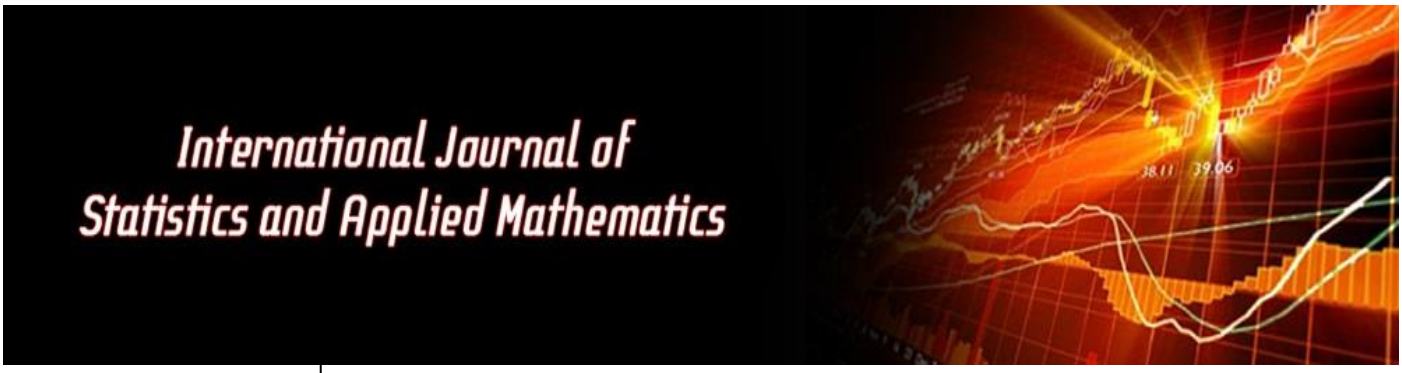

ISSN: 2456-1452
NAAS Rating (2025): 4.49

Maths 2025; SP-10(8): 37-42
www.mathsjournal.com
Received: 09-07-2025
Accepted: 11-08-2025

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Adult equivalent scale estimation for food expenditure in Junagadh District, Gujarat: A case of cereals, pulses, and edible oils

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Abstract
Consumption is an essential, everyday activity for everybody. It is a feature of everything we do during our waking hours up to the time that we fall asleep The way consumers practice consumption is influenced by diverse factors that are personal as well as external The annual per capita availability of cereals (113 kg), pulses (29 kg), and edible oils (12 kg) in India remains significantly lower than the intake levels recommended by ICMR. This gap highlights the importance of examining the changing consumption patterns of cereals, pulses, edible oils, and other food and non-food commodities in both rural and urban settings. The present study relies on primary household-level data collected from Junagadh district through personal interviews. The reference period covered the agricultural year 2023-24, including winter (November 2023-February 2024), summer (March-June 2024), and monsoon (July-October 2024). Analytical tools such as tabular analysis and regression analysis without intercept were applied to estimate the adult equivalent scale (AES). Findings from rural households indicated that women aged 20-40 years incurred the highest expenditure share across total cereals, pulses, and edible oils (TCPE), total food (TF), total non-food (TNF), and total expenditure (TOT) categories during all seasons. In contrast, among urban households, adolescents (13-20 years) contributed the largest proportion of expenditure to TCPE commodities in every season. For TF and TNF groups, men in the 20-40 years age bracket accounted for the maximum share in winter and summer, whereas adolescents dominated TCPE expenditure during summer. With respect to TOT, adolescents (13-20 years) held the highest share in winter and summer, while females aged 20-40 years led during the monsoon. At the aggregate household level, women in the 20-40 years group consistently accounted for the largest share in TCPE during winter and summer, while their male counterparts dominated in the monsoon. For TF, TNF, and TOT groups, females in the 20-40 years category remained the leading contributors across all seasons.

