

CURRENT TRENDS IN THE CONSUMPTION OF FAT, SALT AND SUGAR IN INDIA



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Time trends in consumption of sugar, salt & fat among rural, tribal & urban population in India



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National Nutrition challenges

Malnutrition is one of the most important public health Problems, arises either from deficiency or excess or imbalance of a single or various nutrients in the body. The following are the nutritional challenges and most of them were detected by diet surveys:

1. Protein energy malnutrition (PEM)

- Low birth weight (LBW)
- Chronic energy deficiency (CED)
- High fat, salt and sugar

2. Micronutrient deficiencies (MND)

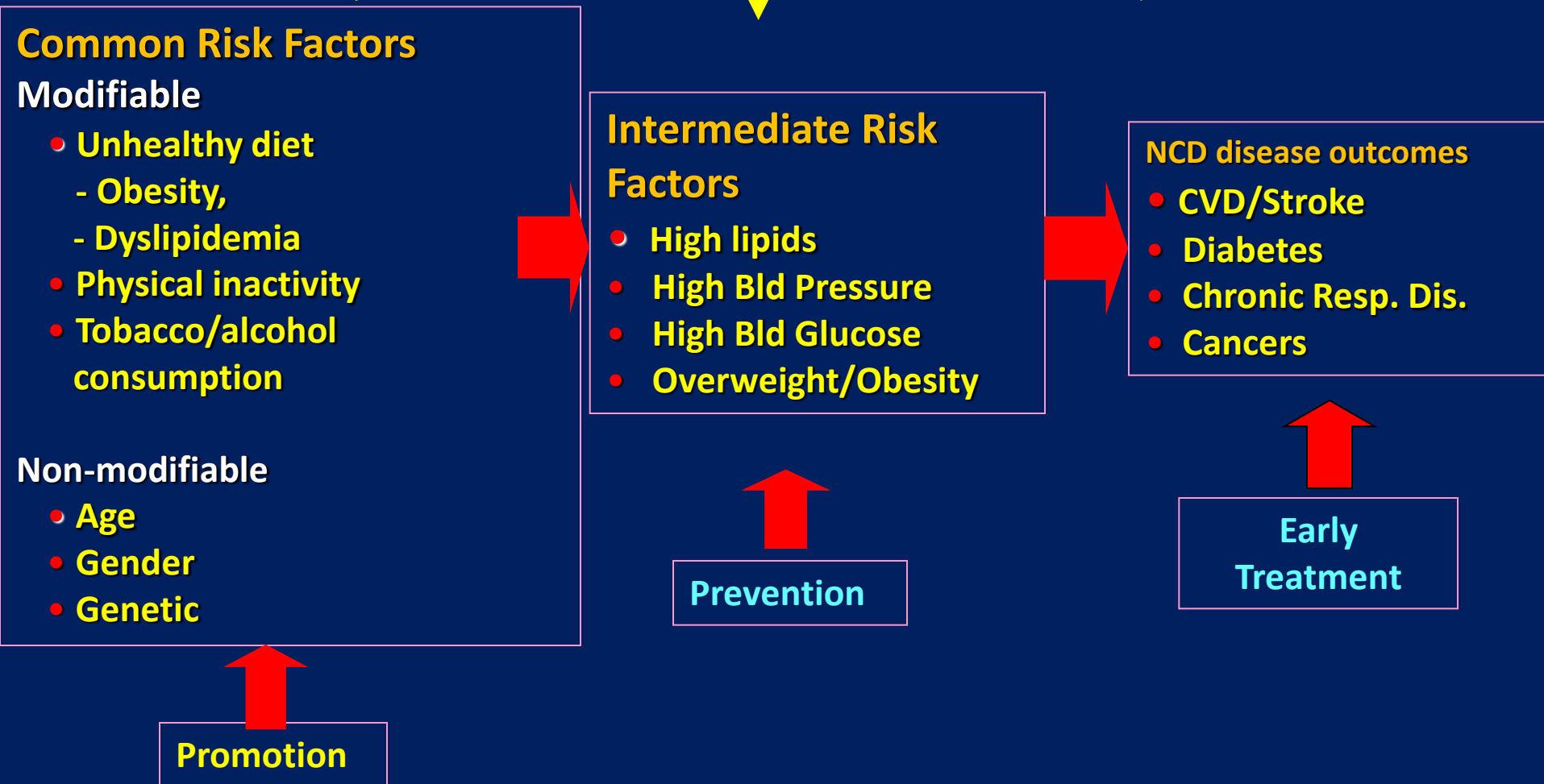
- Vitamin A deficiency (VAD)
- Iron deficiency anemia (IDA)
- Iodine deficiency disorders (IDD)
- Zinc deficiency disorders

3. Diet related chronic non-communicable diseases (NCDs)

- Overweight and obesity
- Insulin resistance
- Type 2 Diabetes
- Cardiovascular diseases (CVD), Cancers etc.

Determinants → Risk Factors → NCD disease outcomes

Socio-economic determinants
















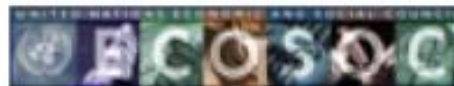
Common Risk Factors

- Diet related Non-communicable diseases

Noncommunicable Diseases

4 Diseases, 4 Modifiable Shared Risk Factors

	Tobacco Use	Unhealthy diets HFSS	Physical Inactivity	Harmful Use of Alcohol
Cardio-vascular				
Diabetes				
Cancer				
Chronic Respiratory				



*Regardless of who
the Father of a disease is,
Surely its Mother is
IMPROPER DIET*

Old Chinese Proverb

Nutrition Transition

- Changes have been observed in the intake of legumes, vegetables, milk, salt, sugar, fats and oils, especially *animal fats*.
- Substitution of **millets** by more prestigious and often **highly polished cereals** such as rice.
- Reduction in over all cereal intakes over a period of time.
- Changes observed in **dietary fat** (n6/n3 ratio) due to higher intake of **cheap commercial vegetable oils** (n6 fatty acids)
- Low fruit and vegetable intake in rural communities.
- Increased intake of **sugar and sweets beverages** in semi-urban and urban areas.
- A significant reduction of physical activities **further aggravating problem of obesity, diabetes, CVD**.
- **With the given context, a special analysis for 'Time trends in consumption of fats and oils among different population groups in India' was carried out by using the NNMB database (www.nnmbindia.org).**

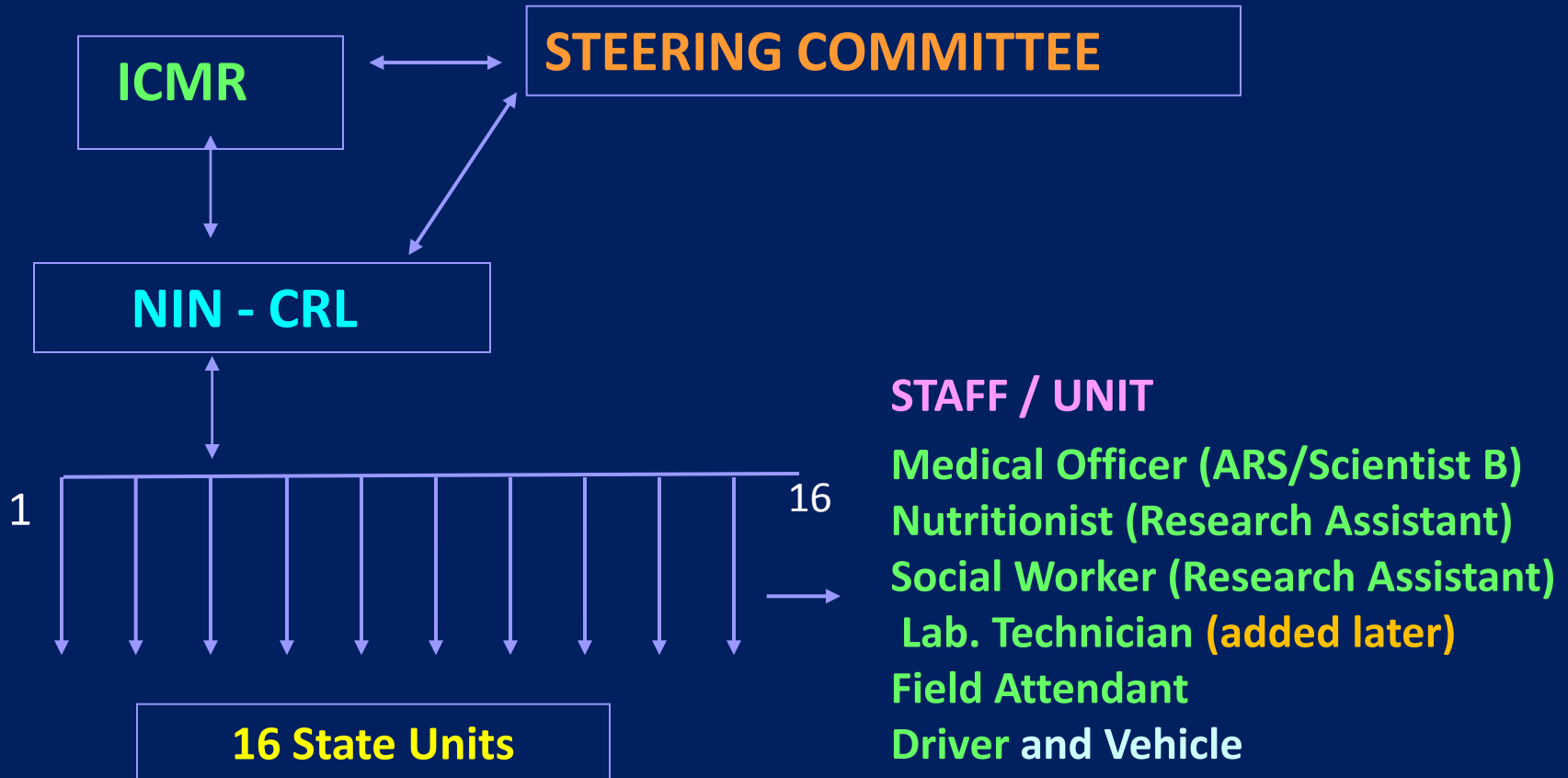
Under the aegis of Indian Council of Medical Research, **National Nutrition Monitoring Bureau (NNMB)** was established in 1972 in 10 major States, subsequently it was extended to 6 more states/UTs in 2012 (16 NNMB state units)



