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Estimation of Adult Equivalent Scale for Consumption Expenditure of Food and Non-food Items with Special Reference to Fruits and Vegetables in Rural and Urban Households of Junagadh District of Gujarat

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Consumption is an integral part of our life. Consumer patterns change for both micro and macro reasons. The per capita availability of vegetable was 415.76 gms/day and fruits was 228.79 gms/day in 2019-20 in India which was far below the quantity recommended by WHO. Therefore, it is important to understand changing consumption pattern of fruits and vegetables as well as food and non-food items in rural and urban areas.

The present study is based on primary data and hence the household data pertaining to the research study from Junagadh district were collected with the help of interview method. The reference period for the study was year 2019-20 *i.e.* winter (November-2019 to February-2020), summer (March to June-2020) and monsoon (July to October-2020). The data were analyzed using tabular analysis, regression analysis without intercept for calculating adult equivalent scale (AES)

The estimates of adult equivalent scales for main commodity group for different seasons for rural

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households revealed that the females in age group of 20-40 years accounted for the maximum expenditure share in total fruits and vegetables (TFV), total food (TF), total non-food (TNF) and total expenditure (TOT) commodities groups in all the seasons.
In urban households, the adolescent (13-20 years) accounted for the largest proportionate share of expenditure in in TFV commodities groups in all the seasons. For TF and TNF commodity groups, 20-40 years male age groups accounted for the highest share in expenditure in winter and summer seasons while adolescent age group (13-20 years) which accounted for the highest expenditure share in summer season. In TOT commodity group, adolescent of 13-20 years accounted for the highest proportionate share of expenditure in winter and summer seasons whereas it was females in age group of (20-40 years in monsoon season.
In overall households, the females in age group of 20-40 years accounted for the maximum expenditure share in TFV commodities groups in winter and summer seasons whereas, it was maximum in monsoon season for the males in age group of 20-40 years. For other commodity groups *i.e.*TF, TNF and TOT in all seasons, the female in 20-40 years age group accounted for the largest proportionate share of expenditure in different seasons.

Keywords: TFV; TF; TNF; TOT; Adult Equivalent Scale (AES); income scale.

1. INTRODUCTION

India's faster economic growth over the twentieth century increased per capita income (expenditure) and significantly changed food consumption patterns by causing a change in the structure of food consumption patterns that was previously observed during the pre-reforms period. Households in both rural and urban areas spend money on various commodities in order to obtain utility and satisfaction. The expenditure on food commodities and items is the most important in household behaviour because food is the most basic nutritional ingredient for all humans. As a result, in the analysis of consumer behaviour, food consumption is defined as the consumer's expenditure on various food commodities to meet daily food needs. Adult equivalent scale (AES) consumption is primarily used in household consumption analysis because it is more meaningful than indiscriminate 'per-capita' consumption. The needs of a household grow with each additional member, but not in a proportional way due to consumption economies of scale. Farrel [1] coined the phrase "adult equivalent scale" or "consumer unit" in 1952. This method allows everyone to be treated on the same level. Various research workers estimated consumer AES using various methods, including the ordinary least squares technique, the iterative procedure, and the weighted least squares technique. The ordinary least square technique can be used for estimating the consumer AES for estimating per capita income/expenditure. The standardization of consumer unit can be done by using without intercept regression technique. This method was used by Bhuyan [2], Jain [3] and Shiyani and Singh [4].

The modified iterative procedure was used by Singh and Nagar [5] to obtain the estimate of equivalent weight for total expenditure. This modified approach was suggested for the type of study which involves data collection at the survey stage of consumption of at least one item individual member wise in the sample households. This approach was also used by Prais and Houthakker [6], Singh and Nagar [7] and Sing and Patel (1982).

