

Consumption Levels of Sugar Among Rural and Urban Population in India: National Nutrition Monitoring Bureau Surveys



Division of Public Health Nutrition
ICMR-National Institute of Nutrition
Indian Council of Medical Research
Hyderabad
And
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EXECUTIVE SUMMARY

This is the first of its kind; the study was carried out in 10 states among rural population during year 2011-12 and 16 states among urban population during 2015-2016. In more than 20,000 households in urban and rural areas, a 24-hour recall diet surveys were carried out to assess their diet including sugar intakes and nutritional status. For the present analysis, the food intake data especially sugar consumption data was obtained and assessed sugar consumption levels in different age, gender, rural, urban, occupation, type of activity and region was provided in this report.

In the present context of nutrition transition and epidemic increase of diet related non-communicable diseases, assessment of consumption levels sugar, and sugar sweetened foods and beverages is very important for development of prevention and control strategies of NCDs, especially diabetes. Over the past few decades, nutrition transition is associated with rising rates of obesity and chronic diseases such as diabetes, cardiovascular diseases and some cancers. Monitoring of dietary patterns within countries is achieved by carrying out nationwide nutrition monitoring systems. Such studies are used to understand long-term changes in individual food and nutrient intakes. This information is also used to identify trends in foods, nutrients and eating patterns among various subpopulations of interest.

Therefore, it is essential to assess consumption levels of added sugars in foods and beverages among individuals to enable the planners and implementers to develop intervention strategies to maintain its consumption levels at desirable levels. With the given context, it was proposed to study at household and individual-level consumption of sugars and its derivatives. Also to study associations, if any, between demographic and socio-economic status (SES) by utilizing the NNMB databases (NNMB 2011-12 & NNMB 2015-16). Findings of the present analysis will be helpful to design targeted interventions and policy measures.

The salient observations of the study are given below:

The foods (including sugars) and nutrients intakes were available for 46,438 urban and 46,076 rural individuals. The mean consumption levels of added sugars were higher among urban households (16g/CU/day) as compared to rural households (13g/CU/day). The consumption levels among rural households were maximum in the states of Karnataka (20g/CU/day) and Maharashtra (19g/CU/day) and it was lowest in the state of West Bengal

(7g/CU/day). While, the consumption levels among urban households was maximum in the states of Madhya Pradesh (26g/CU/day), Maharashtra (24g/CU/day) and Gujarat (22g/CU/day) and it was lower in the states of A & N Islands (10g/CU/day), and Puducherry (10g/CU/day).

In general, the consumption of added sugars was high in the all age group of individuals, who were literates as compared to illiterates. The consumption of added sugars was high among agricultural laborers and also those who were in service and business. The mean consumption of sugar was high among men and women who were doing moderate activity as compared to the individuals involved in the sedentary activity. The consumption levels of added sugars were lower among SC/ST communities as compared to backward and other communities in rural areas. This trend was not observed among urban population.

The consumption levels of sugar were high among Hindus as compared to other religions. The consumption of sugars through foods like cakes/sweets/payasam/vermicelli was maximum about 20-45g/serving as compared to other processed and non-processed foods. The sugar consumption levels through foods like tea; coffee/black tea was 5-7g.

India is witnessing huge rise in the risk factors as well as the chronic disease burden across all age groups. In order to tackle this rising epidemic, we need to address public health and nutrition issues urgently. The present consumption levels of sugar among rural and even among urban population were within the levels suggested by the ICMR (30g/day). The data presented in the report is only from few states in India, where NNMB was in operation. The NNMB was closed on 31-10-2015 due to administrative and logistic reasons. Therefore, the governments/multinationals/NGOs should invest more resources to get country representative periodical data by conducting well designed studies like NNMB. This information may help the policy makers to develop suitable intervention strategies on consumption of sugar and also advocating healthy lifestyles.

1. INTRODUCTION

Sugars are crucial compounds from the context of human beings and these can synthesize energy for the body needs from the sugars present naturally in foodstuffs, whereas in case of other foodstuffs like fats, proteins and macronutrients are different. Most of the dietary sugars are converted to a major fuel, glucose, used by cells in the body. It is the primary fuel needed by brain tissue for its normal function. Levels of glucose in the blood may vary and when low will impair the brain and cause permanent mental deterioration or presence of high concentration also lead to adverse effects on health.

Nutrition and lifestyle transition are contributing for the global rise of obesity. According to recent report of WHO, more than 1.9 billion adults (≥ 18 years), were overweight and obese. Once considered the problem related to affluence, obesity is now fast growing in many developing countries and in poor neighborhoods of the developed countries. In many developing countries like India, with increasing urbanization, mechanization of jobs and transportation and physical inactivity, availability of processed and fast foods, consuming more of “energy-dense, nutrient-poor” diets like sugar and sweets, the prevalence of non-communicable diseases also have been increasing in epidemic proportions. Carbohydrate metabolism denotes the various biochemical processes responsible for the formation, breakdown and inter conversion of carbohydrates in living

organisms. The most important carbohydrate is glucose, a simple sugar (monosaccharide) that is metabolized by nearly all known organisms. Complex carbohydrates are those which are not very digestible but they represent an important dietary element for humans, called dietary fiber.

Other sources of sugars are proteins, which may be converted to glucose for the cells by the breakdown of body tissues (1). The starches convert to sugar in our bloodstream and usually have the same impact as table sugar (2). According to the dietary guidance, there are two types of sugars acting as sources of non-intrinsic sugars such as free sugars and added sugars (3). Free sugars comprise of sugars naturally found in fruit, honey, and syrup (4). Added sugars are sugars and syrups that are added to foods or beverages when they are processed or prepared. This does not include naturally occurring sugars such as those in milk and fruits (5). The recent WHO guidelines recommend the adults and children to restrict sugars to less than 10% or more of total energy intake and to less than 5%, for additional health benefits (6). Diets high in total sugar would not necessarily result in lower diet quality, whereas there are evidences showing a significantly decreasing trend of nutrient intakes and food groups by children with increasing added sugar levels (7).

Therefore, it is essential to assess consumption levels of added sugar in foods

and beverages among individuals to enable the planners and implementers to develop intervention strategies to maintain its consumption levels at desirable levels. With the given context, it was proposed to study individual-level consumption of sugars and

associations, if any, between demographic and socio-economic status (SES) by utilizing the NNMB database. Findings of the present analysis will be helpful to design targeted interventions and policy measures. .

2. OBJECTIVES OF THE STUDY

1. To assess the consumption levels of sugar (g/CU/day) among various age, gender, physiological, and physical activity groups among rural (2011-12) and urban population (2014-15),
2. To assess sugar consumption levels in different socio-economic population groups.

3. METHODOLOGY

For the purpose, we have utilized the NNMB database collected from rural (2011-12) and urban (2015-16) population in different points of time. The NNMB studies 'diet and nutritional status of rural population and prevalence of obesity, hypertension and diabetes' were collected during 2011-12 in 10 states and similar studies 14 were also collected among urban population in 16 states during 2015-16. The data on demographic and socio-economic, anthropometric, food and nutrient intakes including sugar consumption was collected. The response rate of these surveys was 96% and 90%. In addition to the above, measurement of blood pressure, fasting blood glucose and knowledge and practices about health and nutrition and lifestyles, risk behaviors of adults were also collected.

The sugar consumption levels were analyzed for different **age groups** (5-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-59, 60-69, 70-79 and >80 years); **residence** (urban, rural); **education** (illiterate, literate but less than middle school complete, middle school complete but less than high school complete, high school complete or higher); **education of head of household** (illiterate, literate but less than middle school complete, middle school complete but less than high school complete, high school complete or higher); **food habits and physical activity status, occupation** (p r o f e s s i o n a l / t e c h n i c a l , clerical/sales/service, laborer including agricultural work, household worker); **religion** (Hindu, Muslim, Sikh, other); **community** (scheduled caste/scheduled tribe, other backward class, other) and **standard of living** (low, medium, high).