NNMB OBJECTIVES

1. To collect diet and nutritional status, on regular a basis among various population groups by using a standard and uniform methodology, and
2. To evaluate ongoing National Nutrition intervention programs, to identify its strengths and weaknesses and recommend for mid-course corrections, if needed.

ORGANIZATIONAL STRUCTURE OF NNMB



- The results of all these studies have been published as NNMB Technical Reports (1-26) and Research papers. All are hosted on the NNMB website (www.nnmbindia.org).



NATIONAL NUTRITION MONITORING BUREAU

National Institute of Nutrition, Hyderabad, India
राष्ट्रीय पोषण संस्थान हैदराबाद भारत

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NATIONAL NUTRITION MONITORING BUREAU

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Nutrition monitoring is the measurement of the changes in the nutritional status of a population or a specific group of individuals over time

WHO, 1984


The paucity of reliable and comparable data from all parts of the country is a definite obstacle towards a realistic and disaggregated problem definition. This calls for a nation-wide monitoring system. To achieve this, it is necessary to restructure and strengthen the existing National Nutrition Monitoring Bureau (NNMB) and to develop a mechanism for generating nationwide disaggregated data.

National Nutrition Policy, Govt. of India, 1993

- The Bureau, since its inception, has been carrying out diet and nutrition surveys and repeat surveys (**village cohorts**) in rural (1975-97, 1980-90, 1996-97, and 2011-12), tribal (1985-87, 1998-99, and 2008-09), urban populations as well as special surveys like micronutrient deficiency (MND), NSSO and NCAER linked surveys.


NNMB Technical Report No. 25

NATIONAL NUTRITION MONITORING BUREAU





Diet and Nutritional Status of Tribal Population and Prevalence of Hypertension among Adults



Report on Second Repeat Survey



NNMB Technical Report No. 26

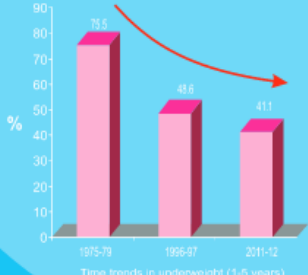
NATIONAL NUTRITION MONITORING BUREAU

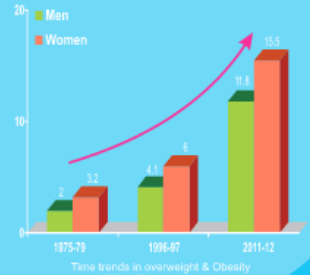
Diet and Nutritional Status of Rural Population, Prevalence of Hypertension & Diabetes among Adults and Infant & Young Child Feeding Practices

- Report of Third Repeat Survey



Time trends in underweight (1-5 years)

Year	Percentage (%)
1975-79	78.8
1996-97	48.8
2011-12	41.1



Time trends in overweight & Obesity (BMI >25) among adults

Year	Men (%)	Women (%)
1975-79	2	3.2
1996-97	4.1	6
2011-12	11.1	18.5

NNMB SAMPLING PROCEDURE FOR RURAL AND TRIBAL REPEAT SURVEYS

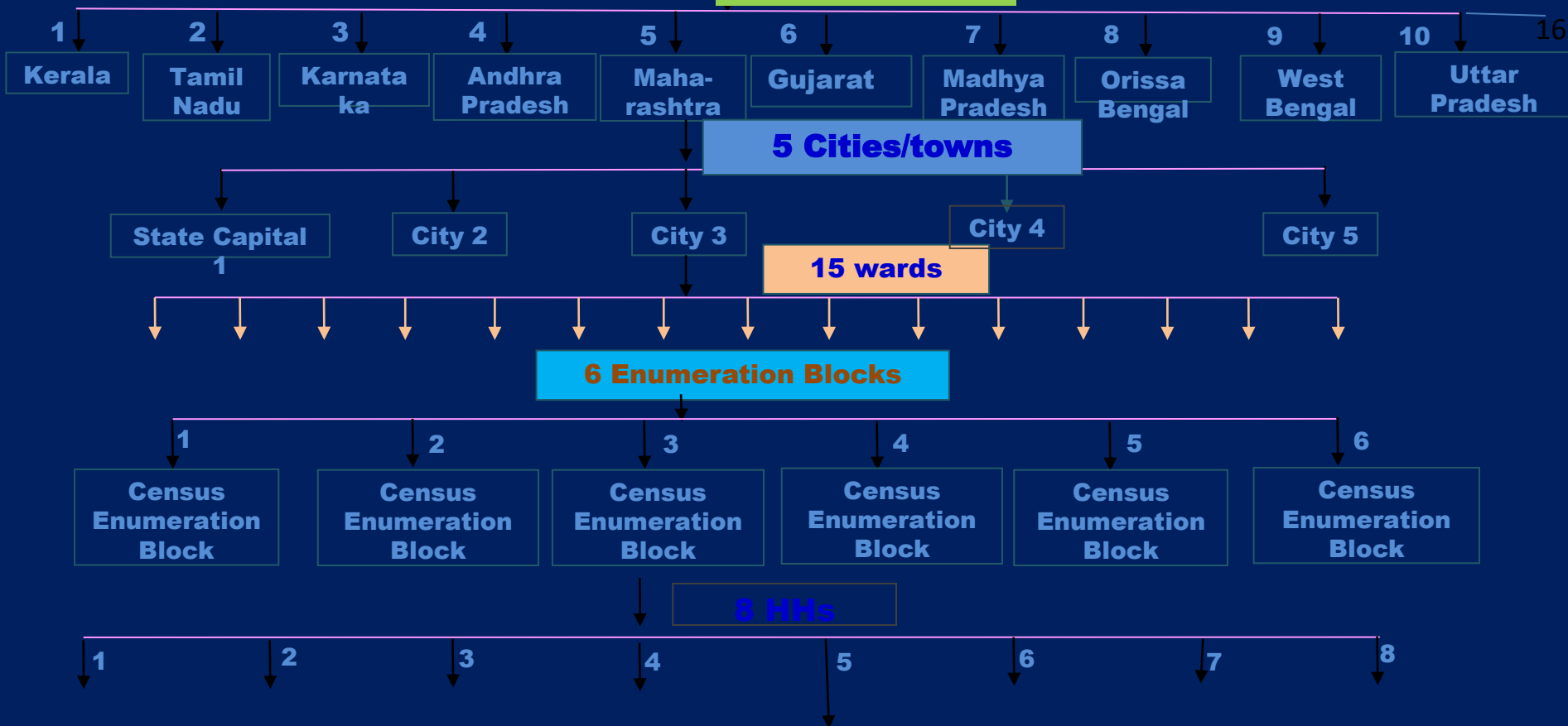
- In each State, 120 villages were surveyed.
- Out of 120 villages, 90 villages were selected from the list of villages, which were already covered in the previous rounds.
- The rest of 30 villages were covered new villages randomly selected from the list of villages available from the Census India, to assess current as well as trends in diet and nutritional status.
- These repeat surveys have been carrying out in 10 major states (representing 86% population of India).
- Investigations carried out:
 - Anthropometry
 - Biochemical
 - Clinical examination
 - 24 hour dietary recall & weighing
- **Diet surveys:** All age groups were covered: Preschool, school age, adolescents, adults, elderly and all physiological (children, pregnant women & lactating mothers, NPNL women) and activity (sedentary, moderate, heavy activity) groups