Keywords: TCPE, TF, TNF, TOT, Adult Equivalent Scale (AES), income scale

Introduction
Consumption is an essential, everyday activity for everybody. It is a feature of everything we do during our waking hours up to the time that we fall asleep. Everywhere you look, one buys, eats, uses, or enjoys something. Initially, consumption may appear to be innocuous, but it is the multiples forms and patterns of consumption and their impacts that are concerning. Households in both rural and urban regions allocate their expenditure across different commodities to maximize utility and satisfaction. Among these, spending on food holds primary importance, as it is essential for meeting the basic nutritional requirements of human life. Hence, in consumer behaviour studies, food consumption is often defined in terms of household expenditure on different food items to satisfy daily dietary needs. For such analyses, the Adult Equivalent Scale (AES) is considered a more appropriate measure than simple per capita consumption. This is because household needs increase with additional members, but not in a strictly proportional manner, owing to economies of scale in consumption. The concept of AES, also referred to as the "consumer unit," was first introduced by Farrell (1952). It provides a standardized framework to place individuals on a comparable consumption level. Over time, several researchers have applied different techniques to estimate AES, including Ordinary Least Squares (OLS), iterative procedures, and weighted least squares.

OLS has been widely applied to estimate per capita income and expenditure, with regression models (without intercepts) frequently employed for standardizing consumer units, as demonstrated by Bhuyan [2], Jain [3], and Shiyani & Singh [4]. Singh and Nagar [5] proposed a modified iterative procedure for deriving equivalent weights in total expenditure, particularly useful in surveys where member-wise consumption data for at least one item is available. This method has also been utilized in studies by Prais & Houthakker [6], Singh & Nagar [7], and Singh & Patel (1982).

2. Material and Methods

The study was conducted in Junagadh district, located in the south Saurashtra agro-climatic region. Data were collected separately from rural and urban households. The district was selected purposively, considering operational feasibility as well as its agro-economic characteristics, which provide an appropriate setting for analyzing inter-class differences in household consumption across various commodity groups. Household selection was carried out using a multistage random sampling design. At the first stage, four tehsils (Talukas) were selected. At second stage, two villages were selected randomly from each taluka and from each village, 10 rural households were selected i.e.20 households from each taluka. Thus, total 80 rural households were selected for the study from eight selected villages. For the selection of urban sample households, Junagadh city was selected purposively. At the first stage, four wards were selected randomly and at third stage, 20 households from each ward were selected randomly, thus 80 urban households were re selected from four wards of Junagadh city. These way total 180 sample households were selected for the study.

Table 1: List of selected variables of household expenditure

Sr. No.	Variables	Items (30 days)
1	X_1	Cereals
2	X_2	Pulses
3	X_3	Edible oils
4	X_4	Fruits
5	X_5	Vegetables
6	X_7	Milk and milk products
7	X_8	Spices
8	X_9	Beverages
9	X_{10}	Miscellaneous food items
10	X_{11}	Non-food items

Data for the study were collected through a conventional household survey using pre-structured questionnaires and personal interviews with the heads of the selected households. The survey was conducted in three to four rounds from the same households, covering three distinct seasons' winter, summer, and monsoon. In line with the objectives of the research, information was gathered on household expenditure relating to cereals, pulses and edible oils, food items, and non-food items. For food items, data were recorded in both physical quantities and monetary terms, while for non-food items, only monetary values were collected due to variations in measurement units, which made it impractical to record them in quantity terms. As is common in studies employing cross-sectional data, total household expenditure was treated as the independent variable, whereas expenditure on major food commodity groups specifically cereals, pulses, and edible oils was considered the dependent variable. In addition, new variables representing key commodity groups (as presented in Table 2) were generated for further analysis.