Definitions for some of the terms used in the report:

Illiterate: A person who is unable to read or write,

Literate: Able to read and write.

Artisans: A worker who is involved in making things by hand,

Business: Persons involved in a commercial operation or company,

Agricultural labourers: Persons who are involved in agri-labours,

Physical Activity status: The physical activity status is classified into three categories:

- **Sedentary:** to spend much time seated; somewhat inactive (white collar jobs)
- **Moderate:** a lifestyle that includes light physical activity (agri-labour/manual labour)
- **Heavy:** involving energetic physical effort and action (gang men/mine workers/those who are involved in digging wells).

Scheduled Caste (SC) and Scheduled Tribe (ST): The Scheduled Castes (SCs) and Scheduled Tribes (STs) are officially designated groups of historically disadvantaged people in **India**. This population comprises about 16.6% and 8.6%, respectively, of **India's** population (according to the 2011 census).

Other **Backward Class (OBC)** is a collective term used by the Government of **India** to classify **castes**, which are socially or educationally or economically disadvantaged group.

The consumption levels of sugar in the following products including processed

foods consumed by individuals were also assessed.

1. **Hot beverages:** Tea, coffee, milk, malt beverages and nutritional supplements.
2. **Juices:** Homemade preparations, packaged, sugarcane, roadside juices and other cool drinks Social beverages: sugar sweetened beverages like home made and street sweets and commercial beverages.
3. **Dairy sugar based products:** Ice creams, flavored milk, yoghurts, sweetened lassi, etc.
4. **Indian Sweets such as** – Ladoo, Barfi, Kheer, Imarti, Jalebi, Halwa, Gulab Jamun, Soan Papdi, Rasgulla, Kalakand, Panjeeri, Brittles (Chikki), Khumani Ka Meetha, Karachi Ka Halwa, Meetha Chawal, Kulfi etc.,
5. **Others:** Cakes, pastries, biscuits, bakery items, jams, jellies, cookies, chocolates, sugar confectionaries etc. Sugar is added to most of the food preparations in Gujarat, West Bengal and Maharashtra. These were also assessed.

Plan of Analysis

The required data was obtained from NNMB databases and consistency and outliers were checked and final database was prepared for analysis. Means and median and frequencies of sugar consumption levels among different individuals and states were also carried out at consumption units (CUs) and individual age groups. Association between socio-economic, demographic status and consumption levels of sugars among different population groups was also carried out. Analysis of covariates of sugar

was also carried out. Percentage contribution of added sugar for each food item to total and carbohydrate consumption

and total calories was also carried out in the present analysis.

4. RESULTS

The 24-hour dietary recall was carried out in 12903 urban households in 16 states during 2015-16 and 11910 rural household in 10 states during 2011-12, in which the consumption of added sugar was assessed. The foods (including sugars) and nutrients

were available for 46438 urban and 46076 rural individuals.

The mean consumption levels of sugar at household level (g/CU/day) among rural and urban population is presented in the **Table 1** and **Figs 1** and **2**.

Fig 1: Mean Consumption of Sugar in Rural Areas of NNMB States

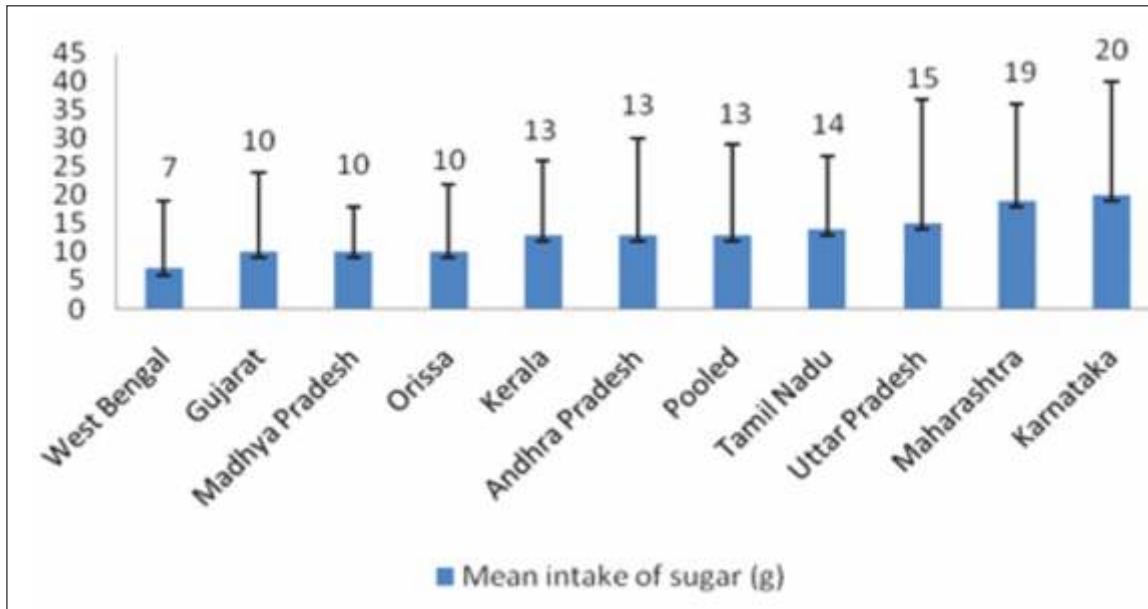
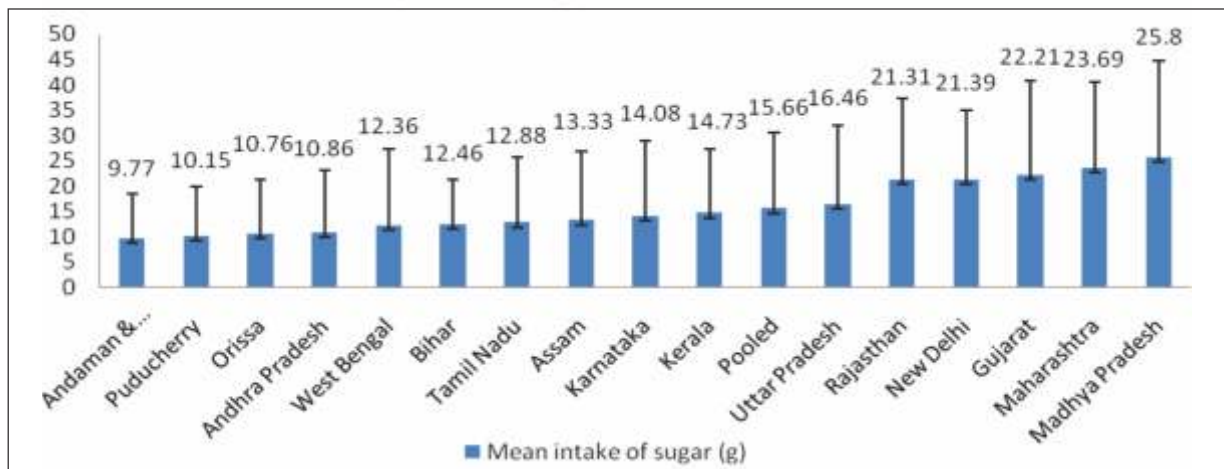


Fig 2: Mean Consumption of Sugar in Urban Areas of NNMB States



The mean consumption levels of added sugar among rural and urban households were 13 and 16 g/CU/day. The consumption levels among rural households was maximum in the states of Karnataka (20g/CU/day) and Maharashtra (19g/CU/day) and it was low in the states of West Bengal (7g/CU/day), Madhya Pradesh, Odisha and Gujarat (10g/CU/day). While, the consumption levels among urban households was maximum in the states of Madhya Pradesh (26g/CU/day), Maharashtra (24g/CU/day) and Gujarat (22g/CU/day) and it was lower in the states of A & N Islands (10g/CU/day), Puducherry (10g/CU/day), Andhra Pradesh (11g/CU/day) and Odisha, (11g/CU/day).

