

## ORIGINAL ARTICLE

## Food acquisition and intra-household consumption patterns: a study of low and middle income urban households in Delhi, India

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### Article Cycle

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### Abstract

**Background:** Food habits and choices in India are shifting due to many factors: changing food markets, fast urbanization, food price inflation, uncertain food production and unequal distribution during the past decade. This study aims to explore food acquisition and intra-household consumption patterns in urban low and middle income (LMI) households in Delhi. **Methods:** Twenty households were randomly selected from the Center for Cardio-metabolic Risk Reduction in South Asia (CARRS) surveillance study. Data were derived from 20 questionnaires administered to women responsible for food preparation, four key-informant-interviews, and 20 in-depth interviews with household heads during September-November 2011. STATA and ATLAS.ti software were used for data analysis. **Results:** Half of the households spent at least two-thirds of their income on food. The major expenditures were on vegetables (22% of total food expenditure), milk and milk products (16%), and cereal and related products (15%). Income, food prices, food preferences, and seasonal variation influenced food expenditure. Adults usually ate two to three times a day while children ate more frequently. Eating sequence was based on the work pattern within the household and cultural beliefs. Contrary to previous evidence, there was no gender bias in intra-household food distribution. Women considered food acquisition, preparation and distribution part of their self-worth and played a major role in food related issues in the household. **Conclusion:** Women's key roles in food acquisition, preparation and intra household food consumption should be considered in formulating food policies and programs.

### Key Words

Delhi; Food Acquisition; Income; Intra-Household Consumption; Women

### Introduction

Food habits and choices in India are shifting due to many factors: changing food markets, fast urbanization, food inflation, uncertain

food production and unequal distribution during the past decade.(1-4) This has resulted simultaneously in food insecurity for some and a rise in obesity for others. About 35% of the Indian population is underweight, while the

prevalence of overweight/obesity is estimated to be of 13% for women and 10% for men.(5) Food expenditure is directly associated with the levels of income in both rural and urban areas(6) and households reduce their food expenditures by 0.8% for every 1% increase in food prices.(7) In Delhi in 2008, the poor spent 59%, and those on an average income spent 47% of their household income on food, with the consumption of milk and fruit increasing with wealth.(8) Changes in household expenditure are also occurring –a shift from food to non-food items (e.g. between 1993-94 to 2009-10, the proportion of monthly per capita consumer expenditure on food has declined 9% in rural areas and 14% in urban areas) in all expenditure categories across both rural and urban areas.(9)

In India women have limited economic decision making authority in a household but are more likely to be involved in decisions related to food purchases.(10) Women consider intra-family food acquisition and feeding as a part of their self-worth and family's social status and prestige.(11) More than 70% of women take independent decision about the 'items to be cooked' in the household.(12,13) Contrary to household surveys, qualitative evidence suggests that although a woman is generally perceived as the "queen of kitchen", the decision about the items to cook are mainly made by husbands or other family members.(14) Intra-household discrimination towards girls in terms of distribution of food has also been highlighted.(15-20) Evidence further indicates that irrespective of the household type (nuclear/joint) women eat after male members and children.(21) Moreover, these behaviours become more pronounced under conditions of poverty and during period of limited access to resources.(16,18)

The National Food Security Act of India (2013) aims to provide food and nutritional security

by ensuring access to adequate quantity of quality food at affordable prices.(22) An in-depth exploration of food consumption patterns and its acquisition in urban households was undertaken to examine the scale of the food security problem.

### Aims & Objectives

Specifically, the study objective was to explore food acquisition system and intra-household consumption patterns in low and middle income (LMI) urban households in Delhi. Salt consumption patterns were focused on as they are thought to be high in India but little data exist.