2. MATERIAL AND METHODS

The study was undertaken in Junagadh district of south Saurashtra agro-climatic. Data were collected separately for rural and urban sectors. The choice of the district was done purposively, depending on operational convenience, it will provide a suitable background in term of agro-economic feature for examining inter-class difference in consumer household for various commodity groups. The selection of households was done by adopting 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 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
1	X_1	Fruits
2	X_2	Vegetables
3	X_3	Cereals
4	X_4	Pulses
5	X_5	Fats and oils
6	X_6	Meat, fish & eggs
7	X_7	Milk & milk products
8	X_8	Spices
9	X_9	Beverages
10	X_{10}	Miscellaneous food items
11	X_{11}	Non-food items

The data were collected by conventional survey method with the help of pre-structured questionnaires and personal interview of the head of the sample households. The survey was carried out in three to four rounds, with the same households. The data were collected for three different seasons *viz.,* winter, summer and monsoon. As per the objectives of present research, data were collected for the expenditure on fruits, vegetables, food items and non-food items as presented in The data on food items were collected in terms of physical quantity as well as their monetary values whereas data on non-food items were collected in monetary terms only as it was not possible to collect in quantity terms due to their different units of quantity.

It is true that in these types of almost all the research studies using cross sectional data, total expenditure has been used as the independent variable and specific main commodity group expenditure, which is fruits & vegetables here, has been used as dependent variable.

For further analysis, new variables (main commodity groups) presented below in Table 2 were also used.

2.1 Estimation of Adult Equivalent Scale

In view of non-availability of data on consumption expenditure of specific item by the individual member of the household, the researchers in the past have used the regression technique for estimating the specific income/expenditure weight for various age-sex groups. In this study, data were obtained on actual consumption expenditure of all food and non-food items taken together for the family as whole. The same technique was 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 estimating the consumer adult equivalent scale for different commodities. The standardization of consumer unit was done by using regression technique without/zero intercept.

2.1.1 Regression Analysis [14]

Multiple linear regression analysis technique was adopted for estimating the consumer equivalent adult scale for the three main groups as well as total expenditure. The following form of regression model without intercept was fitted.

$$X_j = b_1n_{1j} + b_2n_{2j} + b_3n_{3j} + b_4n_{4j} + b_5n_{5j} + b_6n_{6j} + \varepsilon_j \quad (1)$$

$$Y_{ij} = b'_1n_{1j} + b'_2n_{2j} + b'_3n_{3j} + b'_4n_{4j} + b'_5n_{5j} + b'_6n_{6j} + \varepsilon_j \quad (2)$$

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 year) 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 member in age group 14-20 years age group

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

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

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

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

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

Sr. No.	Variables	Main commodity groups	Sum of items
1	TFV	Total expenditure on fruits and vegetables	$X_1 + X_2$
2	TF	Total expenditure of other food items (without fruits and vegetables)	$X_3 + X_4 + ... + X_9$
3	TNF	Total expenditure on all non-food items	X_{10}
4	TOT	Total expenditure/total consumer expenditure	$X_1 + X_2 + ... + X_{10}$

The parameters b_1, b_2, b_3, b_4, b_5 and b_6 were estimated by ordinary least square (OLS) technique for both the rural and urban households and for all the seasons separately making total six set of estimate for each of main commodity groups. Similarly, b_1', b_2', b_3', b_4', b_5' and b_6' were estimated without 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 scales was computed as given in Table 3.

This consumer unit was estimated separately for main commodity groups *viz*. total expenditure on fruits and vegetables (TFV), total expenditure on other food items (without fruits and vegetables) (TF), total expenditure on all non-food items (TNF) and total expenditure/total consumer expenditure (TOT) for three seasons for the rural and urban households.

The weighted household size was derived by using the consumer unit, and was estimated as follows:

$$\sum_{g=1}^{G} w_{ig} n_{gj} = \frac{\hat{b}_1}{\hat{b}_6} n_{1j} + \frac{\hat{b}_2}{\hat{b}_6} n_{2j} + \frac{\hat{b}_3}{\hat{b}_6} n_{3j} + \frac{\hat{b}_4}{\hat{b}_6} n_{4j} + \frac{\hat{b}_5}{\hat{b}_6} n_{5j} + n_{6j} \quad (3)$$

And

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

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_{gj} = Number of person in g^{th} age-sex group and j^{th} household

Thus,

$\sum_{g=1}^{G} w_{ig} n_{gj}$ = 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

Then,

$\frac{Y_{ij}}{\sum_{g=1}^{G} W_{ig} n_{gj}}$ = Per consumer unit (adult equivalent scale) expenditure on i^{th} commodity group

$\frac{X_{ij}}{\sum_{g=1}^{G} W_{og} n_{gj}}$ = Per consumer unit total expenditure for j^{th} household