The maximum sugar consumption levels among the male population in the rural and urban regions was found to be 14.4 grams in males aged 60-69 years age groups and 17.16 grams in the 70-79 years age groups, respectively. In case of females, the maximum sugar consumption levels was found to be 13.6 grams in 40-44 years and 50-59 years age group in the rural region. In the urban population, maximum sugar consumption among females was observed to be 18.27 grams in the age group of 45-49 years and

minimum sugar consumption levels among the females was found to be 10.1 grams and 11.50 grams in the age group of 5-14 years in the rural and urban regions respectively (Table 2).

In general, the consumption of added sugars was high in the all age group of individuals, who were literates (1-8th and above years of education) as compared to illiterates, except in the age group of 80y and above rural individuals and 15-19y, 20-24y and 70-79y of urban individuals. In rural areas, a maximum sugar consumption of 15.4 grams was observed among the population aged 70-79 years with a literacy status of 1-8th Class and the illiterate group aged 5-14 years showed a minimum sugar consumption of 9.0 grams, while in the urban areas, a maximum sugar consumption of 19.78 grams was observed among the population aged 70-79 years and the illiterate group aged 5-14 years showed a minimum sugar consumption of 11.31 grams.

The consumption pattern of sugar among females was similar to the male counterparts and their literacy status. However, the consumption levels were high among illiterate urban individuals in most of the age groups

(15-19y, 25-29y, 35-39y, 40-44y and 60-69y) as compared to literates. In rural areas, a maximum sugar consumption of 15.0 grams was observed among the population aged 60-69 years with a literacy status of 1-8th Class and a minimum sugar consumption of 8.8 grams was observed among the illiterate group aged 5-14 years. In urban areas, a maximum sugar consumption of 19.38 grams was observed among the illiterate population aged 35-39 years and the illiterate group aged 5-14 years showed a minimum sugar consumption of 9.31 grams.

The mean consumption of sugar among individuals with different occupations is presented in Table 4.1 and 4.2.

Mean consumption of sugar levels among different age groups of males in rural and urban population by Occupation:

In general, the consumption of added sugars was high among agricultural laborers and occupation of service and business population. In rural areas, maximum sugar consumption of 15.4 gram was observed among the agriculture laborer group aged 30-34 years and a minimum sugar consumption of 8.7 grams was observed among the artisans group aged 40-44 years. In urban areas, a maximum sugar consumption of 19.32 grams was observed among the laborer group aged 70-79 years and a minimum sugar consumption of 8.7 grams among the laborer group aged 40-44 years. Furthermore, among the females, in rural areas, a maximum sugar consumption of 15.8 grams was observed among the group aged 25-29 years with occupations other than laborers, agriculture laborers, artisans and service and business. In urban areas, a maximum sugar consumption of 20.63 grams was observed among the female laborers group aged 20-24 years.

In general, the mean consumption of sugar was high among men and women who were doing **moderate activity** as compared to the individuals involved in the **sedentary activity**. However, among the male population, a maximum sugar consumption of 15.5 grams was observed in the age group of 70-79 years with moderate and heavy activity and a minimum sugar consumption of 10.5 grams was observed among the individuals of 5-14 years age group, who were involved in sedentary activity in the rural region. In the urban areas, a maximum sugar consumption of 19.23 grams was observed among the male population aged 70-79 years with moderate and heavy activity and a minimum sugar consumption of 9.26 grams was seen among the population under age group 5-14 years with moderate and heavy activity.

On contrary, among the female population, a maximum sugar consumption of 16.0 grams was observed in the age group of 70-79 years with moderate and heavy activity and a minimum sugar consumption of 10.1 grams was observed among the population under age group 5-14 years with sedentary activity in the rural region.

In the urban region, a maximum sugar consumption of 18.68 grams was seen among the female population aged 40-44 years with moderate and heavy activity and a minimum sugar consumption of 11.49 grams was observed among the population under age group 5-14 years with sedentary activity.

The mean consumption of sugar among both male and female population of different age groups in rural and urban areas is given by community in Table 6.1 and Table 6.2.

In general, the consumption levels of sugar were lower among **SC/ST** communities as

compared to backward and other communities, especially in rural areas. This trend was not observed among urban population in most of the age groups.

In rural areas, a maximum sugar consumption of 16.0 grams was observed among the population other than ST, SC and BC aged 60-69 years and a minimum sugar consumption of 6.4 grams was obtained among the ST population aged 5-14 years. While in urban areas, a maximum sugar consumption of 20.77 grams was seen among the male ST population aged 45-49 years and a minimum sugar consumption of 4.85 grams among the ST population aged ≥ 80 years. The mean consumption of sugar among the female population revealed that in rural areas, a maximum sugar consumption of 16.1 grams was observed among the ST population aged ≥ 80 years and a minimum sugar consumption of 6.7 grams was observed among the ST population aged 5-14 years. In urban areas, a maximum sugar consumption of 21.69 grams was observed among the female ST population aged 45-49 years and a minimum sugar consumption of 9.40 grams was observed among the ST population aged 70-79 years.

Among the female population, in rural areas, a maximum sugar consumption of 17.3 grams

was observed among the Muslim population aged ≥ 80 years and a minimum sugar consumption of 9.5 grams among the Christian Female population aged 20-24 years. In urban areas, a maximum sugar consumption of 22.17 grams was observed among the female Muslim population aged ≥ 80 years and a minimum sugar consumption of 8.59 was observed grams among the Christian female population aged 15-19 years.

The consumption of sugar levels among male and female population of different age groups in rural and urban areas by religion is presented in **Table 7.1 and Table 7.2.**

In general, the consumption level of sugar was high among Hindus as compared to other religions. However, in rural areas, a maximum sugar consumption of 18.5 grams was observed among the Muslim population aged 30-34 years and a minimum sugar consumption of 9.1 grams was seen among the Muslim population aged 25-29 years and also the population aged ≥ 80 years. In urban areas, a maximum sugar consumption of 18 grams was observed among the Christian male population aged 70-79 years and a minimum sugar consumption of 8.59 grams was seen among the Christian male population aged 15-19 years.

5. DISCUSSION

This is the first study of its kind; the study was carried out in 10 states among rural population and 16 states among urban population. In more than 20,000 households in urban and rural areas, a 24-hour recall diet surveys were carried out to assess their diet and nutritional status. For the present analysis, the food consumption data especially sugar intake data was obtained and assessed.

Consumption levels of sugar in different age, gender, rural, urban, occupation, type of activity and region is provided in this report. In the present context of nutrition transition and epidemic increase of diet related non-communicable diseases, assessment of consumption levels of sugar through different foods and sugar sweetened beverages is very important to the development of prevention

and control strategies of NCDs, especially diabetes. Over the past few decades, nutrition transition is associated with rising rates of obesity and chronic diseases such as diabetes, cardiovascular disease and some cancers. Monitoring of dietary patterns within countries is achieved using nationwide monitoring systems. Such studies are used to understand long-term changes in individual dietary intake. This information is also used to identify trends in foods, nutrients and eating patterns among various sub-populations of interest. Also, the variability within areas of a country or between different socio-demographic sub-groups in the population can be studied. **Studies have concluded that, developing countries between 1963 and 2003 revealed large increases in the available**

consumption of calories from sugar (127%). However, the present studies carried out by NNMB have shown that the consumption levels are within the suggested levels of ICMR (30g/day).

Considered the outcomes of various related studies, one study implicated that the intake of added sugars was higher among males than females and inversely related to age, educational status, and family income. Many factors, including race/ethnicity, family income and educational status, are independently associated with added sugars intake. Groups with low income and education are particularly vulnerable to diets with high added sugars.