### Methods

Following the National Council for Applied Economic Research criteria for household income, (23) 20 LMI households were randomly selected from the Center for Cardio-metabolic Risk Reduction in South Asia (CARRS) surveillance study, located in two poor areas(Sangam Vihar and Kotla) of Delhi. These areas were considered as poor on the basis of the income level of the residents gathered through the CARRS Study and were selected at random for this study. Data were collected during September-November 2011 using both quantitative (structured interview schedule) and qualitative (in-depth interview and key informant interview) tools. Ethical approval was obtained for the CARRS study from the Health Ministry Screening Committee of Government of India, and the institutional review boards of collaborating organizations. Informed consent was obtained from the respondents prior to data collection. Responses were anonymized to ensure confidentiality of the participants.

The structured interview schedule focused on a) usual food acquisition in the household, b) household decision-making on food purchases,

c) the usual food purchaser, d) location of where food purchases were made, e) household budget for food, and f) percentage of household income spent on food. In-depth interviews (IDIs) explored these issues in greater detail including intra-household food distribution pattern. The interview schedule was administered to those, who were responsible for the food preparation and distribution in the households. IDIs were carried out with the 'perceived' head of household. Key informants (food vendors) were interviewed using a predetermined interview guideline to explore food purchasing behaviour of the households, and were selected purposively from the study areas.

Quantitative data, collected through interview schedule was analyzed using STATA 10.0 version. The per head salt consumption was calculated by dividing the total amount of salt consumed over a month (collected in kilograms) by the number of members of the household. It was further divided by 30 to get per head per day consumption. The audio recorded IDIs and key informant interviews (KIIs) were transcribed independently by two authors and discrepancies were resolved with a third author. All the IDIs and KIIs were conducted in Hindi and were subsequently translated into English. Translations were checked by a second author before being imported to ATLAS. ti (Version 6.2) software for the analysis. Relationship among emerging categories and codes were studied using memos, graphic representations and conceptual frameworks through an iterative process. Anonymous direct quotes were used as examples of particular themes to substantiate the findings, where appropriate.

## Result

Background characteristics of the households:

The study investigated 20 households in two poor areas of Delhi. The mean household size was 4.8 persons. Fourteen out of 20 surveyed households were nuclear families. The average monthly income of the studied household was 10,550 Indian Rupees (INR). Details of socio-demographic characteristics are shown in [Table 1](#).

Brief profile of the study participants:

The mean age and education of the women was 34.8 years (range 18-69 years) and 5.9 years (range 0-15 years) respectively. Most of them were homemakers, and only three were employed in the government or private sector. A majority (18/20) were currently married. Seventeen perceived heads of household were men. Four worked in the government sector (one peon, one traffic police, two clerks), six in the private sector (especially in small scale firms/companies), five were daily wage laborers, and two had their own business. Two out of the four key informants interviewed were grocery shop owners; one was a fruit shop owner while the fourth was a vegetable vendor.

Food acquisition and its determinants:

[Figure 1](#) describes the complexity of what influences food budget and food acquisition in the surveyed households, the main determinants for which are described below.

Household food budget:

The average estimated monthly household food expenditure was 5,985- 6,245 INR (range 2,500-10,000) which constituted 58-59% of the average household income. Half of the households (mainly salaried people or daily wage earners) were spending more than 66% of their total income on food, six between 50-60%, and four (all salaried people) less than 50% of their income on food. Food item wise, the major expenditures were on vegetables,

'milk and milk products', and 'cereal and related products'; comprising 22%, 16%, and 15% of the total food expenditure respectively ([Figure 2](#)).

In-depth interviews found that the decision making on the food budget varied and was dependent on the household size and occupation of the household members. Further, there were households, who considered expenditure on food as something unavoidable; and a state of helplessness was observed among the respondents. To quote an IDI participant:

*Everything (food items) we buy from X market, because Y market is costlier than X. everybody is looting (here in Y). The government is not doing anything and poor people like us are dying. Nobody (referring to designated government employees in charge of monitoring food quality and price) checks the actual cost (maximum retail price) and what the shopkeeper charges. What to do? There is nothing in our hand.*

*Male household head (monthly income-4600 INR, household size-4)*

Frequency of food items purchased:

Frequency of food items purchased by the households often depended on the type of food item. For example, vegetables and milk were purchased daily whilst there was no clear trend in the frequency of purchase for 'cereal and related products', 'pulses and legumes', 'fats and oils', sugar, fruits, beverages and salt. In-depth interviews found that the available food budget, seasonality, and storage facility were additional factors taken into account while determining the frequency of food items bought.