Table 3. Computation of adult equivalent scale

A	Pre-school children (up to 4 year)	$\hat{b}_1 / \hat{b}_6$
B	School going children (4-13 years)	$\hat{b}_2 / \hat{b}_6$
C	Adolescent (13-20 years)	$\hat{b}_3 / \hat{b}_6$
D	20-40 years male	$\hat{b}_4 / \hat{b}_6$
E	20-40 years female	$\hat{b}_5 / \hat{b}_6$
F	40 years above	$\hat{b}_6 / \hat{b}_6 = 1$

3. RESULTS AND DISCUSSION

The results of adult equivalent scale for rural, urban and overall households are presented in Table 4, 5 and 6. In order to check the presence of multicollinearity in the data, the correlation analysis was carried out before employing the regression analysis for the estimation of adult equivalent scale. In correlation analysis, it was found that the multicollinearity was not present in the data as the values of all the correlation coefficients were found <0.4.

The estimates of adult equivalent scales for main commodity groups for different seasons are provided in Table 4. In case of rural households, it was found that the females in age group of 20-40 years accounted for the maximum expenditure share in Total Fruits and Vegetables (TFV) commodities groups in all the three seasons. For other commodities group *i.e.*TF, TNF and TOT of all seasons, it was observed that the female in 20-40 years age group accounted for the largest proportionate share of expenditure in different seasons in rural households. The examination of Table 4 further revealed that the expenditure on fruits & vegetables and all food and non-food items taken together increased with the older age groups. These findings are in agreement with the findings of Singh et al. [15]. They estimated the consumer unit scales in consumption expenditure in Agro-Climatic Zone-II of South Gujarat and the results revealed that female in 20-40 years ages group accounted for the largest proportionate share of expenditure in different season for all main commodity group in rural households. This result is justified on the view that the female folk of Gujarat are involved in almost all type of physical work (like farming) in addition to the household work in rural areas.

It is evident from the table that the adjusted coefficient of multiple determination ($\bar{R}^2$) for expenditure on total fruits and vegetables (TFV) during all the three seasons varied between 89.54 and 90.78 per cent, on total food items other than fruits and vegetables (TF) varied between 88.35 to 89.57 per cent, on total non-food items (TNF) varied between 86.75 to 87.75 per cent and total items (TOT) varied from 88.73 to 89.85 per cent, respectively in rural households (Table 4).

The results of urban households presented in Table 5 revealed that the adolescent (13-20 years) accounted for the largest proportionate share of expenditure in in TFV commodities groups in all the seasons. For TF commodities groups, 20-40 years male age group accounted for the highest expenditure share in all the seasons. 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 accounted for the highest expenditure share in all the seasons. 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 [9] and Ghavane [16] indicating that the family members in the age group of 20-40 years male 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.

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

Main commodity groups	Age sex groups for rural						Reg. coefficient associated with adult (Rs)	$\bar{R}^2$ (%)
	Pre-school child (up to 4 year)	School children (4-13 years)	Adolescent (13-20 years)	20-40 years Male	20-40 years Female	Adult (above 40 years)		
	(N1)	(N2)	(N3)	(N4)	(N5)	(N6)		
Winter								
TFV	0.207	0.427	0.302	1.032	2.113	1.000	331.01	0.9078**
TF	0.283	0.394	0.951	0.767	1.507	1.000	1121.90	0.8957**
TNF	0.679	0.530	1.058	0.622	1.891	1.000	1576.74	0.8775**
TOT	0.291	0.329	1.052	0.496	1.608	1.000	3029.66	0.8985**
Summer								
TFV	0.086	0.533	1.126	0.672	1.891	1.000	310.78	0.8954**
TF	0.381	0.431	1.042	0.361	1.652	1.000	1161.35	0.8835**
TNF	0.790	0.394	1.738	0.496	1.879	1.000	1765.95	0.8675**
TOT	0.474	0.331	1.173	0.506	1.574	1.000	3238.08	0.8873**
Monsoon								
TFV	0.302	0.706	1.114	0.967	1.644	1.000	295.49	0.9022**
TF	0.219	0.305	0.846	0.969	1.149	1.000	1134.43	0.8899**
TNF	0.198	0.479	1.310	1.885	1.945	1.000	1892.09	0.8725**
TOT	0.166	0.369	1.087	1.152	1.157	1.000	3297.20	0.8916**