6. FINDINGS AND CONCLUSIONS

Mean household consumption of Sugar and Jaggery (g/CU/day) was studied as a part of NNMB Rural studies for the time periods 1975-79, 1988-90, 1996-97 and 2011-12. Overall, mean Sugar and Jaggery consumption was high (29 g/CU/day) during 1988-90 and low (14 g/CU/day) during 2011-12. During 1975-79, Sugar and Jaggery consumption was maximum in both Karnataka and Maharashtra (31 g/CU/day), whereas it was minimum in Andhra Pradesh with 9 g/CU/day. During 1988-90, Sugar and Jaggery consumption was maximum in Gujarat (35 g/CU/day), whereas it was minimum in Orissa (5 g/CU/day). During 1996-97, Sugar and Jaggery consumption was maximum in Gujarat and Maharashtra (30 g/CU/day), whereas it was minimum in Orissa (6 g/CU/day). During 2011-12, Sugar and Jaggery consumption was maximum in Karnataka (20 g/CU/day), whereas it was minimum in Gujarat and Orissa (10 g/CU/day).

India is witnessing huge rise in the risk factors as well as the chronic disease burden across all age groups. The related public health and nutrition issues need to be addressed urgently to be able to tackle this rising epidemic. The present consumption levels of sugar among rural and even among urban population were within the levels as suggested by the ICMR (30g/day). **The data presented in the report is only from few states in India, where NNMB was in operation. The NNMB was closed on 31-10-2015 due to administrative reasons.** Therefore, the governments / multinationals / NGOs should invest more resources to get more country representative data by conducting well designed studies like NNMB. The information on consumption levels of sugar and its correlates may help the policy makers to develop suitable intervention strategies on sugar by utilizing consumption data for leading healthy lifestyles.

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Table 1: Mean Consumption Levels (g/CU/day) of Added Sugars among Rural and Urban Households

State	Rural			Urban		
	N	g/CU/day	SD	N	g/CU/day	SD
Kerala	1184	13	13	882	15	12.49
Tamil Nadu	1199	14	13	893	13	12.86
Karnataka	1197	20	20	894	14	14.79
Andhra Pradesh	1200	13	17	870	11	12.32
Maharashtra	1195	19	17	880	24	16.84
Gujarat	1197	10	14	882	22	18.59
Madhya Pradesh	1197	10	8	867	26	18.92
Orissa	1198	10	12	896	11	10.49
West Bengal	1145	7	12	896	12	15.02
Uttar Pradesh	1198	15	22	881	16	15.57
A & N Islands	--	--	--	879	10	8.76
Assam	--	--	--	504	13	13.46
Bihar	--	--	--	577	13	8.83
New Delhi	--	--	--	661	21	13.63
Puducherry	--	--	--	878	10	9.82
Rajasthan	--	--	--	563	21	15.90
Total	11910	13	16	12903	16	14.98
Pooled	46438	12.2	16.57	46076	15.1	14.77

Table 2: Mean Sugar Consumption (g/day/person) Levels among Rural and Urban Population by Gender and Age

Gender	Age group (y)	Rural			Urban		
		N	(g/day/person)	SD	N	(g/day/person)	SD
Males	5-14	5265	10.5	16.3	4526	12.26	13.28
	15-19	2344	12.0	16.6	2328	13.78	14.05
	20-24	2031	12.9	18.2	2049	13.89	13.57
	25-29	2011	11.4	13.8	1830	14.49	13.40
	30-34	1875	12.5	21.4	1877	14.31	12.75
	35-39	1800	12.1	16.3	1961	14.39	14.80
	40-44	1539	11.9	15.7	1935	15.39	14.38
	45-49	1511	13.3	18.4	1803	15.56	15.19
	50-59	2106	13.8	20.5	2641	16.64	16.01
	60-69	1578	14.4	18.7	1366	16.48	15.00
	70-79	560	14.0	14.1	486	17.16	15.66
	≥80	180	12.4	11.0	143	15.06	12.52
Males Pooled		22800	12.2	17.44	22945	14.5	14.29
Females	5-14	4965	10.1	14.1	3961	11.50	13.18
	15-49	2447	11.8	15.8	2188	12.84	13.29
	20-24	2367	12.1	15.2	2139	14.69	14.28
	25-29	2330	12.8	17.4	2163	15.55	14.22
	30-34	1890	12.0	14.5	2177	16.82	15.30
	35-39	2015	12.9	16.0	2163	18.22	18.30
	40-44	1541	13.6	17.7	2139	17.63	15.06
	45-49	1667	13.5	15.0	1810	18.27	16.13
	50-59	2125	13.4	15.7	2284	17.80	16.26
	60-69	1528	13.6	17.4	1339	17.08	14.73
	70-79	571	12.5	15.5	561	16.88	15.95
	≥80	192	11.9	10.1	207	16.51	12.49
Female Pooled		23638	12.2	15.67	23131	15.6	15.20

Table 3.1: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Population by Literacy Status (Males)

Age group (yrs)	Literacy status	Rural			Urban		
		N	(g/day/person)	SD	N	(g/day/person)	SD
5-14	Illiterate	1778	9.0	15.1	124	11.31	11.20
	1-8 th Class	1779	10.6	18.4	3479	12.20	13.42
	≥9 th class	1708	11.9	15.3	508	13.96	14.29
15-19	Illiterate	891	11.9	18.7	58	15.00	12.96
	1-8 th Class	797	11.7	13.9	275	12.96	12.34
	≥9 th class	656	12.6	16.6	1959	13.93	14.28
20-24	Illiterate	713	12.4	17.3	76	16.64	12.70
	1-8 th Class	754	13.0	21.2	291	14.86	14.79
	≥9 th class	564	13.5	14.5	1644	13.57	13.36
25-29	Illiterate	604	9.9	12.6	103	13.03	12.06
	1-8 th Class	781	11.8	12.8	364	14.33	12.53
	≥9 th class	626	12.4	15.8	1336	14.59	13.74
30-34	Illiterate	501	11.1	15.0	132	13.97	11.58
	1-8 th Class	677	13.5	27.8	459	13.16	11.66
	≥9 th class	697	12.5	17.9	1262	14.66	13.12
35-39	Illiterate	513	10.2	12.3	136	12.16	12.28
	1-8 th Class	586	13.0	16.6	449	14.91	15.16
	≥9 th class	701	12.7	18.3	1362	14.42	14.93
40-44	Illiterate	469	10.6	15.5	147	14.78	13.60
	1-8 th Class	502	11.7	15.2	474	14.20	12.35
	≥9 th class	568	13.1	16.1	1294	15.93	15.17
45-49	Illiterate	481	13.5	23.9	171	14.58	13.45
	1-8 th Class	572	12.8	13.1	499	14.39	14.41
	≥9 th class	458	13.7	17.5	1122	16.22	15.79
50-59	Illiterate	680	12.8	21.3	250	14.96	14.31
	1-8 th Class	828	13.8	17.4	688	16.15	15.58
	≥9 th class	598	14.9	23.4	1684	17.18	16.46
60-69	Illiterate	576	13.7	16.8	167	16.50	14.67
	1-8 th Class	602	14.5	19.5	393	15.55	13.17
	≥9 th class	400	15.3	20.1	798	16.97	15.90
70-79	Illiterate	178	13.0	15.3	77	19.78	19.36
	1-8 th Class	195	15.4	14.8	176	17.93	16.74
	≥9 th class	187	13.6	11.8	222	15.57	12.90
≥80	Illiterate	51	12.2	13.1	48	14.64	13.79
	1-8 th Class	60	13.2	10.1	38	16.05	14.61
	≥9 th class	69	11.9	10.2	54	14.95	10.00
Pooled	Illiterate	7435	11.2	16.96	1489	14.6	13.65
	1-8 th Class	8133	12.4	18.08	7585	13.6	13.78
	≥9 th class	7232	12.9	17.15	13245	15.1	14.71

Table 3.2: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Population by Literacy Status (Females)