*We purchase (food items) daily and consume the same. There is not enough income to buy for several days.*

*Female household head (monthly income-8000 INR, household size-5)*

Though 14 households had a refrigerator, only six households had dry and safe kitchen storage.

Usual buyer and reason:

Women were found to be the usual buyer of food items often determined by factors including availability of time, perceived skills in identifying quality food items and not wanting to buy unwanted products. In contrast, in two households men took control of buying food especially meat products. On exploring this further, perceived family prestige was a factor. In the words of an IDI participant:

*No, in our family, women do not go to butchers. In our khandan (family usually with high status and honor), women do not do this.*

*Male household head (monthly income-12000 INR, household size-5)*

Usual place for food purchase and issues considered during food purchase:

Food items were usually purchased from the nearby shops/markets and in some instances close to work locations due to better availability. Grocery items were generally purchased from 'kirana store' (a small, usually family-owned shop selling groceries and other sundries) whilst vegetables and 'meat, poultry and fishes' were purchased from the 'open market'. Freshness of the food items was always considered by most of the households (18/20), whilst price was always an influencing factor in 13 households, and brand name for eight households. This finding was substantiated by the in-depth interviews.

*Everybody look at the price, which is cheap and which is costly. Meanwhile who will take a spoiled thing even if it is cheap?*

*Male household head (monthly income-6000 INR, household size-6)*

One key informant added:

*People tend to go for cheaper items. How can they buy costlier items without money? But they also look at quality and freshness.*

Routine check of nutrition labels was always observed by five households and only four looked at food ingredients. Half of them did not usually check the expiry dates, due to illiteracy.

Intra-household food consumption patterns and its determinants:

[Table 2](#) illustrates the usual food items consumed and frequency of consumption during the month preceding the survey in the surveyed households.

Usual food consumed:

Roti (chappati), rice, milk and milk products, vegetables, and dal (pulses) were the most common food items consumed daily. Tea/coffee, sugar, salt and oils were also consumed every day. Dislike for certain food items further influenced the type of food consumed within the household. As may be seen, pickle was being consumed either occasionally (11/20) or never (9/20) in the surveyed households. More than half of the households (12/20) consumed non-vegetarian items (meat, chicken, fish and egg) but the frequency of consumption was mostly occasional due to religious beliefs and increasing prices.

Insufficient income prevented these households from visiting restaurants or cafes. About half of the households never consumed fruit juices (11/20), nuts/ seeds (11/20), bakeries (9/20) and fast foods (10/20) during the month preceding the survey. Rising food prices further contributed to households

having to make choices and decrease their food consumption.

*Due to high food prices, I sometime don't buy certain food items. Like take the case of fruits, apple costs 70 rupees per kg, cauliflower comes 80 rupees per kg. We can't eat that. You tell me how can we eat?*

*Male household head (monthly income-4600 INR, household size-4)*

Additionally, seasonality and cultural beliefs influenced the food items consumed.

*Sometimes in winter we cook eggs but never in summer because people say eggs bring garmi (perceived warmth of the body owing to consumption of the food classified as 'hot', often based on qualities like temperature, pungency and some abstract qualities) to the body.*

*Male household head (monthly income-6000 INR, household size-4)*

[Figure 3](#) illustrates the complexity of the association among usual foods consumed, food preparation and distribution, sequence and frequency of eating; the main determinants for which are described below.

Cooking and food preparation:

Women on the whole were responsible for food preparation and cooking ([Table 3](#)). Though daughters and daughter-in-laws were the usual cook due to cultural practices, the decision of the items to be cooked was often influenced by the food preferences of other household members especially the children and the male members.