NNMB- URBAN NUTRITION SURVEYS IN INDIA 2015-16

STUDY DESIGN

India

16 NNMB States



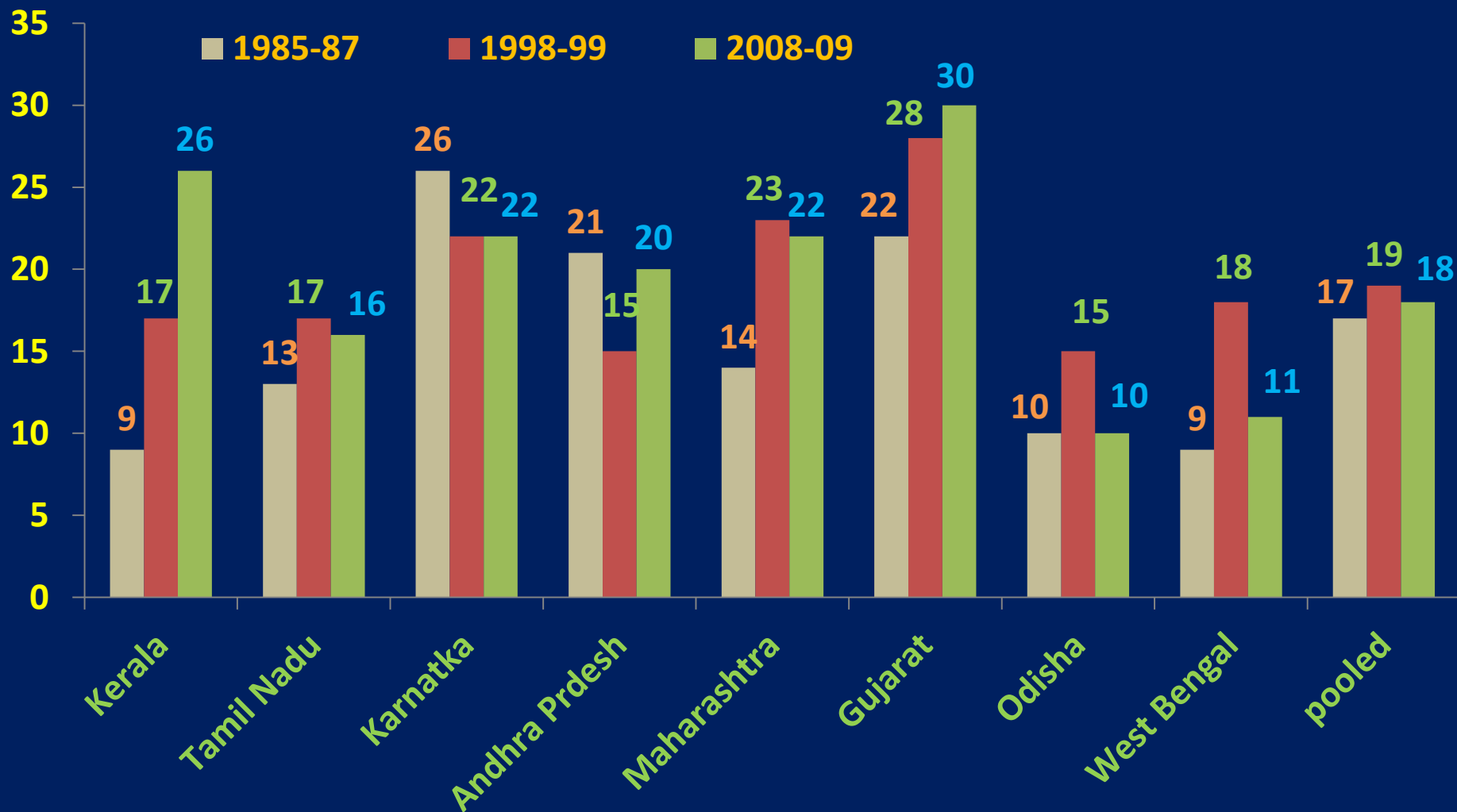
All the proposed investigations were covered among the available individuals in all the selected HHs

- **For the proposed analysis, the dietary data schedules collected by National Nutrition Monitoring Bureau (NNMB) from all the 16 major states was scrutinized.**
- **The dietary data was re-coded recipe wise, the data was re-entered into Ms excel sheets and the master dietary consumption database for all the NNMB states was prepared.**
- **Information on socio-economic and demographic particulars of the individuals, food consumption, including fat, sugar and salt intake was included in the data base.**
- **Mean, median and frequency of consumption of fat, sugar and salt was presented.**