Age Group (yrs)	Literacy status	Rural			Urban		
		N	(g/day/person)	SD	N	(g/day/person)	SD
5-14	Illiterate	1680	8.8	14.2	118	9.31	10.93
	1-8 th Class	1655	10.7	15.5	3017	11.51	13.26
	≥9 th class	1630	10.9	12.5	484	12.46	14.59
15-19	Illiterate	885	11.3	18.6	45	14.16	12.77
	1-8 th Class	873	11.9	14.6	247	14.78	12.84
	≥9 th class	689	12.4	13.3	1861	12.58	13.40
20-24	Illiterate	689	10.9	17.0	103	14.14	13.65
	1-8 th Class	917	12.4	13.7	365	14.19	13.77
	≥9 th class	761	12.9	15.2	1643	14.84	14.49
25-29	Illiterate	677	11.4	16.5	200	16.32	18.17
	1-8 th Class	789	13.0	18.8	497	16.29	13.15
	≥9 th class	864	13.6	16.5	1446	15.19	13.98
30-34	Illiterate	522	10.4	12.2	241	16.75	14.76
	1-8 th Class	649	12.3	15.4	542	16.82	13.45
	≥9 th class	719	13.0	15.2	1369	16.92	16.16
35-39	Illiterate	669	11.8	16.5	316	19.38	28.87
	1-8 th Class	650	13.5	16.4	592	17.35	13.78
	≥9 th class	696	13.6	15.3	1237	18.23	16.58
40-44	Illiterate	539	13.2	23.7	401	17.83	16.09
	1-8 th Class	541	13.2	13.0	626	17.69	14.71
	≥9 th class	461	14.4	13.9	1097	17.55	14.94
45-49	Illiterate	549	11.8	13.9	443	16.84	14.92
	1-8 th Class	636	14.0	16.5	522	17.94	14.84
	≥9 th class	482	14.8	14.1	829	19.37	17.47
50-59	Illiterate	702	12.5	16.2	632	17.63	17.53
	1-8 th Class	803	13.3	14.1	712	17.02	14.41
	≥9 th class	620	14.5	16.9	909	18.57	16.81
60-69	Illiterate	494	12.3	15.2	481	17.38	14.10
	1-8 th Class	547	15.0	20.2	460	17.76	15.03
	≥9 th class	487	13.3	15.9	359	16.34	15.33
70-79	Illiterate	143	11.3	16.6	281	16.54	15.80
	1-8 th Class	210	12.2	13.1	162	17.57	13.60
	≥9 th class	218	13.6	16.9	95	17.01	20.43
≥80	Illiterate	42	11.6	10.7	123	15.95	11.82
	1-8 th Class	65	14.2	11.8	58	17.49	14.66
	≥9 th class	85	10.4	7.9	17	18.98	11.34
Pooled	Illiterate	7591	11.1	16.44	3384	16.9	17.28
	1-8 th Class	8335	12.6	15.73	7800	14.8	14.05
	≥9 th class	7712	12.9	14.75	11346	16.0	15.42

Table 4.1: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Population by Major Occupation (Males)

Age Group (yrs)	Major Occupation	Rural			Urban		
		N	Mean	SD	N	Mean	SD
20-24	Labourers	581	10.2	12.2	321	13.77	13.74
	Agri. Labourers	623	14.3	17.4	--	--	--
	Artisans	77	14.9	30.6	--	--	--
	Service & Business	333	12.5	16.7	556	12.47	11.48
	Others	72	10.4	7.7	1141	14.65	14.43
25-29	Labourers	610	9.7	12.1	464	15.09	13.55
	Agri. Labourers	625	13.7	16.4	--	--	--
	Artisans	101	11.1	11.4	--	--	--
	Service & Business	299	11.7	15.9	883	14.71	13.93
	Others	74	9.1	7.0	461	13.24	12.09
30-34	Labourers	636	9.3	10.7	500	14.31	12.03
	Agri. Labourers	493	15.4	29.3	--	--	--
	Artisans	90	9.6	8.0	--	--	--
	Service & Business	298	12.6	20.1	1096	14.49	13.11
	Others	80	12.0	10.9	262	13.54	12.93
35-39	Labourers	617	10.6	14.7	514	14.48	13.57
	Agri. Labourers	461	13.8	16.2	--	--	--
	Artisans	90	12.2	10.6	--	--	--
	Service & Business	306	11.4	10.2	1210	14.13	14.92
	Others	51	10.2	8.7	224	15.42	16.89
40-44	Labourers	522	9.7	12.7	470	14.55	13.34
	Agri. Labourers	412	15.5	20.8	--	--	--
	Artisans	79	8.7	9.7	--	--	--
	Service & Business	276	11.3	13.9	1249	15.50	14.47
	Others	34	17.4	16.6	198	16.92	16.34
45-49	Labourers	491	11.1	14.0	446	13.98	12.99
	Agri. Labourers	403	13.7	16.6	--	--	--
	Artisans	75	13.0	10.4	--	--	--
	Service & Business	243	12.5	10.4	1144	16.34	16.26
	Others	39	12.5	15.1	202	14.57	13.35
50-59	Labourers	606	11.5	17.0	486	16.13	14.63
	Agri. Labourers	703	14.9	22.4	--	--	--
	Artisans	89	13.5	28.7	--	--	--
	Service & Business	361	13.0	17.4	1742	16.81	16.64
	Others	51	12.4	10.9	398	16.82	15.03
60-69	Labourers	442	12.2	14.4	169	16.14	15.36
	Agri. Labourers	508	15.3	15.3	--	--	--
	Artisans	63	12.9	9.6	--	--	--
	Service & Business	195	14.0	15.5	452	14.25	11.98
	Others	149	13.5	23.8	740	17.92	16.37
70-79	Labourers	160	12.9	14.6	33	19.32	20.61
	Agri. Labourers	165	14.9	15.1	--	--	--
	Artisans	19	10.2	8.1	--	--	--
	Service & Business	89	14.6	12.8	99	14.14	13.68
	Others	72	13.0	9.7	344	17.77	15.50
≥80	Labourers	50	11.3	11.2	4	8.63	3.31
	Agri. Labourers	52	14.7	11.4	--	--	--
	Artisans	8	13.0	7.4	--	--	--
	Service & Business	34	10.8	9.0	15	13.57	8.42
	Others	19	13.7	12.7	123	15.51	13.10
Pooled	Labourers	5477	10.5	13.52	3533	14.7	13.55
	Agri. Labourers	5051	14.4	19.64	--	--	--
	Artisans	801	11.6	16.05	--	--	--
	Service & Business	2820	12.3	14.90	8565	15.2	14.82
	Others	699	12.0	14.46	6152	15.0	14.57

Table 4.2: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Population by Major Occupation (Females)