*She (wife) only cooks (pause), asks my opinion over phone.*

*Male household head (monthly income-15000 INR, household size-2)*

Frequency and sequence of food consumption:

Whilst the survey established that the participants consumed meals two to three times a day in all the households, in-depth interviews highlighted greater frequency for children. Most of the households (14/20) did not follow any fixed patterns or sequence in food consumption other than children, who were given food first ([Table 3](#)). In-depth interviews found that the decision about the sequence of eating was usually informal in nature and often was influenced by working patterns.

*Dinner time is 8 to 8.30 pm. If I am not there (back at home from office) they (other family members) will eat.*

*Male household head (monthly income-12000 INR, household size-5)*

However, further exploration revealed that in some cases adult women tended to eat at the end of the meal due to their perceived gender role as a food distributor and adherence to tradition.

*The daughter-in-law serves the food. She eats at the end. We usually follow (this sequence) in our family, First elders eat, daughter-in-law at the end, not like everybody eating together or touching the food simultaneously.*

*Female household head (monthly income-9000 INR, household size-5)*

Intra-household food distribution:

Women were the main intra-household food distributor in the surveyed households. They often perceived it as a part of their gender role whilst men saw this as women's responsibility.

*In our family men do not enter the kitchen for food (females serve food).*

*Female household head (monthly income-15000 INR, household size-5)*

There appeared to be no age or gender bias in allocating food, as most of the surveyed households usually took care of the food requirement of all its members ([Table 3](#)).

*Yes, whatever is cooked everybody (boys and girl) eat that. No separate or special food for anybody.*

*Female household head (monthly income-15000 INR, household size-5)*

We explored the issue of leftovers. Most households stated that they rarely had 'leftovers', when they did, they were consumed mainly by the adult women ([Table 3](#)).

Consumption of salt:

The per capita consumption of salt in the surveyed households was 12 grams (range 6-22 grams) per day ([Table 1](#)). 'Individual taste' was the primary influencing factor.

*Whatever salt they put in the curry, they (other household members) eat it, but I need more salt. I put extra salt. I eat spicy and salty foods.*

*Male household head (monthly income-15000 INR, household size-4)*

Three of the households perceived that putting too much salt might make the food poisonous or lead to whitish sweat.

## Discussion

The study found that household income, food prices, food preference of the members, and seasonal variation influenced the expenditure and consumption pattern of food. Nutrition labels were rarely observed and this was in part due to illiteracy. People usually ate two-three times a day with the exception of children and the prevalent sequence of eating

was often based on work pattern of the household members as well as traditional cultural beliefs. There was a feeling of helplessness towards coping with the mounting food prices, more so about perceived government inaction about price control. This resulted in our respondents consuming less or buying cheaper food items.

The traditional Hindu system of male dominance and the consequent male bias in intra-household food distribution was absent in this study population, which was contrary to many past studies.(15-21) We also found that intra-household food distribution was more likely to be associated with working pattern in urban India, which was not previously observed. Our findings on the association between household income and food expenditure also confirmed previous findings(6,11) as did our results on price, availability, quality of the food, and food preference of the members.(11) Although decisions about food purchase were often informal, women usually had a larger say on these decisions. This too was corroborated in a study on women's autonomy in India and Pakistan a decade ago.(10) Despite, many women taking independent decisions about the items to cook, we found it was often influenced by the food preferences of other household members as previously observed in rural populations.(13,14) Food distribution was perceived as a part of women's gender role and self-worth. The per capita per day consumption of salt was much higher than the World Health Organization (WHO) recommended standard of five grams,(24) making our participants vulnerable to the risk of hypertension.