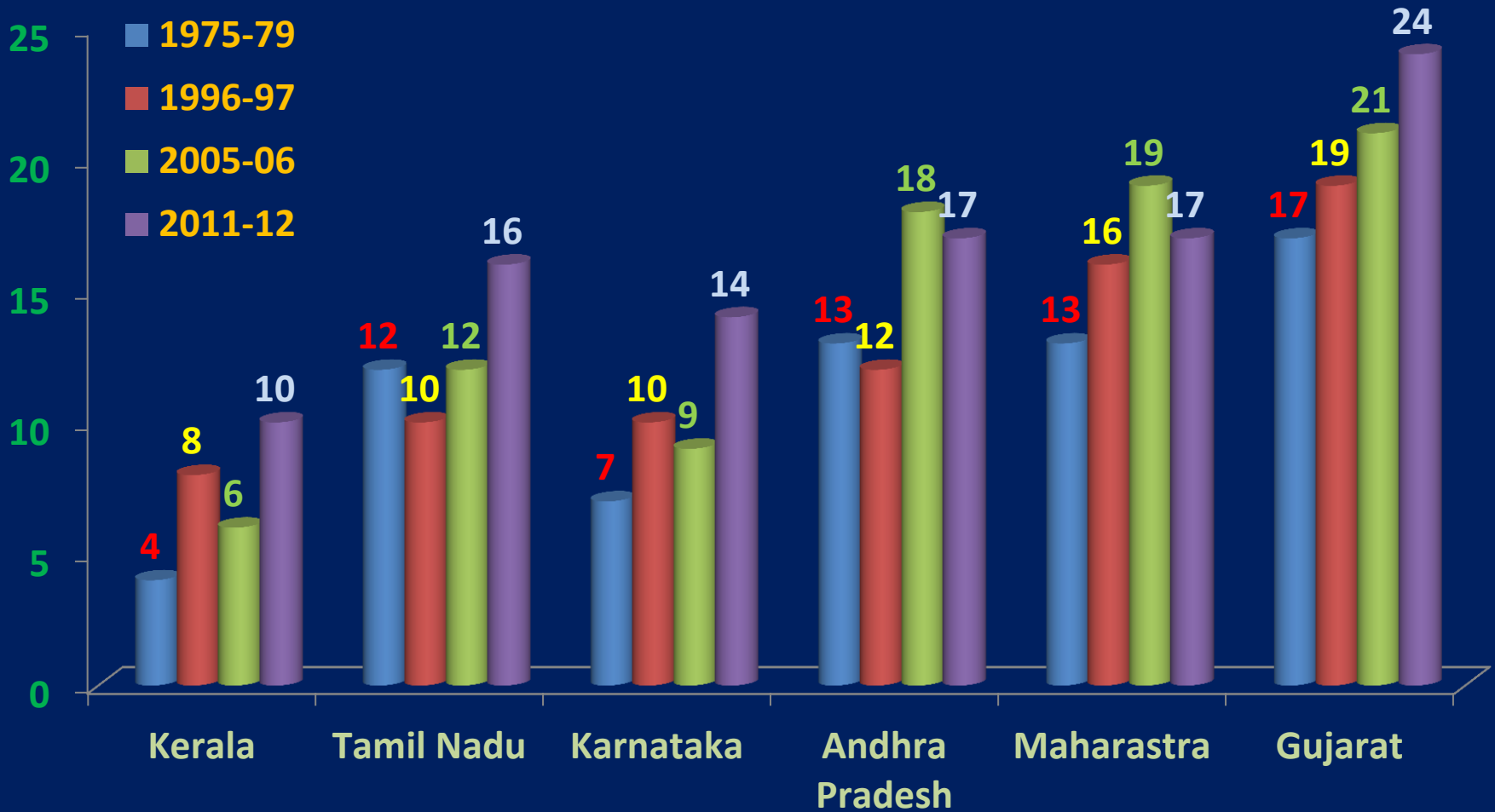
RESULTS

FAT CONSUMPTION AND TIME TRENDS DATA

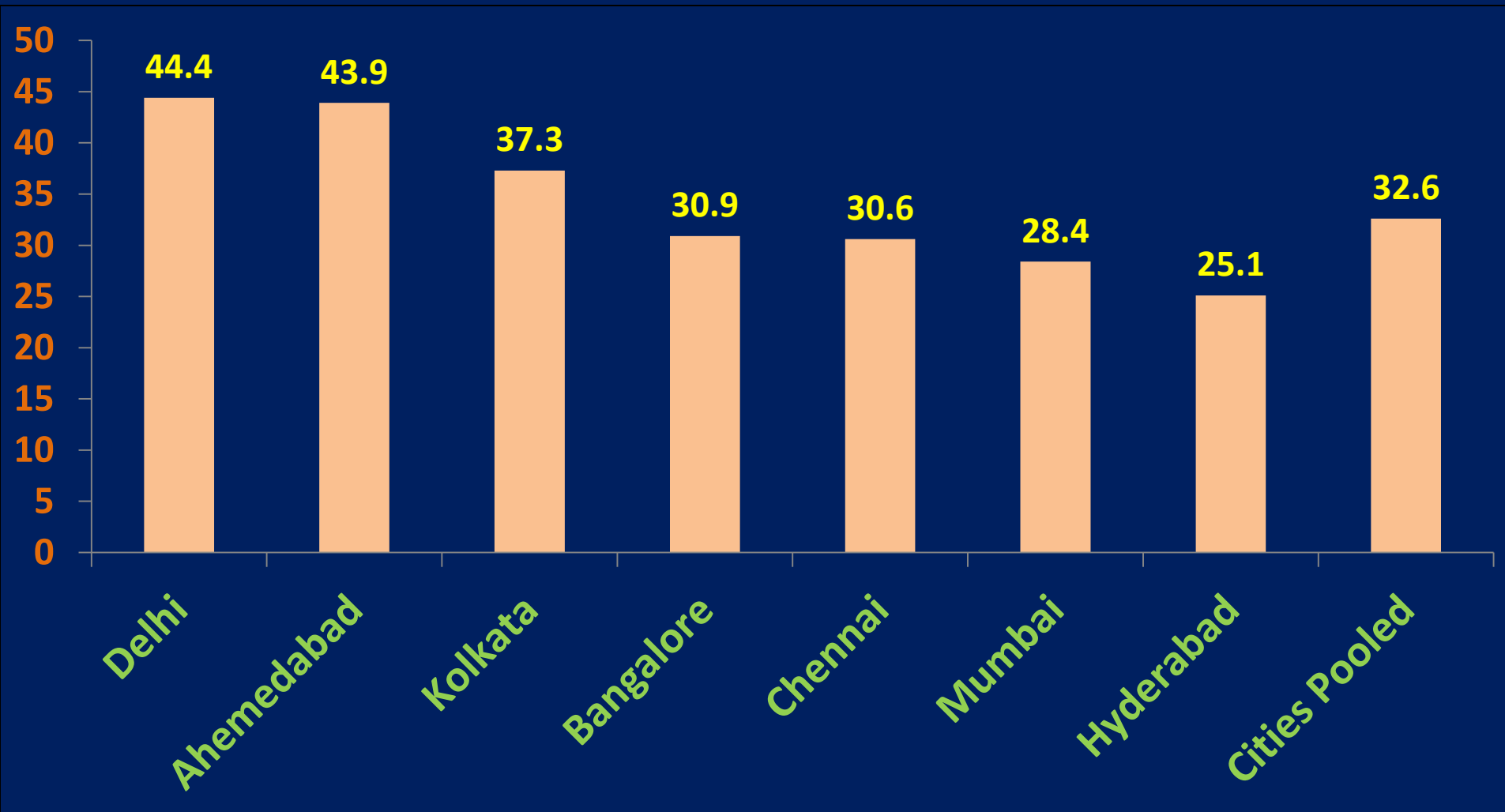
Mean household consumption of fat (g/CU/day) among Tribal population by time trends



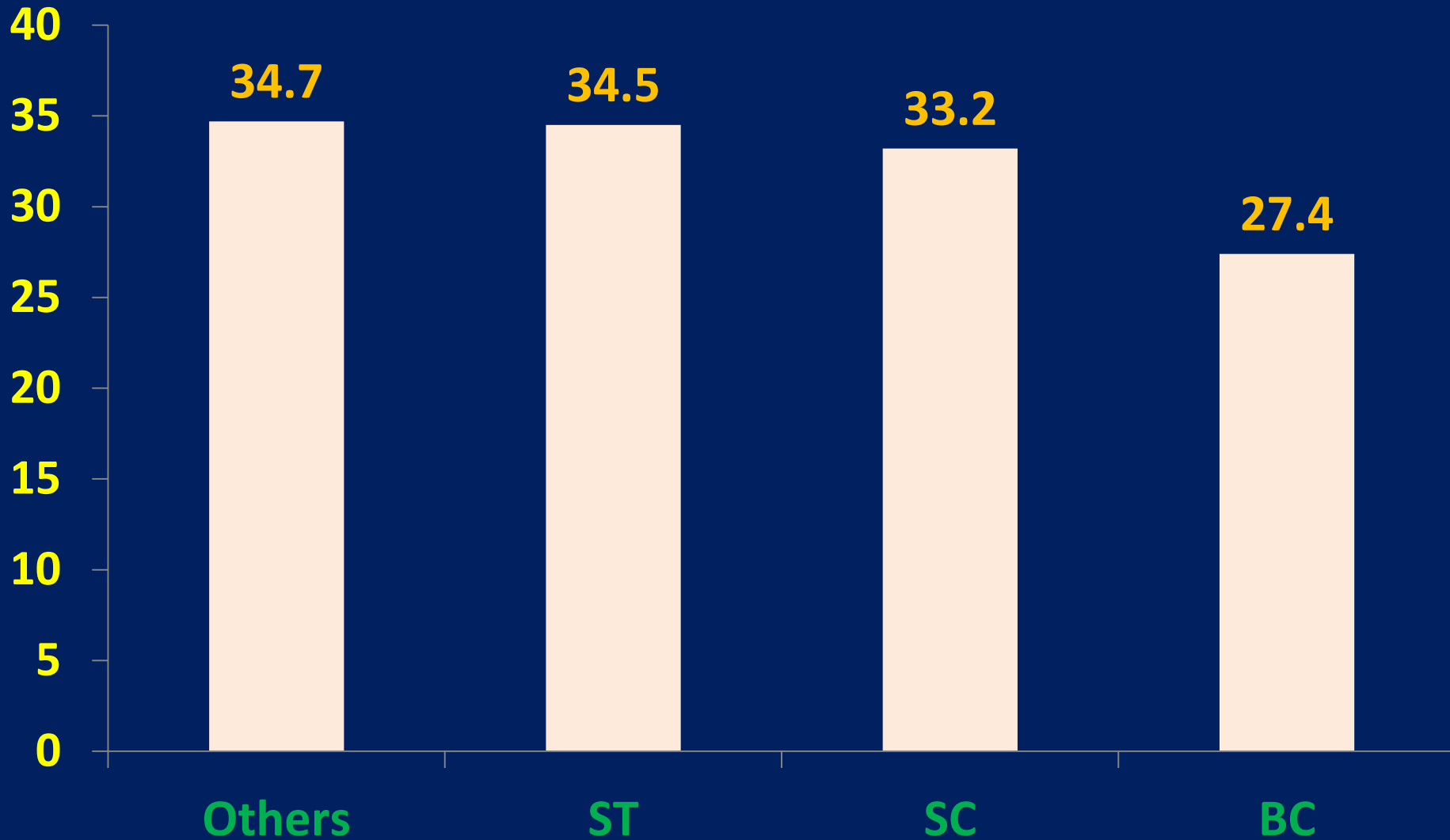
TIME TRENDS IN THE CONSUMPTION OF *VISIBLE FATS* (g/CU/day) AMONG RURAL POPULATION