Age Group (yrs)	Occupation	Rural			Urban		
		N	Mean	SD	N	Mean	SD
20-24	Labourers	726	9.8	12.1	19	20.63	17.91
	House wives				847	14.49	13.06
	Agri. Labourers	675	14.3	17.5	--	--	--
	Artisans	115	10.4	8.6	--	--	--
	Service & Business	395	12.2	15.0	207	12.74	10.99
	Others	83	12.6	12.5	1051	15.12	15.66
25-29	Labourers	811	9.7	11.2	59	15.52	15.81
	House wives				1514	15.79	13.89
	Agri. Labourers	569	14.1	19.7	--	--	--
	Artisans	107	13.3	10.7	--	--	--
	Service & Business	405	13.8	11.2	238	13.90	13.07
	Others	90	15.8	19.7	338	15.67	16.11
30-34	Labourers	645	11.1	15.1	68	15.79	16.10
	House wives				1681	17.15	15.58
	Agri. Labourers	460	12.5	13.2	--	--	--
	Artisans	96	11.0	8.3	--	--	--
	Service & Business	342	13.3	17.3	206	14.84	12.11
	Others	64	12.2	12.2	202	16.90	16.04
35-39	Labourers	699	10.9	14.3	92	17.36	12.50
	House wives				1650	18.59	19.48
	Agri. Labourers	495	15.1	19.9	--	--	--
	Artisans	95	11.3	11.7	--	--	--
	Service & Business	385	13.0	11.5	234	17.03	14.54
	Others	58	12.2	8.8	175	16.58	13.37
40-44	Labourers	508	11.4	17.7	122	19.21	14.17
	House wives				1577	17.81	15.45
	Agri. Labourers	367	14.3	15.1	--	--	--
	Artisans	71	12.5	9.8	--	--	--
	Service & Business	272	14.3	15.1	230	16.73	13.92
	Others	50	12.8	12.5	199	16.37	13.89
45-49	Labourers	500	11.6	13.1	83	15.96	11.56
	House wives				1319	18.78	16.76
	Agri. Labourers	495	14.2	14.4	--	--	--
	Artisans	72	14.9	31.6	--	--	--
	Service & Business	298	13.4	12.8	188	17.01	15.74
	Others	64	11.9	10.1	209	17.35	13.84
50-59	Labourers	587	11.8	13.0	87	16.99	13.76
	House wives				1422	18.26	16.23
	Agri. Labourers	670	14.2	14.6	--	--	--
	Artisans	78	13.0	8.6	--	--	--
	Service & Business	335	12.6	13.3	218	17.05	18.64
	Others	162	11.5	9.8	536	17.08	15.88
60-69	Labourers	454	11.1	12.5	41	15.64	14.47
	House wives				508	17.47	15.29
	Agri. Labourers	418	14.0	15.0	--	--	--
	Artisans	67	11.2	8.7	--	--	--
	Service & Business	259	13.5	14.1	49	15.48	13.92
	Others	123	15.2	26.1	718	17.15	14.44
70-79	Labourers	188	10.3	13.5	6	14.15	8.75
	House wives				86	14.81	10.56
	Agri. Labourers	143	14.5	13.9	--	--	--
	Artisans	31	11.9	13.2	--	--	--
	Service & Business	103	12.0	14.8	12	16.40	11.39
	Others	54	13.6	13.3	443	17.34	17.09

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≥80	Labourers	41	11.4	1.8	--	--	--
	House wives				15	16.81	8.17
	Agri. Labourers	59	14.2	11.6	--	--	--
	Artisans	9	9.4	5.8	--	--	--
	Service & Business	47	10.6	8.1	3	12.20	7.14
	Others	15	12.9	8.4	182	16.63	13.00
Pooled	Labourers	5935	10.7	13.60	596	17.1	13.99
	House wives	--	--	--	10727	17.4	16.02
	Agri. Labourers	5019	13.8	16.20	--	--	--
	Artisans	849	11.7	13.05	--	--	--
	Service & Business	3282	13.1	14.65	1613	15.5	14.27
	Others	830	13.2	17.53	6061	15.2	14.48

Table 5.1: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Males by Activity Status (Males)

Age group (yrs)	Activity status	Rural			Urban		
		N	Mean	SD	N	Mean	SD
20-24	Sedentary	815	12.5	15.9	1612	13.76	13.48
	Moderate & Heavy	1215	13.2	19.5	437	14.38	13.91
25-29	Sedentary	498	11.7	15.6	1192	14.14	13.04
	Moderate & Heavy	1512	11.3	13.2	638	15.13	14.02
30-34	Sedentary	368	13.1	18.4	1206	14.51	13.02
	Moderate & Heavy	1507	12.3	22.1	671	13.94	12.27
35-39	Sedentary	339	11.7	9.2	1245	14.43	15.29
	Moderate & Heavy	1460	12.2	17.5	716	14.31	13.94
40-44	Sedentary	304	11.2	11.8	1245	15.87	14.80
	Moderate & Heavy	1235	12.1	16.5	690	14.51	13.56
45-49	Sedentary	281	12.8	11.5	1174	16.22	15.68
	Moderate & Heavy	1230	13.4	19.7	629	14.32	14.15
50-59	Sedentary	462	12.5	16.2	1919	16.85	16.63
	Moderate & Heavy	1644	14.1	21.6	722	16.07	14.25
60-69	Sedentary	582	13.1	17.0	1124	16.55	15.12
	Moderate & Heavy	996	15.2	19.6	242	16.15	14.41
70-79	Sedentary	383	13.4	12.8	451	17.00	15.33
	Moderate & Heavy	177	15.5	16.4	35	19.23	19.62
≥80	Sedentary	156	12.4	10.5	134	15.42	12.71
	Moderate & Heavy	23	11.1	11.0	9	9.61	7.81
Pooled	Sedentary	11240	11.4	15.71	17961	14.4	14.45
	Moderate & Heavy	11554	12.9	18.94	4984	14.7	13.73

Table 5.2: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Females by Activity Status (Females)

Age group (yrs)	Activity status	Rural			Urban		
		N	Mean	SD	N	Mean	SD
20-24	Sedentary	1706	11.9	13.0	2089	14.64	14.32
	Moderate & Heavy	660	12.8	19.8	50	16.71	12.15
25-29	Sedentary	1395	13.1	17.0	2058	15.58	14.23
	Moderate & Heavy	934	12.3	17.9	105	14.88	14.15
30-34	Sedentary	1056	12.1	13.8	2018	16.89	15.30
	Moderate & Heavy	833	12.0	15.4	159	15.99	15.29
35-39	Sedentary	999	12.6	14.9	1978	18.24	18.64
	Moderate & Heavy	1016	13.4	17.1	185	18.01	14.22
40-44	Sedentary	766	14.1	16.1	1936	17.51	15.17
	Moderate & Heavy	772	13.0	19.1	203	18.68	13.95
45-49	Sedentary	813	12.8	15.2	1659	18.40	16.28
	Moderate & Heavy	854	14.1	14.8	151	16.92	14.35
50-59	Sedentary	1205	13.0	13.7	2126	17.89	16.28
	Moderate & Heavy	920	13.9	17.9	158	16.65	15.95
60-69	Sedentary	1163	13.0	17.7	1284	17.07	14.78
	Moderate & Heavy	365	15.5	16.2	55	17.31	13.48
70-79	Sedentary	539	12.3	15.6	546	16.90	16.11
	Moderate & Heavy	31	16.0	15.0	15	16.01	8.63
≥80	Sedentary	192	12.0	10.1	206	16.54	12.52
	Moderate & Heavy	-	-	-	1	11.50	--
Pooled	Sedentary	16870	11.9	14.96	22015	15.6	15.24
	Moderate & Heavy	6758	13.1	17.30	1116	17.0	14.37

Table 6.1: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Male Population by Community (Males)