In common with rural studies, our participants indicated that seasonal variability in dietary pattern mostly depending upon the availability and perceived 'hot and cold nature' of food items (21,25,26). Higher food prices often

owing to non-availability of food items, perceived poor quality of stored food, and cultural practices were the factors responsible for seasonal variation in food consumption. This study confirms the reasons for high salt consumption, chiefly excess voluntary use in household cooking and individual taste.(27,28)

The limitations of our study are that the results are based on self-reports and social desirability response bias could not be totally annulled. We had a relatively small sample size and our participants were based in two poor areas of Delhi and lived in LMI households. Therefore caution needs to be taken in the transferability of the results. The strengths of our study are that it provides new data on food acquisition and intra-household consumption patterns (including salt) among LMI households in urban India, providing a benchmark prior to government action to improve food security. The comprehensive understanding of the determinants of food acquisition and consumption pattern is a precursor to frame any intervention aiming at inclusive growth of the urban poor.

Our results indicate that policies and programs on food allocation and nutrition interventions needs to consider women's roles in food acquisition and consumption patterns as well as socio-cultural constraints as this may lead to more effective outcomes.

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## Tables

**TABLE 1: CHARACTERISTICS OF THE SURVEYED HOUSEHOLDS AND SALT CONSUMPTION PATTERNS**

SLNo	Number of members in the household	Occupation of the main earner	Type of household	Household's main source of income	Monthly total Income (in INR)	Monthly expenditure on food (in INR)	% of income spent on food	Availability of refrigerator in the household	Per head per day consumption of salt (in grams)
1	2	Retired from private service	Nuclear	Not specified	3400	2500	74	No	16.7
2	4	Private service	Nuclear	Salary	4600	3400	74	No	8.3
3	4	Business	Nuclear	Business	6000	3000	50	Yes	8.3
4	6	Daily wage labour	Joint	Daily wage	6000	4500	75	No	5.6
5	5	Daily wage labour	Joint	Daily wage	8000	6000	75	No	13.3
6	4	Daily wage labour	Nuclear	Daily wage	8000	7000	88	Yes	8.3
7	7	Government service	Nuclear	Salary	9000	8000	89	Yes	9.5
8	5	Not specified	Joint	Daily wage	9000	6500	72	Yes	13.3
9	6	Daily wage labour	Joint	Daily wage	9000	5000	56	Yes	11.1
10	5	Others	Nuclear	Others	10000	5000	50	Yes	6.7
11	3	Private service	Nuclear	Salary	11000	6000	55	Yes	22.2
12	5	Private service	Nuclear	Salary	12000	5000	42	Yes	13.3
13	5	Private service	Nuclear	Salary	12000	9000	75	Yes	13.3
14	3	Government service	Nuclear	Salary	13000	5000	38	No	22.2
15	8	Private service	Joint	Salary	15000	6000	40	Yes	8.3
16	5	Government service	Nuclear	Salary	15000	6000	40	Yes	13.3
17	8	Private service	Joint	Salary	15000	10000	67	Yes	8.3
18	2	Private service	Nuclear	Salary	15000	8000	53	Yes	16.7
19	4	Business	Nuclear	Business	15000	10000	67	No	8.3
20	5	Private service	Nuclear	Salary	15000	9000	60	Yes	13.3
Average	4.8				10550	6245	59		12.0

**TABLE 2: USUAL FOOD ITEMS CONSUMED AND FREQUENCY OF CONSUMPTION DURING THE MONTH PRECEDING THE SURVEY IN THE SURVEYED HOUSEHOLDS**

Items	Daily	Weekly	Monthly	Occasionally	Never
Meats	0	3	4	5	8
Poultry	0	7	2	2	9
Fish	0	4	1	6	9
Eggs	0	3	1	7	9
Milk and milk products	19	1	0	0	0
Deep fried foods	1	3	2	10	4
Sweet snacks/ Mithai	0	1	0	13	6
Cold beverages	0	0	0	13	7
Fruits	2	6	1	8	3
Fruits juices	0	0	0	9	11
Nuts/seeds	0	0	0	9	11
Green leafy vegetables	12	8	0	0	0
Other raw vegetables	19	1	0	0	0