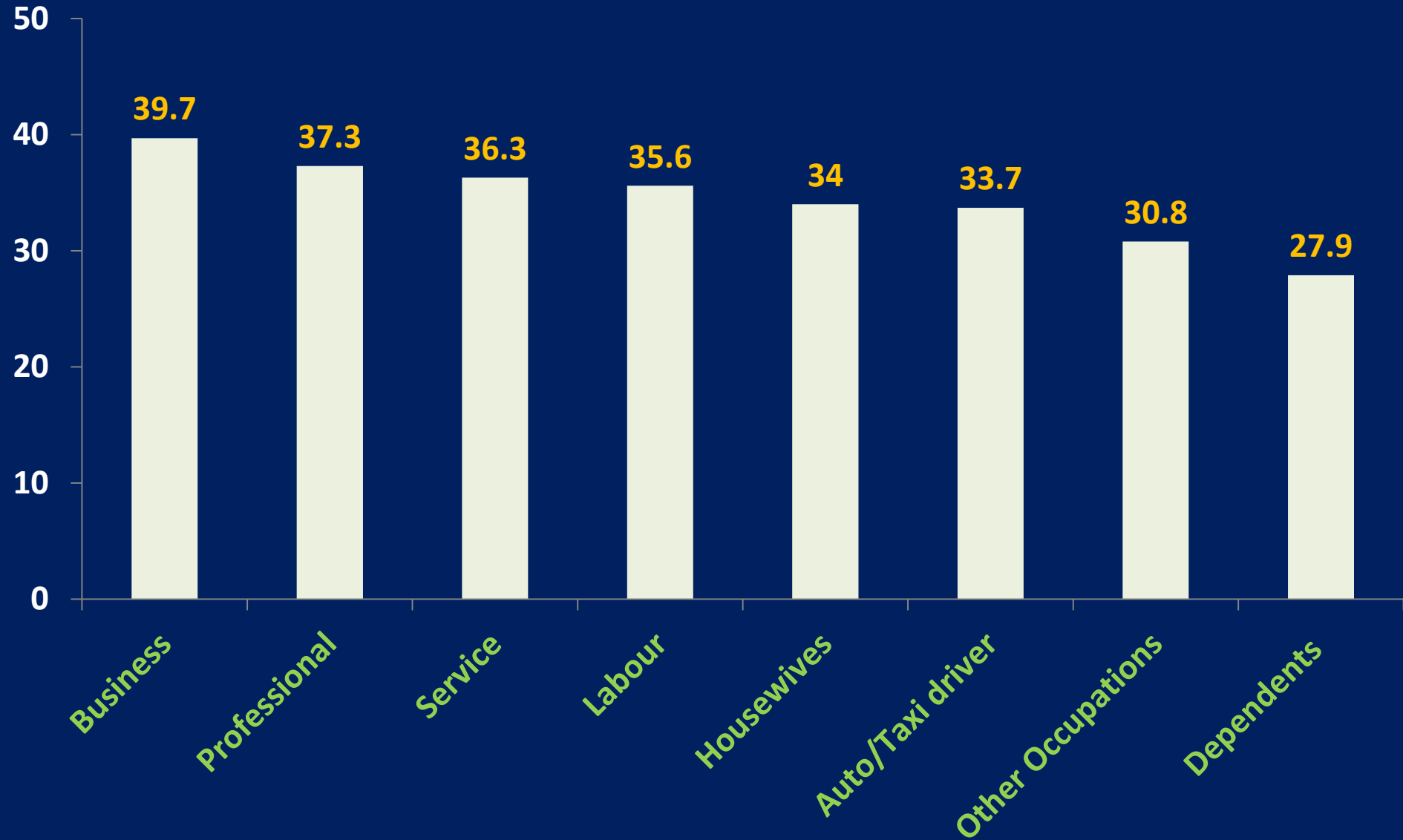
average consumption of Visible Fat (g/day) among urban population in 7 metro cities of India



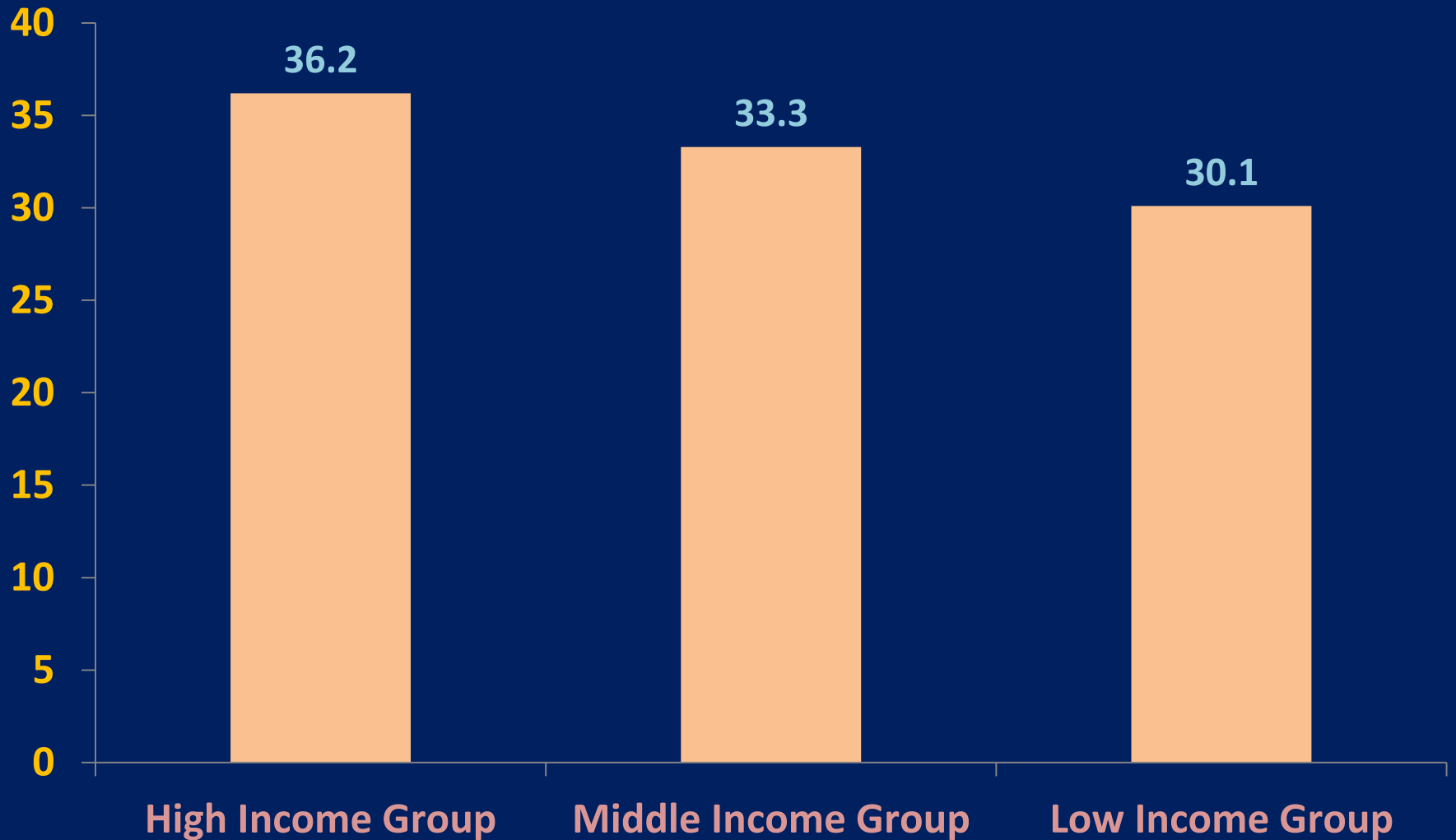
Average intake of Visible Fat (g/day) by Community



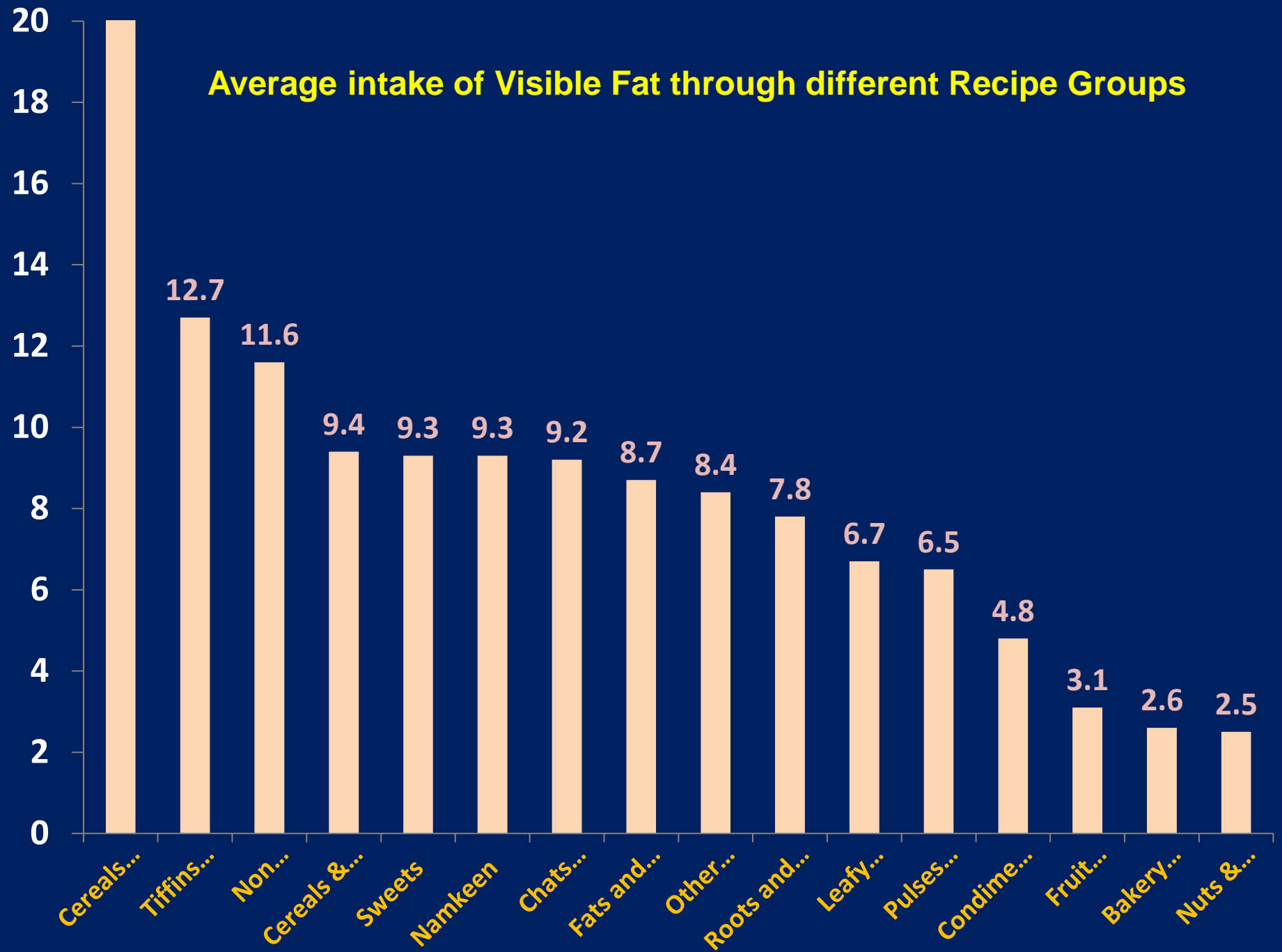
Average intake of Visible Fat (g/day) by Occupation