Age Group	Community	Rural			Urban		
		N	Mean	SD	N	Mean	SD
5-14	ST	887	6.4	8.6	103	12.64	14.06
	SC	1287	10.0	18.2	831	12.71	13.09
	BC	1774	12.0	16.6	1736	11.72	12.16
	Others	1316	11.6	17.6	1787	12.59	14.36
15-19	ST	320	8.9	11.8	41	16.05	23.01
	SC	627	10.0	12.9	390	13.69	12.70
	BC	759	13.4	19.3	893	12.53	12.77
	Others	634	13.9	18.0	980	14.96	14.97
20-24	ST	295	9.4	16.2	46	10.99	11.61
	SC	523	11.3	15.9	397	14.45	12.40
	BC	706	14.2	15.9	772	12.79	13.19
	Others	506	14.8	23.3	803	14.89	14.53
25-29	ST	300	7.4	8.8	38	16.49	21.05
	SC	470	10.2	12.0	374	13.35	11.30
	BC	694	12.5	14.9	670	14.60	13.69
	Others	546	13.4	15.4	726	14.73	13.60
30-34	ST	301	8.3	11.4	41	8.47	10.23
	SC	432	10.1	14.0	353	14.20	12.73
	BC	660	13.8	27.1	685	13.59	11.95
	Others	482	15.4	22.3	779	15.29	13.55
35-39	ST	280	10.2	24.9	36	16.15	19.51
	SC	425	11.3	17.0	335	14.31	13.61
	BC	599	13.0	12.5	760	13.61	13.02
	Others	496	12.7	13.2	817	15.03	16.52
40-44	ST	217	7.7	8.1	35	13.21	14.68
	SC	320	10.9	14.5	294	14.50	12.60
	BC	539	12.5	15.8	762	14.43	13.71
	Others	461	13.9	18.8	826	16.74	15.52
45-49	ST	203	9.8	16.8	34	20.77	25.88
	SC	333	10.8	10.6	251	15.39	17.27
	BC	538	15.2	21.8	754	14.08	13.49
	Others	436	14.5	18.9	753	16.85	15.37
50-59	ST	275	9.0	10.8	49	15.40	14.78
	SC	449	12.5	13.1	374	15.75	13.24
	BC	735	15.6	26.5	1012	15.24	14.60
	Others	646	14.6	19.7	1191	18.26	17.83
60-69	ST	172	10.8	15.3	24	19.83	18.05
	SC	368	14.6	23.4	178	15.04	12.50
	BC	534	14.0	13.8	525	14.83	12.95
	Others	504	16.0	20.3	634	18.13	16.83
70-79	ST	46	14.2	16.3	9	15.61	15.66
	SC	107	13.3	15.8	71	16.18	15.04
	BC	203	13.6	13.4	174	16.56	16.02
	Others	203	14.9	13.3	222	17.92	15.50
≥80	ST	9	15.7	12.6	2	4.85	6.86
	SC	30	10.8	10.9	14	13.10	11.88
	BC	67	12.7	12.6	49	11.63	6.73
	Others	74	12.5	9.3	77	17.96	14.80
Pooled	ST	3305	8.4	13.32	458	14.3	17.24
	SC	5371	10.9	15.91	3862	14.1	13.16
	BC	7808	13.4	18.72	8792	13.5	13.20
	Others	6304	13.8	18.56	9595	15.5	15.47

Table 6.2: Mean Sugar Consumption Levels in Different Age Groups among Rural and Urban Female Population by Community (Females)

Age Group (yrs)	Community	Rural			Urban		
		N	Mean	SD	N	Mean	SD
5-14	ST	847	6.7	10.0	90	9.94	14.24
	SC	1136	9.6	14.0	705	11.97	13.77
	BC	1738	11.5	16.4	1555	11.69	13.56
	Others	1242	11.1	12.8	1550	11.20	12.49
15-19	ST	371	9.1	17.0	39	12.68	13.12
	SC	563	11.1	16.9	381	13.66	12.90
	BC	840	13.2	15.9	840	11.57	12.67
	Others	672	12.2	14.0	903	13.72	14.02
20-24	ST	363	8.9	16.6	45	11.71	12.68
	SC	566	11.6	15.8	388	13.89	13.23
	BC	769	12.7	13.9	822	13.70	13.22
	Others	667	13.7	15.1	869	16.12	15.65
25-29	ST	378	7.7	10.1	56	13.52	12.92
	SC	555	11.5	16.8	416	14.83	13.49
	BC	828	14.3	18.3	799	16.23	14.86
	Others	567	15.1	19.5	878	15.41	14.06
30-34	ST	292	10.4	18.8	55	20.41	21.85
	SC	425	11.4	16.9	372	17.01	14.92
	BC	657	12.5	11.2	846	15.64	12.49
	Others	516	12.9	13.2	884	17.75	17.32
35-39	ST	284	7.9	9.3	42	16.36	18.23
	SC	439	12.3	16.3	332	18.66	27.00
	BC	701	14.5	17.2	848	16.99	15.43
	Others	590	14.0	16.4	929	19.23	16.82
40-44	ST	224	10.2	18.6	39	20.24	21.40
	SC	352	11.8	13.8	326	16.88	13.45
	BC	540	14.9	19.4	880	16.44	14.19
	Others	425	15.1	17.0	883	19.00	16.06
45-49	ST	208	8.9	10.2	37	21.69	24.90
	SC	362	12.6	13.7	274	18.63	15.64
	BC	581	15.2	15.8	690	16.95	14.18
	Others	515	14.2	16.3	798	19.19	17.30
50-59	ST	261	9.8	13.0	52	18.00	18.91
	SC	475	12.3	16.2	292	17.43	16.77
	BC	720	13.9	14.9	854	16.22	14.85
	Others	668	15.0	16.8	1065	19.18	17.05
60-69	ST	177	11.0	14.7	18	20.16	13.83
	SC	325	13.9	22.5	196	17.04	13.63
	BC	534	13.0	12.3	516	15.92	13.41
	Others	491	15.0	19.0	586	18.20	16.14
70-79	ST	54	10.2	20.2	3	9.40	10.05
	SC	115	11.6	14.0	77	17.33	13.43
	BC	207	11.8	12.6	217	15.09	14.47
	Others	195	14.6	17.5	250	18.39	17.95
≥80	ST	9	16.1	14.1	1	10.50	
	SC	38	11.1	9.2	18	12.88	9.79
	BC	63	11.7	10.9	86	17.07	12.24
	Others	82	12.1	9.4	95	16.89	13.45
Pooled	ST	3468	8.6	13.87	477	15.5	17.76
	SC	5351	11.4	16.02	3777	15.4	15.81
	BC	8178	13.2	15.81	8953	14.8	14.05
	Others	6630	13.5	15.81	9690	16.5	15.86

Table 7.1: Mean Sugar Consumption among Different Age Groups in Male Rural and Urban Population by Religion (Males)

Age Group (yrs)	Religion	Rural			Urban		
		N	Mean	SD	N	Mean	SD
5-14	Hindu	4779	10.3	16.1	3597	12.38	13.68
	Muslim	332	11.7	20.7	622	11.71	11.01
	Christians	151	11.6	12.3	164	9.61	12.23
15-19	Hindu	2137	12.0	17.0	1883	13.84	14.21
	Muslim	158	11.9	12.2	317	13.69	11.88
	Christians	45	10.5	9.5	57	11.01	13.23
20-24	Hindu	1870	12.8	17.3	1628	13.70	13.28
	Muslim	103	16.4	32.5	266	14.56	13.59
	Christians	56	10.0	7.2	71	10.28	9.61
25-29	Hindu	1848	11.6	14.2	1509	14.44	13.49
	Muslim	101	9.1	7.2	197	15.36	13.82
	Christians	59	9.8	8.1	63	11.25	8.14
30-34	Hindu	1726	12.2	20.7	1546	14.30	12.86
	Muslim	87	18.5	35.2	215	14.72	12.45
	Christians	59	10.0	10.3	69	10.54	9.89
35-39	Hindu	1636	12.1	16.9	1609	14.26	14.67
	Muslim	106	12.5	9.1	210	15.39	13.64
	Christians	58	11.2	8.5	92	11.85	17.39
40-44	Hindu	1418	11.9	15.6	1611	15.43	14.59
	Muslim	71	12.5	17.9	201	16.47	13.75
	Christians	47	11.0	14.7	68	8.62	7.20
45-49	Hindu	1381	13.4	19.0	1536	15.59	15.54
	Muslim	74	12.8	11.1	176	15.26	13.45
	Christians	54	11.5	9.8	53	14.27	13.08
50-59	Hindu	1919	14.1	21.2	2166	16.58	16.10
	Muslim	106	11.9	11.1	246	17.21	14.35
	Christians	79	9.2	8.1	137	14.59	15.48
60-69	Hindu	1437	14.3	17.3	1110	16.50	15.15
	Muslim	81	17.2	36.4	139	15.95	14.71
	Christians	59	12.9	13.9	77	13.75	9.94
70-79	Hindu	495	14.2	14.4	383	17.14	15.58
	Muslim	40	13.1	11.6	43	12.72	11.83
	Christians	24	11.4	9.2	36	18.00	16.54
≥80	Hindu	163	12.8	11.1	118	15.16	12.71
	Muslim	11	9.1	9.9	10	12.55	13.81
	Christians	6	8.9	10.3	9	13.29	4.35
Pooled	Hindu	20809	12.2	17.39	18696	14.5	14.43
	Muslim	1270	12.9	20.97	2642	14.4	12.97
	Christians	697	10.8	10.58	896	11.9	12.77