Table 2: List of new variables generated from the main commodity groups

Sr. No.	Variables	Main commodity groups	Sum of items
1	TCPE	Total expenditure on cereals, pulses and edible oils	$X_1+X_2+X_3$
2	TF	Total expenditure of other food items (without cereals, pulses and edible oils)	$X_4+X_5+\ldots X_{10}$
3	TNF	Total expenditure on all non-food items	X_{11}
4	TOT	Total expenditure/total consumer expenditure	$X_1+\ldots..+X_{11}$

2.1 Estimation of the Adult Equivalent Scale

Since item-wise consumption expenditure data for individual household members were not available, earlier researchers have employed regression techniques to estimate income or expenditure weights for different age-sex groups. In the present study, information on actual household expenditure was collected for both food and non-food items combined at the family level. A similar approach has been used by Sarkar [8], Jain [3], Shiyani and Singh [4], Upadhyay [9], Marviya [10], Dutta *et al*. [11], Rahman *et al*. [12], and Chaudhary *et al*. [13] for deriving the adult equivalent scale (AES) across different commodity groups. For the standardization of consumer units, a regression model without (zero) intercept was applied. Specifically, multiple linear regression analysis was employed to estimate adult equivalent scales for the three major commodity groups as well as for total household expenditure. The general form of the regression model without intercept is as follows:

$$X_j = b_1 n_{1j} + b_2 n_{2j} + b_3 n_{3j} + b_4 n_{4j} + b_5 n_{5j} + b_6 n_{6j} + \varepsilon_j$$

…. Eq.3.1

$$Y_{ij} = b'_1 n_{1j} + b'_2 n_{2j} + b'_3 n_{3j} + b'_4 n_{4j} + b'_5 n_{5j} + b'_6 n_{6j} + \varepsilon_j$$

…..Eq.3.2

Where,

X_j = Total consumer expenditure of j^{th} household;

Y_{ij} = Consumption/expenditure of i^{th} commodity group in the j^{th} household;

n_{1j} = Number of pre-school children (up to 4 years) in the j^{th} household;

n_{2j} = Number of school-going children (5-13 year) in the j^{th} household;

n_{3j} = Number of family members in age group of 14-20 years;

n_{4j} = Number of male family members in age group of 21-40 years;

n_{5j} = Number of female family members in age group of 21-40 years;

n_{6j} = Number of adult family members in age group above 40 years; and

ε_j = Random disturbances term having zero mean and constant variances $(0, \sigma^2)$.

The parameters b_1, b_2, b_3, b_4, b_5 and b_6 were estimated using the Ordinary Least Squares (OLS) method for both rural and urban households, and separately for each season. This procedure generated six different sets of estimates for every commodity group considered in the analysis. Similarly, the parameters, b_1', b_2', b_3', b_4', b_5'and b_6' were estimated using a regression model without an intercept.

2.1.2 Developing adult equivalent scale and standard household size: The consumer unit was selected as adult of 40 years above. Thus, an adult equivalent consumer unit scale was computed as shown below:

Table 3: Consumer unit scale by age and sex categories

A	Pre-school children (up to 4 years)	bˆ1 / bˆ 6
B	School going children (4-13 years)	bˆ 2 / bˆ 6
C	Adolescent (13-20 years)	bˆ 3 / bˆ 6
D	20-40 years male	bˆ 4 / bˆ 6
E	20-40 years female	bˆ 5 / bˆ 6
F	40 years above	bˆ 6 / bˆ 6 =1

This consumer unit was estimated separately for main commodity groups, *viz.*, total expenditure on cereals, pulses and edible oils (TCPE), total expenditure on other food items (without cereals, pulses and edible oils) (TF), total expenditure on all non-food items (TNF), total expenditure/total consumer expenditure (TOT) for three seasons for each of the two sectors.
The weighted household size was derived by using the consumer unit, and was estimated as follows

$$\sum_{g=1}^{G} w_{ig} n_{g_j} = \frac{\hat{b}_1}{\hat{b}_6} n_{1j} + \frac{\hat{b}_2}{\hat{b}_6} n_{2j} + \frac{\hat{b}_3}{\hat{b}_6} n_{3j} + \frac{\hat{b}_4}{\hat{b}_6} n_{4j} + \frac{\hat{b}_5}{\hat{b}_6} n_{5j} + n_{6j} \quad \text{.....Eq.3.3}$$

$$\sum_{g=1}^{G} w_{og} n_{gj} = \frac{\hat{b'}_1}{\hat{b'}_6} n_{1j} + \frac{\hat{b'}_2}{\hat{b'}_6} n_{2j} + \frac{\hat{b'}_3}{\hat{b'}_6} n_{3j} + \frac{\hat{b'}_4}{\hat{b'}_6} n_{4j} + \frac{\hat{b'}_5}{\hat{b'}_6} n_{5j} + n_{6j} \quad \text{..... Eq.3.4}$$