*** Significant at 1 per cent level of significance*

It is evident from the table that the adjusted coefficient of multiple determination ($\bar{R}^2$) for expenditure on total fruits and vegetables (TFV) varied between 89.86 to 91.44 per cent, on total food items other than fruits and vegetables (TF) varied between 88.74 to 90.38 per cent, on total non-food items (TNF) varied from 87.13 to 88.75 per cent and total items (TOT) varied from 89.01 to 90.74 per cent, respectively in urban households.

The adult equivalent scale for overall households presented in Table 6 revealed that the females in age group of 20-40 years accounted for the maximum expenditure share in total fruits and vegetables (TFV) commodities groups in winter and summer seasons whereas, it was maximum in monsoon season for the males in age group of 20-40 years. For other commodities groups *i.e.*TF, TNF and TOT of all seasons, akin to rural households, it was noticed that the female 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 [9] 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 main commodity groups in all the three seasons.

This is supported on the basis that most of the female are involved in almost various types of physical work besides household work. Additionally, fruits and vegetables are considered as an essential part of the diet for pregnant and nursing mothers, a great 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 season.

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

Main commodity groups	Age sex groups for urban						Reg. coefficient associated with adult (Rs)	$\bar{R}^2$ (%)
	Pre-school child (up to 4 year)	School children (4-13 years)	Adolescent (13-20 years)	20-40 years Male	20-40 years Female	Adult (above 40 years)		
	(N1)	(N2)	(N3)	(N4)	(N5)	(N6)		
Winter								
TFV	1.168	0.851	1.290	1.219	0.564	1.000	367.61	0.9144**
TF	0.814	0.774	1.044	1.287	0.762	1.000	980.75	0.9015**
TNF	1.451	1.410	1.330	1.596	0.284	1.000	1751.94	0.8855**
TOT	1.030	1.063	1.158	1.399	0.547	1.000	3100.30	0.9059**
Summer								
TFV	0.939	1.491	2.064	1.231	0.652	1.000	389.52	0.9116**
TF	0.787	0.853	1.302	1.172	0.833	1.000	1037.45	0.9038**
TNF	0.328	1.381	2.089	1.769	0.774	1.000	1962.17	0.8875**
TOT	0.606	1.019	1.587	1.340	0.799	1.000	3389.15	0.9074**
Monsoon								
TFV	0.491	1.267	2.285	1.602	0.570	1.000	345.68	0.8986**
TF	0.576	0.876	1.117	1.308	0.997	1.000	1018.73	0.8874**
TNF	0.648	0.987	0.891	1.757	1.714	1.000	2202.33	0.8713**
TOT	0.615	0.926	1.051	1.016	1.340	1.000	3444.98	0.8901**

*** Significant at 1 per cent level of significance*

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

Main commodity groups	Age sex groups for overall						Reg. coefficient associated with adult (Rs)	$\bar{R}^2$ (%)
	Pre-school child (up to 4 year)	School children (4-13 years)	Adolescent (13-20 years)	20-40 years Male	20-40 years Female	Adult (above 40 years)		
	(N1)	(N2)	(N3)	(N4)	(N5)	(N6)		
Winter								
TFV	0.527	0.510	0.770	1.045	1.198	1.000	349.31	0.9135**
TF	0.362	0.504	0.995	0.752	1.214	1.000	1058.55	0.9005**
TNF	1.069	1.232	2.011	1.504	1.612	1.000	1664.34	0.8840**
TOT	0.477	0.725	1.234	0.947	1.294	1.000	3072.20	0.9065**
Summer								
TFV	0.483	1.004	1.134	0.919	1.187	1.000	350.15	0.8829**
TF	0.468	0.565	1.087	0.632	1.366	1.000	1106.58	0.8815**
TNF	0.911	1.003	1.065	1.103	1.881	1.000	1764.06	0.8557**
TOT	0.446	0.682	1.548	0.873	1.440	1.000	3320.79	0.8770**
Monsoon								
TFV	0.320	0.926	1.142	1.228	1.102	1.000	320.58	0.9066**
TF	0.275	0.533	0.937	1.034	1.160	1.000	1076.58	0.8964**
TNF	0.380	1.245	1.889	1.825	1.923	1.000	2097.21	0.8810**
TOT	0.278	0.760	1.307	1.235	1.443	1.000	3381.91	0.9016**