Table 7.2: Mean Sugar Consumption among Different Age Groups in Female Rural and Urban Population by Religion (Females)

Age Group (yrs)	Religion	Rural			Urban		
		N	Mean	SD	N	Mean	SD
5-14	Hindu	4486	10.1	14.4	3125	11.51	13.70
	Muslim	352	11.0	11.8	566	11.43	9.98
	Christians	121	10.2	9.8	151	9.30	11.60
15-19	Hindu	2190	11.8	16.2	1740	12.80	13.75
	Muslim	182	12.2	14.4	324	13.20	11.21
	Christians	74	10.2	7.3	63	8.59	8.34
20-24	Hindu	2158	12.3	15.7	1698	14.58	14.01
	Muslim	144	10.7	8.3	304	14.88	13.80
	Christians	62	9.5	8.6	76	12.82	17.00
25-29	Hindu	2119	12.6	16.5	1763	15.59	14.23
	Muslim	132	15.5	29.7	251	16.26	14.88
	Christians	75	11.8	11.0	92	12.61	10.35
30-34	Hindu	1744	12.1	14.9	1766	16.92	15.75
	Muslim	91	11.3	9.0	249	17.09	13.79
	Christians	54	11.1	10.2	100	13.89	11.46
35-39	Hindu	1823	12.9	16.2	1789	18.34	19.05
	Muslim	122	14.6	17.0	238	17.15	11.57
	Christians	69	11.1	10.2	91	15.04	18.75
40-44	Hindu	1394	13.5	18.1	1779	17.65	15.18
	Muslim	82	15.6	13.0	227	17.40	13.63
	Christians	65	12.4	13.3	85	14.92	13.15
45-49	Hindu	1519	13.7	15.5	1482	18.07	15.35
	Muslim	95	10.8	8.6	176	18.68	14.77
	Christians	51	10.9	9.5	90	16.51	22.85
50-59	Hindu	1928	13.5	16.1	1855	18.21	16.81
	Muslim	103	13.0	10.9	225	16.36	14.85
	Christians	91	11.2	6.9	133	13.53	10.13
60-69	Hindu	1386	13.6	16.0	1073	16.89	14.51
	Muslim	89	15.1	33.9	115	16.19	12.63
	Christians	52	10.9	9.5	90	15.81	12.90
70-79	Hindu	512	12.5	15.4	436	16.89	17.06
	Muslim	34	14.7	20.1	55	17.65	12.90
	Christians	25	10.7	9.5	41	14.43	9.37
≥80	Hindu	173	11.8	10.3	166	16.35	12.70
	Muslim	6	17.3	6.3	18	22.17	14.49
	Christians	13	11.1	7.3	14	12.69	7.23
Pooled	Hindu	21432	12.2	15.76	18672	15.7	15.47
	Muslim	1432	12.6	16.84	2748	15.2	13.02
	Christians	752	10.9	9.62	1026	13.2	13.97

Table 8.1: Mean Consumption of Total Carbohydrate, Fat and Proteins (g/cu/day) among Rural Population – NNMB 2011-12.

	Protein	Carbohydrates	Fat
Male	56.5	383.5	31.3
Female	48.3	331.5	27.8
Total	51.8	353.3	29.2

The mean consumption of total carbohydrate (353.3g/day) was higher than the total fat (29.2g/day) and protein (51.8g/day) consumption.

Table 8.2: Per cent Energy Contribution (Kcal/day) from Various Proximate Principles (Carbohydrates, Fats and Proteins)

	Units	Protein (Kcal/day)	Fat (Kcal/day)	Carbohydrates (Kcal/day)	Others (Kcal/day)
Male	g/CU/day	226	282	1534	14
	Per cent	11.0	13.0	74.5	0.5
Female	g/CU/day	193	250	1326	13
	Per cent	10.8	14.0	74.5	0.7
Total	g/CU/day	207	263	1413	14
	Per cent	10.9	13.9	74.5	0.7%

The proportion of consumption of energy from various proximate principles is the same among men and women. However, the per cent consumption of energy from carbohydrates is very high as against the suggested levels of ICMR (60-65%), and the proportion is less for fats 14% (suggested: 20-25%) and 11% for protein (as against 10-15%).

The mean contribution of sugar from different foods consumed by rural population is given in **Table 9.1** (N=33261). The total mean contribution was 12.81 g/CU/day where, the maximum contribution was from sugar cane 11.46 g/CU/day.

The consumption levels of sugar through various foods like processed and homemade foods are given in **Table 9.2**.

Table 9.1: Mean Contribution of Sugar from Various Food (g/CU/day) on any Single Occasion of Consumption among Rural Population

	Mean	Std. Deviation
Sugar cane	11.46	13.8
Honey	0.005	0.48
Jaggery (cane)	1.14	8.60
Jaggery (coconut)	0.0	0.0
Jaggery (date palm)	0.08	3.2
Jaggery (fan palm)	0.004	0.35
Jaggery (sago palm)	0.0	0.0
Sago	0.12	3.87
Total	12.81	16.91

The consumption of sugars through foods like cakes/sweets/payasam/vermicelli was maximum about 20-45g as compared to other processed and homemade foods. The sugar consumption levels through foods like tea, coffee/black tea was 5-7g.

Table 9.2: Mean Sugar Consumption from Various Homemade Food Items (g/food item) on any Single Occasion of Consumption in Rural Population

Food item (Homemade)	(g)
Vermicelli – Others	9.1
Mango Green – Chutney	1.5
Other Nuts And Oil Seeds Chutneys	3
Tamarind - Chutney Powder Dry/Wet	1.2
Spinach – Chutney	7.1
Others (Specify) – Chutney	4.1
Kozhukkatta	1.3
Mango Green – Curry	1.2
Other Fish - Fry/Deep Fry/ Snack	1.4
Adaidosal	15.8
Achappam	4.2
Bitter Gourd - Masala Curry	4.9
Lemon Sweet – Juice	3.5
Homemade Sweet Cake (Rice)	21.1
Bitter Leaf Curry	5.6
Banana – Juice	2.2
Kheer/Payasam/Wheat Flour (Sago, Vermicelli, Rice, Semolina)	30.9
Paniyaram	20.4
Lime Sweet – Juice	6.2
Mask Melon – Juice	32.2
Bonda	5.8
Lemon – Juice	5
Mango Ripe – Juice	7.5
Nutritious Flour Kanchi Or Barley	2.4

Contd.

Table 9.2: Mean Sugar Consumption from Various Homemade Food Items (g/food item) on any Single Occasion of Consumption in Rural Population (Contd..)

Tea	7.3
Black Tea	5.8
Coffee	6.7
Milk - Milk Shake – Fruit	2.1
Black Coffee	6.8
Green Tea	8
Rice Flakes - Rice Flakes- With Milk and Sugar	3.8
Semolina – Others	3.6
Ragi - Ragi Java/Porridge/Sari/Kodu	3.2
Wheat - Wheat Porridge/Gruel	1.1
Vermicelli - Vermicelli Upma	3.9
Semolina - Semolina Porridge/Gruel	2.2
Wheat Flour Cake	44.9
Ragi - Ragi Others	1.9
Rice-Rice Roti	9.1
Suji ,Vermicelli-Halwa/Kesari	25.3
Rice-Broken Rice Upma	2.9
Wheat - Cheese Roti	2.4

Contd.

Table 9.2: Mean Sugar Consumption from Various Processed Food Items (g/food item) on any Single Occasion of Consumption in Rural Population

Food Items (Processed)	(g)
Tea Powder	4.4
Healthy Food Drinks	1 – 4.5
Milk - Milk Powder	1



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