001
Dairy Products	1.9±1.2	1.03±1.4	0.01
Meats	1.2±0.1	1.1±0.5	0.01
vegetables	2±0.1	1.4±0.8	0.001
Fruits	3.3±0.1	2±1.2	0.001

Table-2: Consumption of food groups before and after elimination of food subsidies compared to the recommended amount (in % of households).

Food Groups	Less than amount		Equal amount		More than amount	
	Survey 2011	Survey 2013	Survey 2011	Survey 2013	Survey 2011	Survey 2013
Breads and Cereals	25	37	54	43.5	21	19.5
Dairy Products	44	52	31	34.8	25	13.2
Meats	34.7	48	42.15	45.5	23.15	6.5
vegetables	78	85	16.8	12.7	5.2	2.3
Fruits	23.3	53.8	21.6	38.2	55.1	8

Table-3: The relationship between consumption of food groups and demographic parameters in households.

Food Groups	Breads and Cereals	Dairy Products	Meats	vegetables	Fruits
	P(r)	P(r)	P(r)	P(r)	P(r)
Monthly income	0.4(-0.126)	<0.001 (0.246)	<0.001(0. 247)	<0.001(0.214)	<0.001(0.401)

Family size	.2(-0.831)	.009(0.89)	.005(0.191)	0.12(0.107)	<0.001(0.240)
Father's job	0.1(0.186)	0.6(0.188)	0.002(0.332)	0.5(0.207)	0.1(0.262)
Mother's job	0.2(0.14)	0.8(0.133)	0.6(0.153)	0.2(0.196)	0.006(0.283)
Mother's Education	0.1(0.106)	0.3(0.061)	0.007(0.172)	0.1(0.106)	0.03(0137)
Father's Education	0.2(0.177)	0.1(0.196)	0.2(0.068)	0.03(0.135)	0.02(0.151)

Discussion

Elimination of subsidies for basic food items made significant changes in households' food consumption, so that elimination program had led to a significant reduction in consumption of all food groups including bread and cereals, meat and protein products, diary, fruits and vegetables. Studies conducted in Egypt and Morocco also showed that targeted subsidies affected households' consumption pattern, and led to changes in households' consumption (11, 12). Compared to a study conducted in Kermanshah in 2010 (before elimination of food subsidies), households' consumption of meat and protein products reduced (14), mainly due to economic reasons. A study by Eslami showed that payment of subsidies positively affected consumption of meat, and reduction in payment of subsidies led to reduced consumption of such products.

Changes in payment of subsidies reduce consumers' purchasing power (21). Meat is considered among essential food groups in all age group, especially children, pregnant women, and athletes, and their reduction or non-consumption can cause dramatic developmental and nutritional problems in people. Compared to 2011 (before elimination of food subsidies), when households' consumption of milk was almost favorable, due to lower prices, after removal of subsidies, consumption of milk and dairy products showed a reduction. The reduction in consumption of milk and dairy was also observed in a study by Asefzadeh in 2011 (after elimination of subsidies) (22).

Milk and dairy products are a rich source of calcium, and their insufficient intake can cause irreparable damage to humans, including osteoporosis that can impose huge costs on the national health system. Milk can have positive effects when consumed consistently throughout life without discontinuation at any age (23). A study by Faller in China showed that consumption of milk and dairy products is affected by economic, geographical and cultural factors (24). Low consumption of dairy products is mainly due to people's lack knowledge about the need to consume all

food groups, and also affordability, whereas low-income people should be able to purchase dairy products without any problem. In this study, bread and cereals were insufficiently consumed by households. In contrast, a study conducted in Iran showed cereals were the most highly consumed food group for the last 45 years (25). In his study, Ghasemi proposed refined cereals and rice as the most consumed foods in Iran (15). Consumption of this food group was less than the recommended amount in food pyramid, and significantly reduced compared to 2010, which may have been mainly due to rising prices and removal of bread subsidies. Reduced consumption of bread after targeting subsidies may be due to proper use and reduced waste. There was a significant inadequacy in households' consumption of fruits and vegetables, which was far less than the standard level. Previous studies have demonstrated the important role of consuming fruits and vegetables in nutritional diversity and in prevention of chronic diseases (26, 27). Despite huge benefits offered by fruits and vegetables, their consumption in many developing countries is still very low and only very few countries receive the FAO recommended amounts. This can be blamed on high prices and households' unaffordability (28-30). In Iran, low consumption of fruits may be due to the food culture and placing fruits among luxurious items. However, compared to the study conducted on the same samples before elimination of subsidies, reduced consumption of fruits and vegetables can be due to rising prices and unaffordability of households.

In the present study, a positive correlation was found between consumption of all food groups (except bread and cereals) and household income. Similarly, several studies have reported a positive relationship between food consumption and household income, so that consumption was higher in higher income families that spent more on better quality foods (22-31).

A study by Yunus showed that poor and low-income households were much more vulnerable to price changes, and should receive state support (32). Eslami et al. study showed that food prices affect accessibility and procurement of food items (9). In America, a study by Letao&Ludvixon showed that price changes affected consumption level (33).

Conclusion

Elimination of food subsidies has caused changes in consumption of essential food items and household consumption. In fact, changes in payment of subsidies and elimination of subsidies on essential foods such as milk, and bread and cereals have led to reduced purchasing power of consumers.

Proper nutrition is a major factor in reducing burden of various diseases. Inattention to this issue can impose heavy costs on the national health networks. Thus, preventing reduced consumption of essential food items such as dairy

and protein groups can improve living standards of low-income households, increase social equity, and reduce burden of diseases. Given the socioeconomic status of people in Iran, nutritional support of low-income households should be on the state's agenda.

Acknowledgements

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