Where,
W_{ig} = Specific adult equivalent scale for i[th] commodities group in the g[th] age-sex group;

W_{og}= Expenditure adult equivalent scale common to expenditure commodity group in g[th] age-sex group;

$n_{g\ j}$ = number of persons in g[th] age-sex group and j[th] household;
Thus,

$\sum_{g=1}^{G} w_{ig} n_{g_j}$ = Standard household size of i[th] commodity group in the j[th] household

$\sum_{g=1}^{G} w_{og} n_{gj}$ = Standard household size of total expenditure for j[th] household.

The per consumer unit expenditure was computer as follows:

$$\frac{Y_{ij}}{\sum_{g=1}^{G} W_{ig} n_{gj}}$$

= Per comsumer unit expenditure on the commodity group ′i′;

$$\frac{X_{ij}}{\sum_{g=1}^{G} W_{og} n_{gj}}$$

= Per comsumer unit total expenditure for the j[th] household.

3. Results and Discussion

The results of adult equivalent scale for rural, urban and overall households are presented in Table 4, 5 and 6. It is evident from the table 4 that the adjusted coefficient of multiple determination ($\bar{R}^2$) for expenditure on total cereals, pulses and edible oils (TCPE) during all the three seasons varied between 89.10 and 90.82 per cent indicating that total cereals, pulses and edible oils (TCPE) consumption expenditure was influenced by different age-sex groups of rural households to the extent of 89.10 to 90.82 per cent during different seasons. The $\bar{R}^2$ value for expenditure on total food items other than cereals, pulses and edible oils (TF) varied between 88.05 to 89.50 per cent suggesting that the expenditure on total food among the rural households was influenced to the extent of 88.05 to 89.50 per cent during different seasons. The $\bar{R}^2$ value for expenditure on total non-food items (TNF) varied between 86.51 to 87.72 per cent indicating influence of different age-sex groups of rural households to the extent of 86.51 to 87.72 per cent in different seasons.

Table 4: Adult equivalent scale for different commodity expenditure groups in rural households during various seasons in Junagadh district

Main commodity groups	Age sex groups for rural						Reg. coefficient associated with adult (₹)	$\bar{R}^2$ (%)
	Pre-school child (up to 4 year) (N1)	School children (4-13 years) (N2)	Adolescent (13-20 years) (N3)	20-40 years Male (N4)	20-40 years Female (N5)	Adult (above 40 years) (N6)		
Winter								
TCPE	0.289	0.587	0.463	1.184	2.275	1.000	332.01	0.9001**
TF	0.280	0.389	0.924	0.784	1.524	1.000	1011.4	0.8950**
TNF	0.658	0.556	1.241	0.679	1.883	1.000	1126.4	0.8772**
TOT	0.283	0.387	1.120	0.482	1.681	1.000	3189.4	0.8945**
Summer								
TCPE	0.097	0.586	1.183	0.659	1.899	1.000	380.73	0.8910**
TF	0.384	0.473	1.018	0.358	1.683	1.000	1431.4	0.8805**
TNF	0.799	0.397	1.758	0.494	1.886	1.000	1895.1	0.8651**
TOT	0.486	0.386	1.193	0.526	1.804	1.000	3318.0	0.8827**
Monsoon								
TCPE	0.382	0.782	1.184	0.986	1.684	1.000	345.49	0.9082**
TF	0.279	0.374	0.846	0.958	1.183	1.000	1274.4	0.8894**
TNF	0.184	0.486	1.325	1.839	1.928	1.000	1892.0	0.8767**
TOT	0.171	0.384	1.089	1.138	1.287	1.000	3347.2	0.8993**

** Significant at 1per cent level of significance

The $\bar{R}^2$ value for total items (TOT) varied from 88.87 to 89.93 per cent indicating the influence of various age-sex groups of rural households on total consumption expenditure in the range of 88.27 to 89.93 per cent during different seasons (Table 4).