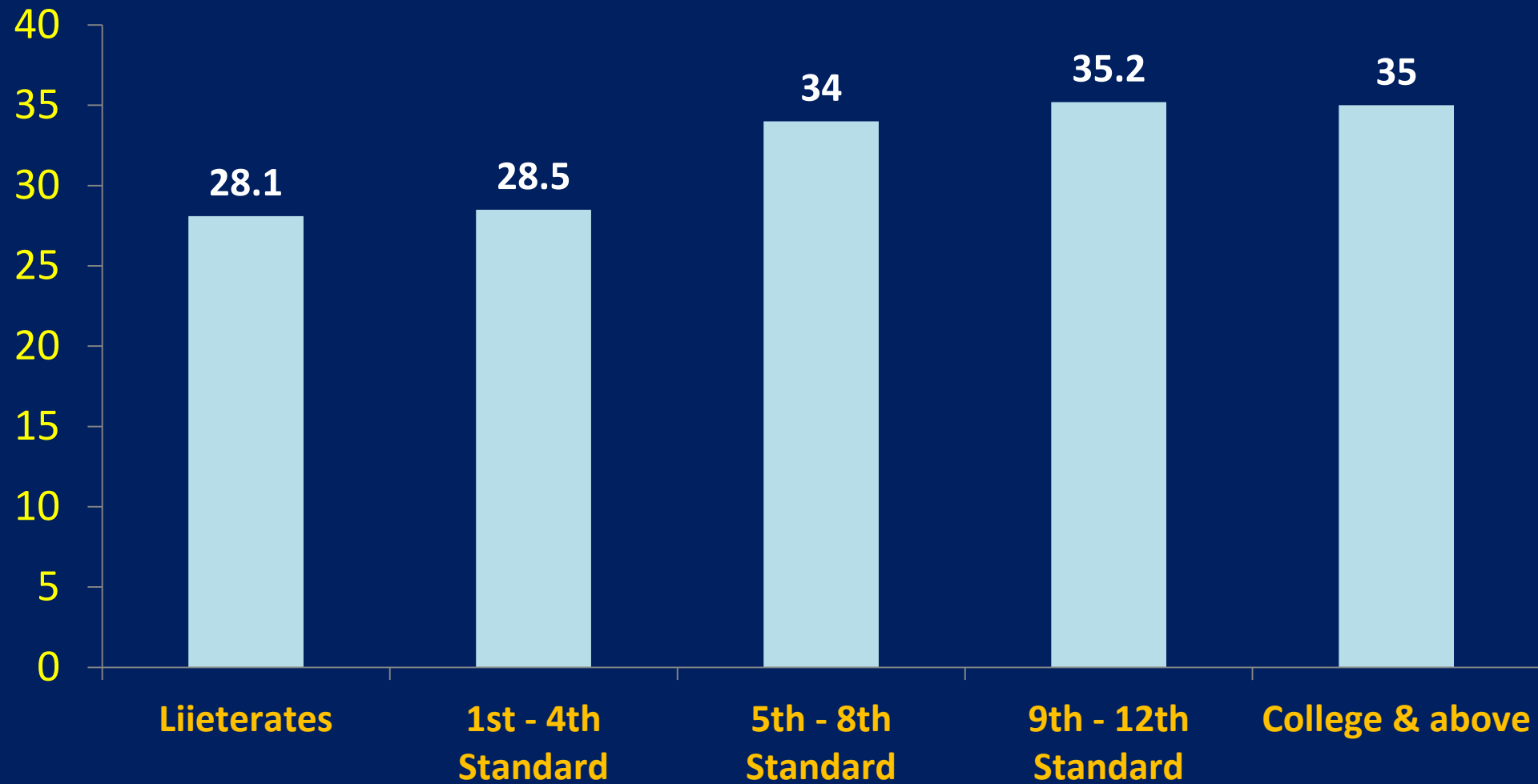
Average intake of Visible Fat (g/day) by Income Groups



Average intake of Visible Fat through different Recipe Groups



Average intake of Visible fat by level of Education



Association between levels of energy derived from fat and prevalence of hypertension among rural men and women in 10 states in India

Gender	variable	N	% Energy consumed from dietary fat			p value
			<15E%	15-20E%	≥20E%	
<i>Hypertension</i>						
Men	Normotensives	8151	80.0	77.7	73.4	0.0001
	Hypertensives	2235	20.0	22.3	26.6	
Women	Normotensives	10495	79.1	78.0	78.9	NS
	Hypertensives	2812	20.9	20	21.1	
<i>General obesity (BMI ≥25)</i>						
Men	CED (BMI <18.5)	3570	36.3	34.3	27.9	0.0001
	Normal	5711	55.4	53.5	56.4	
	BMI 18.5-<25.0					
	Overweight/Obesity (BMI≥25)	1066	8.4	12.2	15.7	
Women	CED (BMI <18.5)	4585	37.8	30.8	27.8	0.0001
	Normal	6710	50.3	51.7	50.5	
	BMI 18.5-<25.0					
	Overweight/Obesity (BMI≥25)	1957	11.9	17.5	21.7	

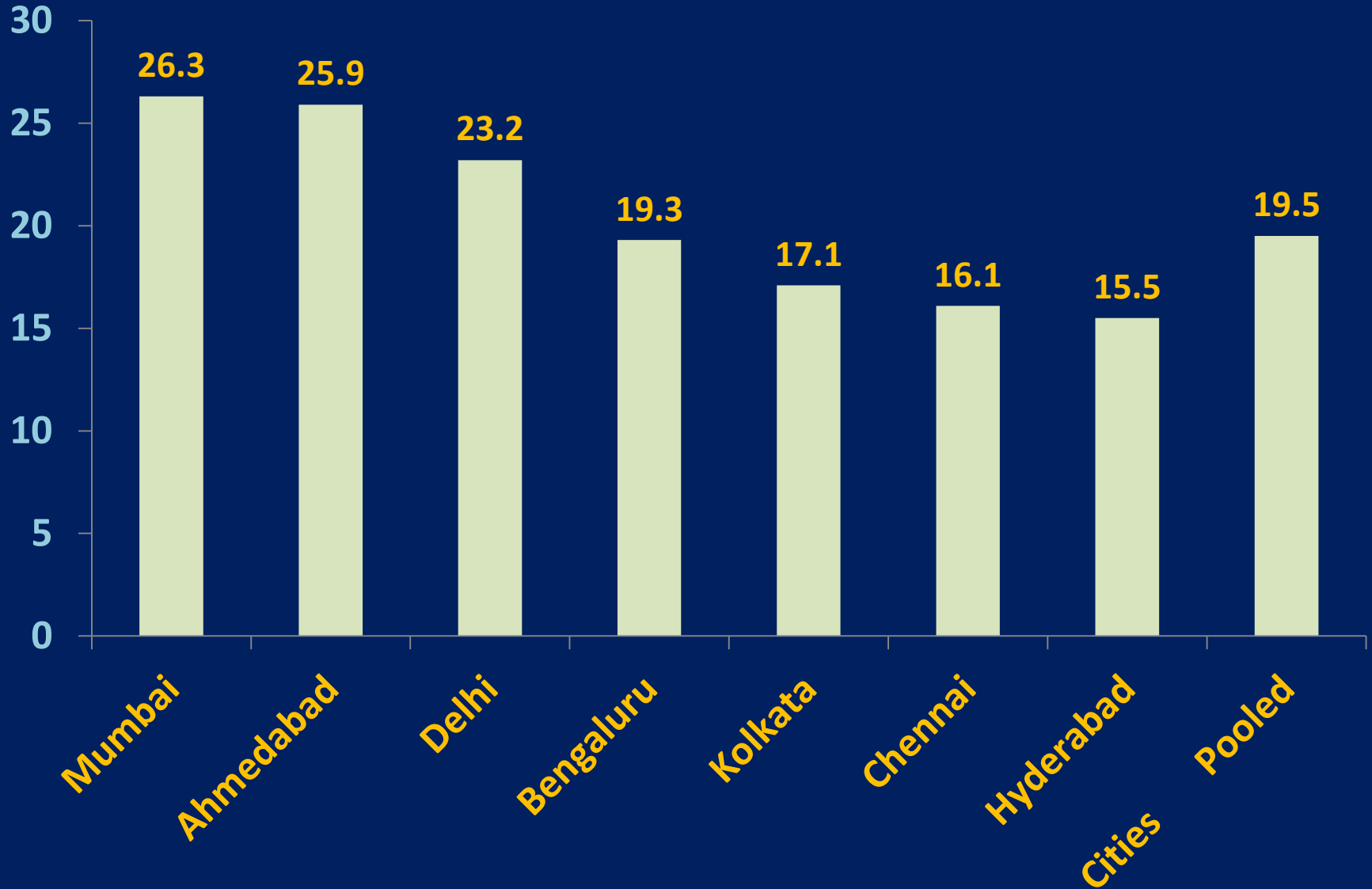
Association between levels of energy derived from fat and prevalence of hypertension among rural men and women in 9 states in India