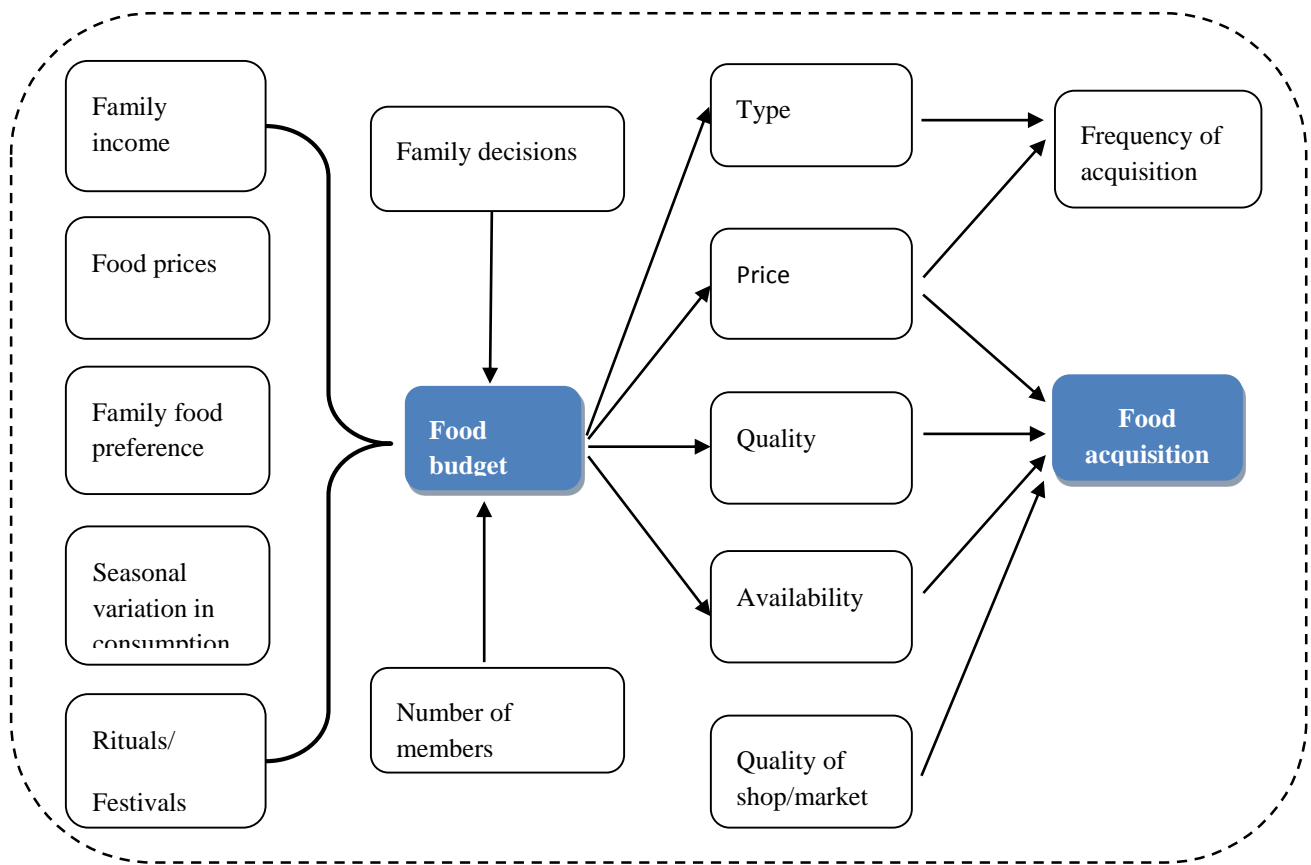
Legumes and pulses	13	6	0	1	0
Pickles	0	0	0	11	9
Refined cereals with less fibre	4	4	6	5	1
Whole grain	20	0	0	0	0
Tea/ coffee	20	0	0	0	0
Salt	20	0	0	0	0
Sugar	20	0	0	0	0
Fats and oils	20	0	0	0	0
Fast foods	0	0	2	8	10
Bakeries	0	0	0	11	9