The Adult Equivalent Scale (AES) results for urban households, presented in Table 5, indicate that adolescents (13-20 years) contributed the highest proportionate share of expenditure on TCPE commodity groups across all seasons. In the case of TF commodity groups, the male age group of 20-40 years recorded the largest share during winter and monsoon, while adolescents (13-20 years) dominated during the summer season.

For TNF commodities group, 20-40 years male age group accounted for the highest share in expenditure in winter and monsoon seasons while it was adolescent age group (13-20 years) which accounted for the highest expenditure share in summer season. In case of TOT commodities group, 20-40 years male age group in winter, adolescents in summer and females of 20-40 years age group respectively accounted for the highest expenditure share. The total expenditure of urban households increased from pre-school children to 20-40 years male age group except 20-40 years female age group in winter season. In summer season, total expenditure showed an increasing trend from pre-school children to adolescent age group and thereafter decreasing. In monsoon season, the uneven trend was observed in total expenditure with respect to age groups with the highest share by female of 20-40 years age group and the lowest by pre-school children. These results support the findings of Upadhyay (1997), indicating that the family members in the age group of 20-40 years males accounted for relatively higher expenditure in main commodity groups in winter and monsoon seasons, whereas, adolescents of 13-20 years age groups shared more expenditure on these commodity groups in summer season.

The $\bar{R}^2$ values for TCPE in urban households ranged from 89.05% to 91.56%, indicating a strong influence of age-sex groups on cereal, pulse, and oil expenditure. For other food items (TF), $\bar{R}^2$ ranged from 88.29% to 90.86%, showing a similar high impact of household composition on food spending.

The $\bar{R}^2$ values for non-food expenditure (TNF) in urban households ranged from 87.05% to 88.24%, indicating strong influence of age-sex groups. For total expenditure (TOT), $\bar{R}^2$ ranged from 89.37% to 90.86%, showing a high degree of explanation by household composition.

Table 5: Adult equivalent scale for different commodity expenditure groups in urban households during various seasons Junagadh district

Main commodity groups	Age sex groups for urban						Reg. coefficient associated with adult (₹)	$\bar{R}^2$ (%)
	Pre-school child (up to 4 year) (N1)	School children (4-13 years) (N2)	Adolescent (13-20 years) (N3)	20-40 years Male (N4)	20-40 years Female (N5)	Adult (above 40 years) (N6)		
Winter								
TCPE	1.282	0.889	1.314	1.329	0.583	1.000	386.76	0.9156**
TF	0.875	0.894	1.178	1.347	0.789	1.000	961.86	0.9086**
TNF	1.437	1.384	1.386	1.586	0.299	1.000	1821.23	0.8824**
TOT	1.037	1.069	1.187	1.386	0.586	1.000	3080.33	0.9086**
Summer								
TCPE	0.986	1.483	2.086	1.272	0.687	1.000	383.80	0.9100**
TF	0.764	0.884	1.386	1.217	0.876	1.000	1457.73	0.9021**
TNF	0.435	1.481	2.080	1.591	0.689	1.000	1962.16	0.8805**
TOT	0.589	1.001	1.543	1.482	0.814	1.000	3329.15	0.9034**
Monsoon								
TCPE	0.450	1.347	2.865	1.584	0.583	1.000	395.16	0.8905**
TF	0.586	0.894	1.367	1.283	0.984	1.000	1108.21	0.8829**
TNF	0.623	0.986	0.807	1.863	1.783	1.000	2536.03	0.8707**
TOT	0.609	0.912	1.059	1.010	1.254	1.000	3265.28	0.8937**

** Significant at 1per cent level of significance

Table 6: Adult equivalent scale for different commodity expenditure groups in overall households during various seasons Junagadh district