Gender	variable	N	% Energy consumed from dietary fat			p value
			<15E%	15-20E%	≥20E%	
Abdominal Obesity						
Men	Normal	8931	89.0	83.6	77.7	0.0001
	Abdominal obesity	1440	11.0	16.4	22.3	
Women	Normal	10194	79.9	73.6	69.1	0.0001
	Abdominal obesity	3093	20.1	26.4	30.9	
Central obesity						
Men	Normal	5016	48.8	50.4	44.5	0.001
	Central obesity	5355	51.2	49.6	55.5	
Women	Normal	4851	35.4	38.2	38.6	0.002
	Central obesity	8433	64.6	61.8	61.4	

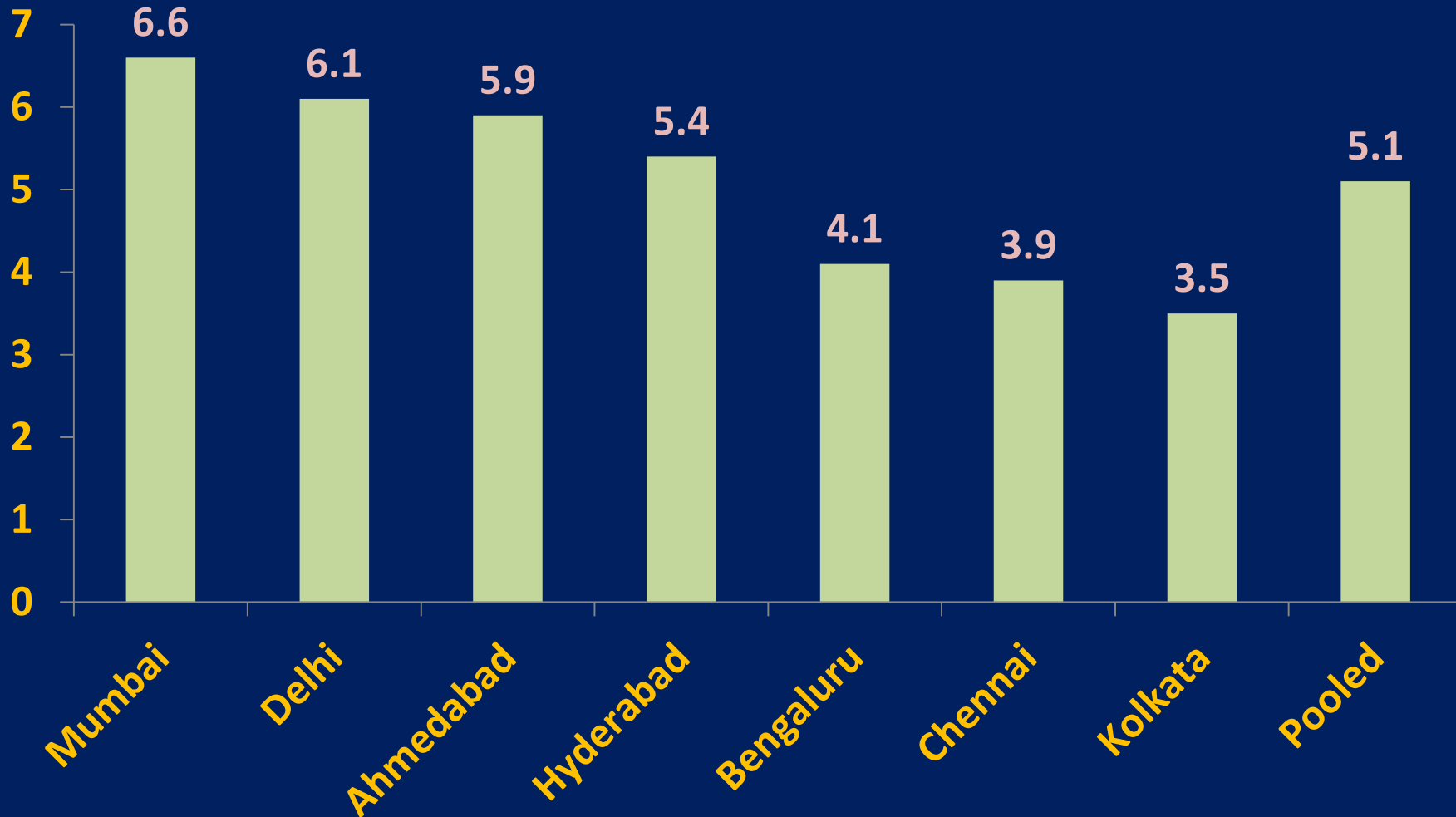
RESULTS

**SUGAR CONSUMPTION
AND TIME TRENDS DATA**

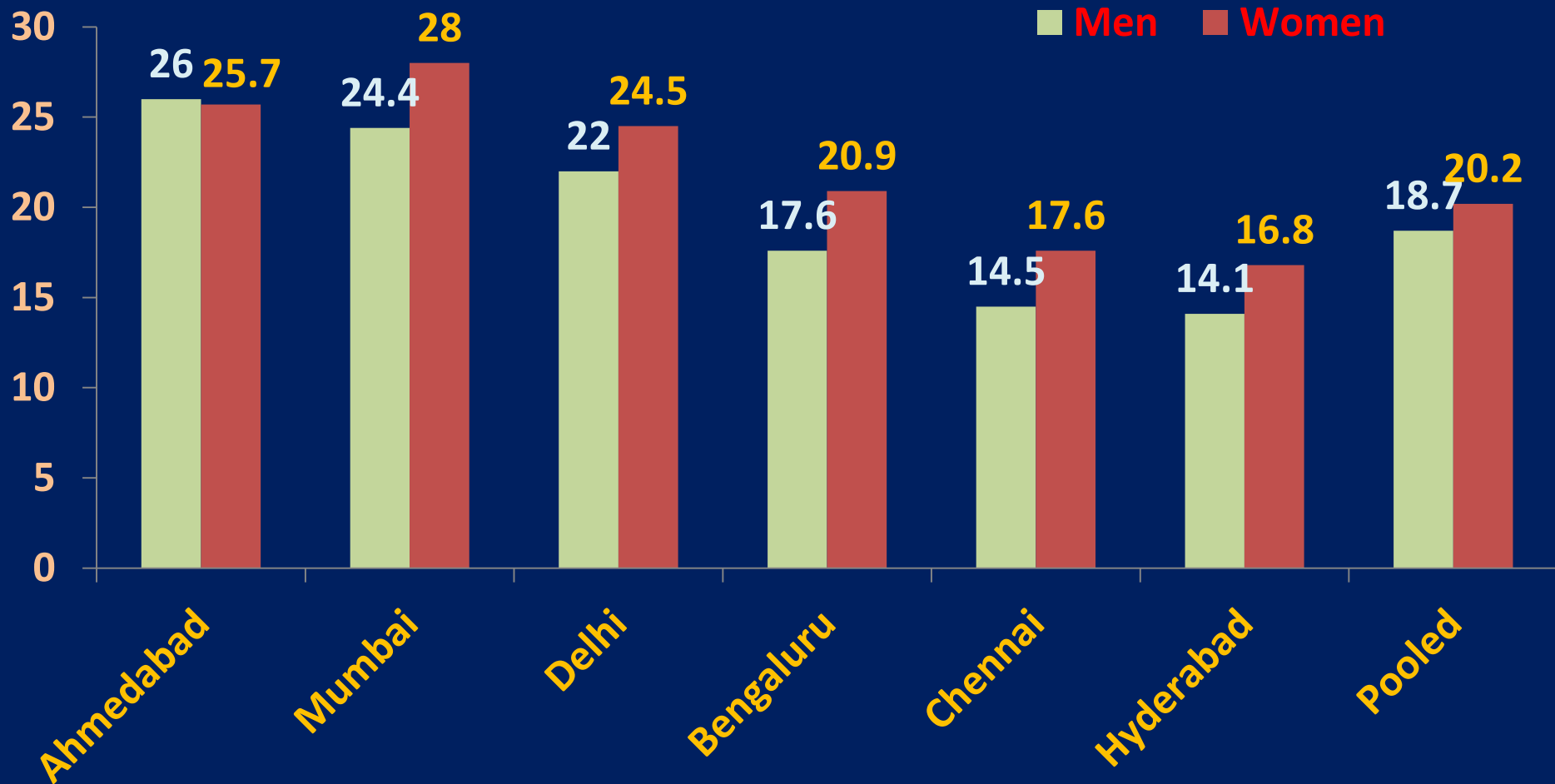
Average intake of added Sugar (g/day) in metro cities of India