*** Significant at 1 per cent level of significance*

It is evident from the table that the adjusted coefficient of multiple determination ($\bar{R}^2$) for expenditure on total fruits and vegetables (TFV) varied between 88.29 and 91.35 per cent, on total food items other than fruits and vegetables (TF) ranged from 88.15 to 90.05 per cent, on total non-food items (TNF), it varied between 85.57 and 88.40 per cent and for total items (TOT), it varied from 87.70 to 90.65 per cent in rural households.

An examination of the regression coefficients associated with adult more than 40 years old revealed that in the rural area, on an average, an additional amount of Rs. 3029.66 was spent on total expenditure (TOT) for an addition of adult member in the family whereas the additional amount spent for TFV, TF and TNF were Rs. 331.01, Rs. 1121.90 and Rs. 1576.74, respectively in winter season of rural area. The corresponding figures for urban sector were Rs. 3100.30, Rs. 367.61, Rs. 9980.75 and Rs. 1751.94, respectively while for overall households, they were Rs. 3072.20, Rs. 349.31, Rs. 1058.55 and Rs. 1664.34, respectively during winter season (Tables 4-6).

In summer season, an additional amount of Rs. 3238.08 was spent for TOT for an addition of adult member in the family whereas the additional amount spent for TFV, TF and TNF were Rs. 310.78, Rs. 1161.35 and Rs. 1765.95, respectively in rural households. The corresponding figures for urban households were Rs. 3389.15, Rs. 389.52, Rs. 1037.45 and Rs. 1962.17, while for the overall households, they were Rs. 3320.79, Rs. 350.15, Rs. 1006.58 and Rs. 1764.06, respectively.

During monsoon season in rural area, an additional amount of Rs.3297.20 were spent for TOT for an addition of adult member in the family whereas, the additional amount spent for TFV, TF and TNF were Rs. 295.49, Rs. 1134.43, and Rs. 1892.09, respectively. The corresponding figures for the urban household were Rs. 3444.98, Rs. 345.68, Rs. 1018.73, Rs. 2202.33, while for the overall households they were Rs. 3381.91, Rs. 320.58, Rs. 1076.58 and Rs. 2097.21, respectively.

3.1 Income Scales

The differential age-sex composition of the family members also affected the total expenditure (income) of the households. Therefore, the family size has been standardized with respect to total consumer, using the information on age and sex of the family members of the sample households. For this purpose, the estimates of adult equivalent scales were obtained by regressing total consumer expenditure on the number of family members in different age-sex groups. The rural, urban and overall household's income scales are given in Tables 4, 5 and 6, respectively. From these tables, maximum TOT expenditure was found in monsoon season for rural households, followed by summer and winter seasons, respectively. In case of urban households, the maximum expenditure on TOT was observed in monsoon season, followed by summer and winter seasons. In case of overall households, maximum expenditure on TOT was observed in monsoon season, followed by summer and winter seasons. No much difference was found between the seasons so far as total consumption in rural, urban and overall households is concerned.

A close examination of the data revealed that, in general, the maximum numerical value of adult equivalent scale was obtained in rural households for the 20-40 years female and 13-20 years sex groups, implying that both sex groups shared the highest proportion of total household expenditure. The children below 4 years were least expensive in rural area except. In case of urban area, the maximum numerical value of adult equivalent scale was obtained for 20-40 years male and 13-20 years sex groups in urban households, implying that both the sex groups shared the highest proportion of total household expenditure. In case of overall households, the maximum numerical value of AES were found for 20-40 years female age group in all seasons in all the commodity groups whereas the minimum values of AES were found for child below 4 years old in all seasons in all the commodity groups, except TFV 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 fruits and vegetables expenditure and total household expenditure in urban household suggesting that adolescents shared the highest proportionate share in total fruits and vegetables (TFV) 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 fruits and vegetables consumption among the people so that they can make available fruits and vegetables to their children, ladies and they themselves for consumption and better health.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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