Main commodity groups	Age sex groups for overall						Reg. coefficient associated with adult (₹)	$\bar{R}^2$ (%)
	Pre-school child (up to 4 year) (N1)	School children (4-13 years) (N2)	Adolescent (13-20 years) (N3)	20-40 years Male (N4)	20-40 years Female (N5)	Adult (above 40 years) (N6)		
Winter								
TCPE	0.586	0.542	0.784	1.035	1.248	1.000	363.76	0.9183**
TF	0.461	0.537	0.983	0.772	1.235	1.000	1038.28	0.9075**
TNF	1.076	1.212	2.003	1.583	1.646	1.000	1464.18	0.8868**
TOT	0.483	0.767	1.273	0.946	1.289	1.000	3092.16	0.9073**
Summer								
TCPE	0.483	1.069	1.183	0.986	1.127	1.000	370.10	0.8883**
TF	0.495	0.549	1.065	0.625	1.425	1.000	1208.42	0.8804**
TNF	0.980	1.087	1.083	1.108	1.793	1.000	1867.83	0.8538**
TOT	0.467	0.639	1.589	0.863	1.476	1.000	3420.73	0.8781**
Monsoon								
TCPE	0.373	0.961	1.153	1.227	1.134	1.000	367.86	0.9046**
TF	0.259	0.528	0.958	1.039	1.184	1.000	1586.08	0.8934**
TNF	0.376	1.346	1.873	1.837	1.964	1.000	2347.25	0.8802**
TOT	0.234	0.891	1.286	1.249	1.486	1.000	3376.93	0.9024**

** Significant at 1 per cent level of significance

The Adult Equivalent Scale (AES) estimates for overall households, as presented in Table 6, show that females aged 20-40 years recorded the highest expenditure share on TCPE (total cereals, pulses, and edible oils) commodity groups during the winter and summer seasons. In contrast, during the monsoon season, the maximum expenditure share was observed among males in the 20-40 years age group. For other commodities groups *i.e.* TF, TNF and TOT of all seasons, akin to rural households, it was noticed that the females in 20-40 years age group accounted for the largest proportionate share of expenditure in different seasons of overall households. These results are in similarity with the findings of Upadhyay (2017) who analyzed the consumption pattern of food and non-food items in Amreli district of Gujarat. The findings suggested that the females of 20-40 years age group accounted for the largest proportionate share in expenditure of three main commodity groups in all the three seasons.

This is supported on the basis that most of the females are involved in almost various types of physical work besides household work. Additionally, cereals, pulses and edible oils are considered as an essential part of the diet for pregnant and nursing mothers, a majority of whom fall in this age group. The highest share in TNF accounted by females in 20-40 years age group can be attributed to the reason that females in this age group spend more on non-food items like clothes, cosmetics and foot wares. It was revealed that the total expenditure taken together, increased with the higher age group in monsoon season. The uneven trend was observed in case of total expenditure with respect to age groups in winter and summer seasons.

It is evident (table 6) that the adjusted coefficient of multiple determination ($\bar{R}^2$) for expenditure on total cereals, pulses and edible oils (TCPE) varied between 88.83 and 91.83 per cent suggested that expenditure on cereals, pulses and edible oils are influenced in the range of 88.83 and 91.83 by different age-sex groups in overall households. The $\bar{R}^2$ value for expenditure on total food items other than cereals, pulses and edible oils (TF) ranged from 88.04 to 90.75 per cent indicated that different age-sex groups of overall households influenced the total food expenditure to the extent of 88.04 to 90.75 per cent. The $\bar{R}^2$ value for expenditure on total non-food items (TNF) varied between 85.38 and 88.68 per cent suggested that total non-food expenditure was influenced to the extent of 88.68 per cent by different age-sex groups. The $\bar{R}2$ value for total household expenditure (TOT) varied from 87.70 to 90.65 per cent in overall households indicated that total household expenditure was influenced by different age-sex groups was to the extent of 87.70 to 90.65 per cent.