**TABLE 3: CHARACTERISTICS OF FOOD CONSUMPTION PROCESS IN THE SURVEYED HOUSEHOLDS**

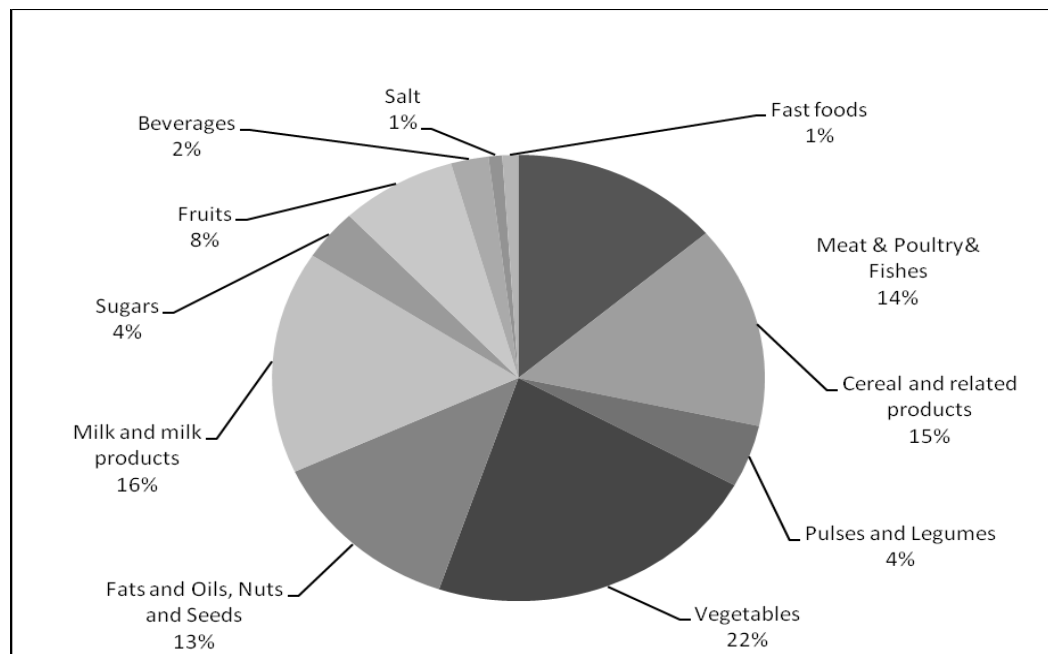
Characteristics	Number of households	Percent
Person responsible for cooking		
Women	18	90
Others (girls)	2	10
Items to be cooked mainly decided by		
Women	9	45
Others (Children/mother-in-law/father-in-law/husband)	11	55
Frequency and timing of meal decided by		
Women	10	50
Others (mother-in-law/father-in-law/husband)	10	50
Sequence of members in food consumption		
All members together	6	30
No fixed sequence	14	70
Whose food preference are usually met		
Children <10 years/ adults/ aged people >60 years	3	15
All members	17	85
Food items to be consumed by each member is decided by		
Women	9	45
Others (mother-in-law/father-in-law/husband)	11	55
Leftovers are consumed by		
Children/ all members	6	30
Adult females	11	55
No leftovers	3	15
Total	20	100

## Figures

**FIGURE 1: FOOD ACQUISITION PROCESS IN THE SURVEYED HOUSEHOLDS**



**FIGURE 2: EXPENDITURE SHARE OF FOOD ITEMS IN THE SURVEYED HOUSEHOLDS**



**FIGURE 3: FACTORS ASSOCIATED WITH INTRA-HOUSEHOLD FOOD CONSUMPTION PROCESS IN THE SURVEYED HOUSEHOLDS**