Analysis of the regression coefficients for adults above 40 years revealed notable expenditure patterns. In rural households, the inclusion of an additional adult member resulted, on average, in an increase of ₹3189.43 in total expenditure (TOT) during the winter season. Corresponding increases for TCPE, TF, and TNF were ₹332.01, ₹1011.40, and ₹1126.41, respectively. In the urban sector, the additional expenditure per adult member was ₹3080.33 for TOT, ₹386.76 for TCPE, ₹961.86 for TF, and ₹1821.23 for TNF. For overall households, the respective increases were ₹3092.16, ₹363.76, ₹1038.28, and ₹1464.18 during the winter season (Tables 4, 5, and 6).

In summer season, an additional amount of ₹ 3318.00 was spent for TOT for an addition of adult member in the family whereas the additional amount spent for TCPE, TF and TNF were ₹380.73, ₹1431.46 and ₹1895.05, respectively in rural households. The corresponding figures for urban households were ₹3329.15,

₹383.80, ₹1457.73 and ₹1962.16, while for the overall households, they were ₹3420.73, ₹ 370.10, ₹ 1208.42 and ₹ 1867.83 respectively.

During the monsoon season, rural households recorded an additional expenditure of ₹3347.20 on total expenditure (TOT) with the addition of one adult member. The corresponding increases for TCPE, TF, and TNF were ₹345.49, ₹1274.43, and ₹1892.09, respectively. In urban households, the additional amounts were ₹3265.28 for TOT, ₹395.16 for TCPE, ₹1108.21 for TF, and ₹2536.03 for TNF. For overall households, the respective figures were ₹3376.93, ₹367.86, ₹1586.08, and ₹2347.25.

Income Scales

The variation in household expenditure was influenced by the age-sex composition of family members. To account for this, family size was standardized into consumer units using information on the demographic structure of sample households. Estimates of adult equivalent scales were derived by regressing total consumer expenditure on the number of family members classified by age and sex. Income scales for rural, urban, and overall households are presented in Tables 4, 5, and 6, respectively.

The results indicate that maximum TOT expenditure occurred during the monsoon season for both rural and urban households, followed by summer and winter. A similar pattern was observed for overall households as well. Hence, seasonal variations in total consumption expenditure were found to be marginal across rural, urban, and overall household categories.

Overall, the highest adult equivalent scales (AES) in rural households were observed for females (20-40 years) and adolescents (13-20 years), indicating their greater share in total expenditure. Children below 4 years had the lowest AES, except for TNF in winter and summer. In urban households, males (20-40 years) and adolescents showed the highest AES. Across all households, females (20-40 years) consistently had the highest AES, while children under 4 had the lowest in all seasons and commodity groups, except TCPE in winter.

4. Conclusion

From the close examination of data, it can be concluded that the maximum numerical value of adult equivalent scale was found for the females (20-40 years) in rural households, implying that females shared the highest proportion of household expenditure. This is mainly because; females in this age group are nurturing mother and hence they need more nutrition and also involved in physical works in rural area. The highest value of adult equivalent scale was found for the adolescents (20-40 years) in total cereals, pulses and edible oils expenditure and total household expenditure in urban household suggesting that adolescents shared the highest proportionate share in total cereals, pulses and edible oils (TCPE) and total expenditure (TOT). This may be due to the fact that adolescent are more conscious about their physique as well as they are more fashion conscious in wearing apparels may lead to the highest total expenditure (TOT). Males of (20-40 years) contributed the highest expenditure share in total food (TF) commodity group, whereas the females (20-40 years) contributed the highest expenditure share in total non-food (TNF) commodity group. Considering

rural and urban households combined, it is concluded that the females (20-40 years) accounted for the highest share in household expenditure as the adult equivalent scale was found the highest. The children up to 4 years of age were found least expensive as their adult equivalent scales were found the least. It can be concluded that there is a need to create awareness about importance of cereals, pulses and edible oils consumption among the people so that they can make available cereals, pulses and edible oils to their children, ladies and they themselves for consumption and better health.

5. Competing Interests

The authors declare that they have no competing interests.

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