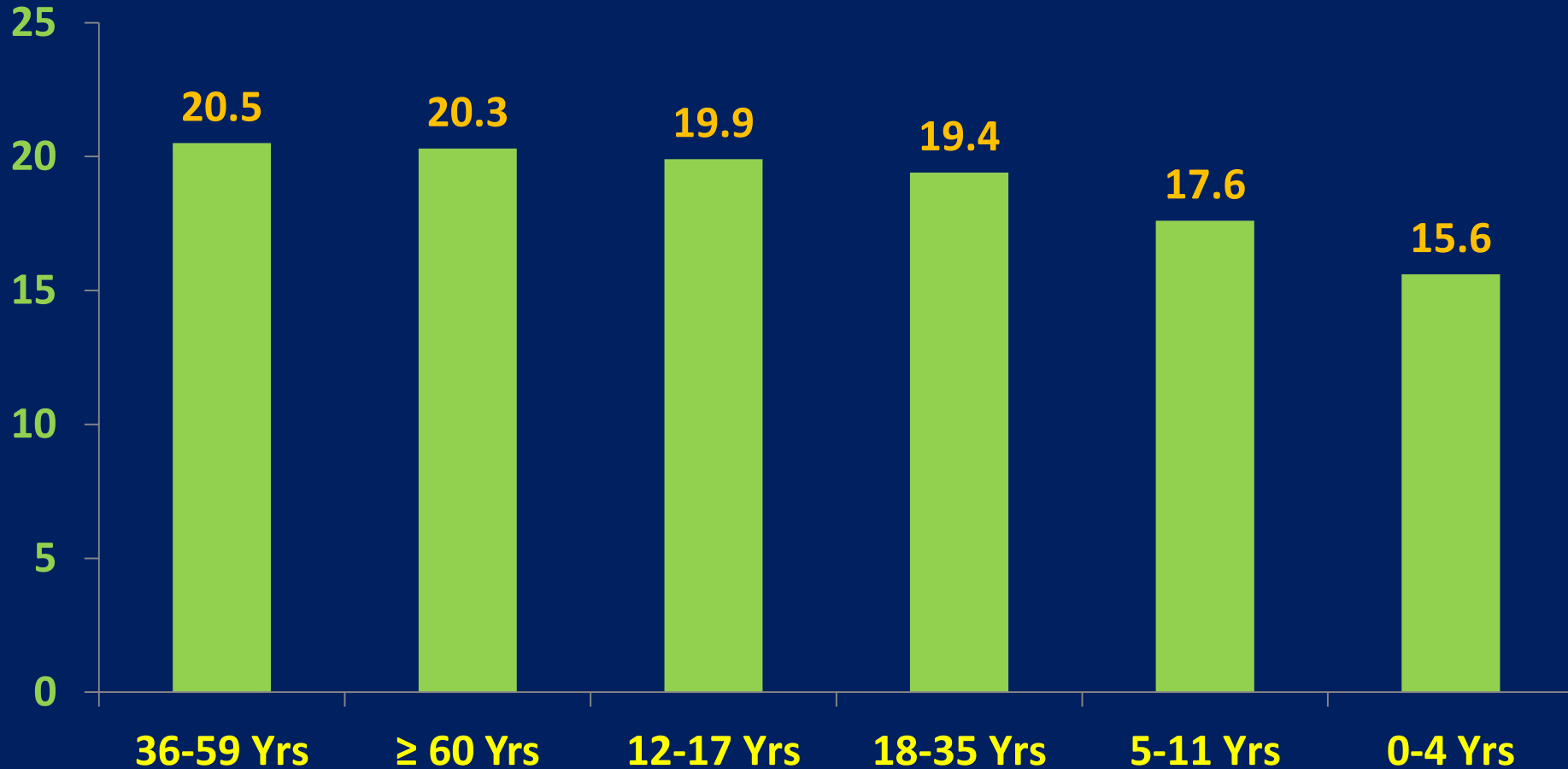
Percentage of Energy through Added Sugar to the total Energy



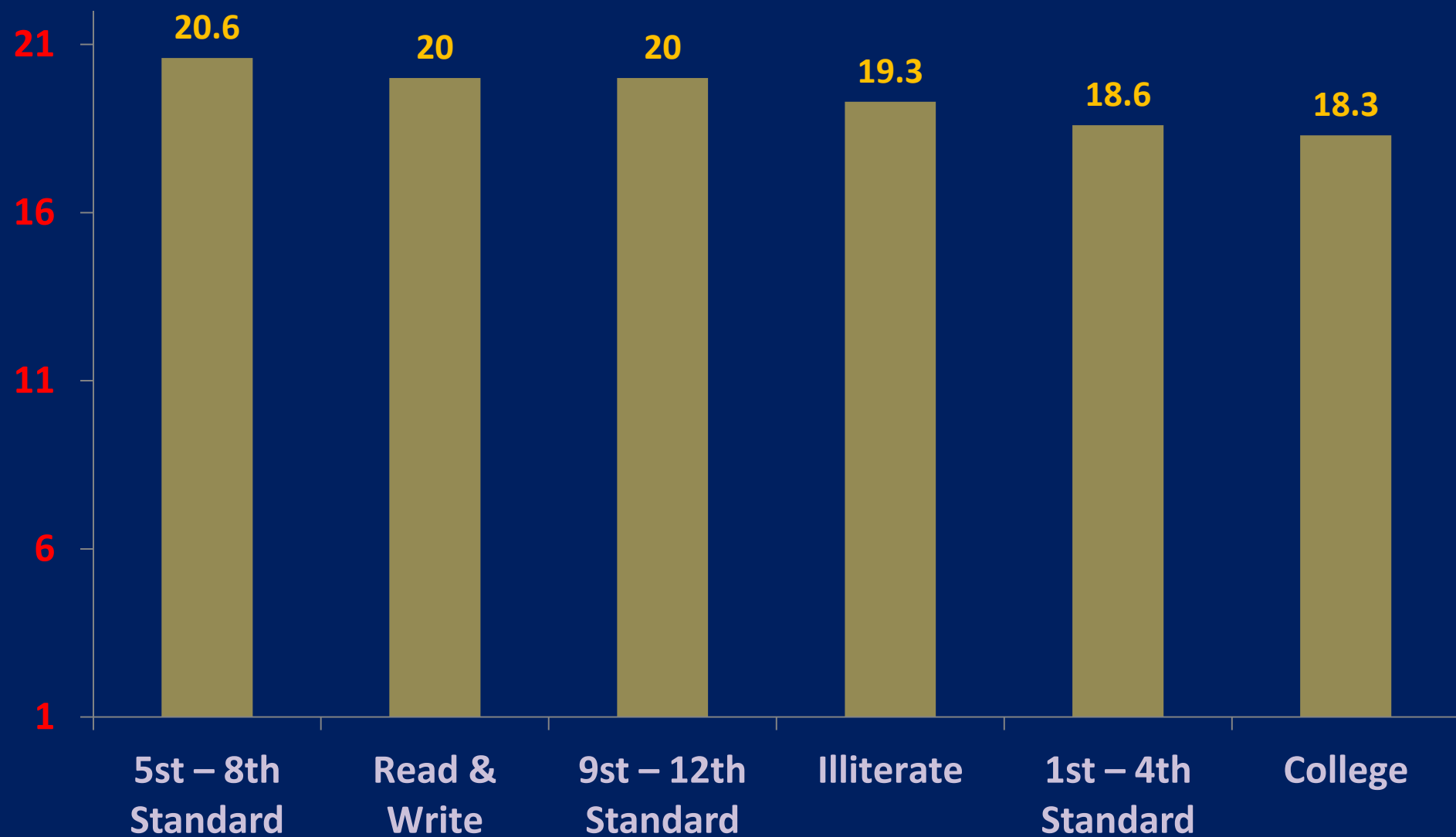
Average Intake of Sugar in Metro Cities in India by Gender



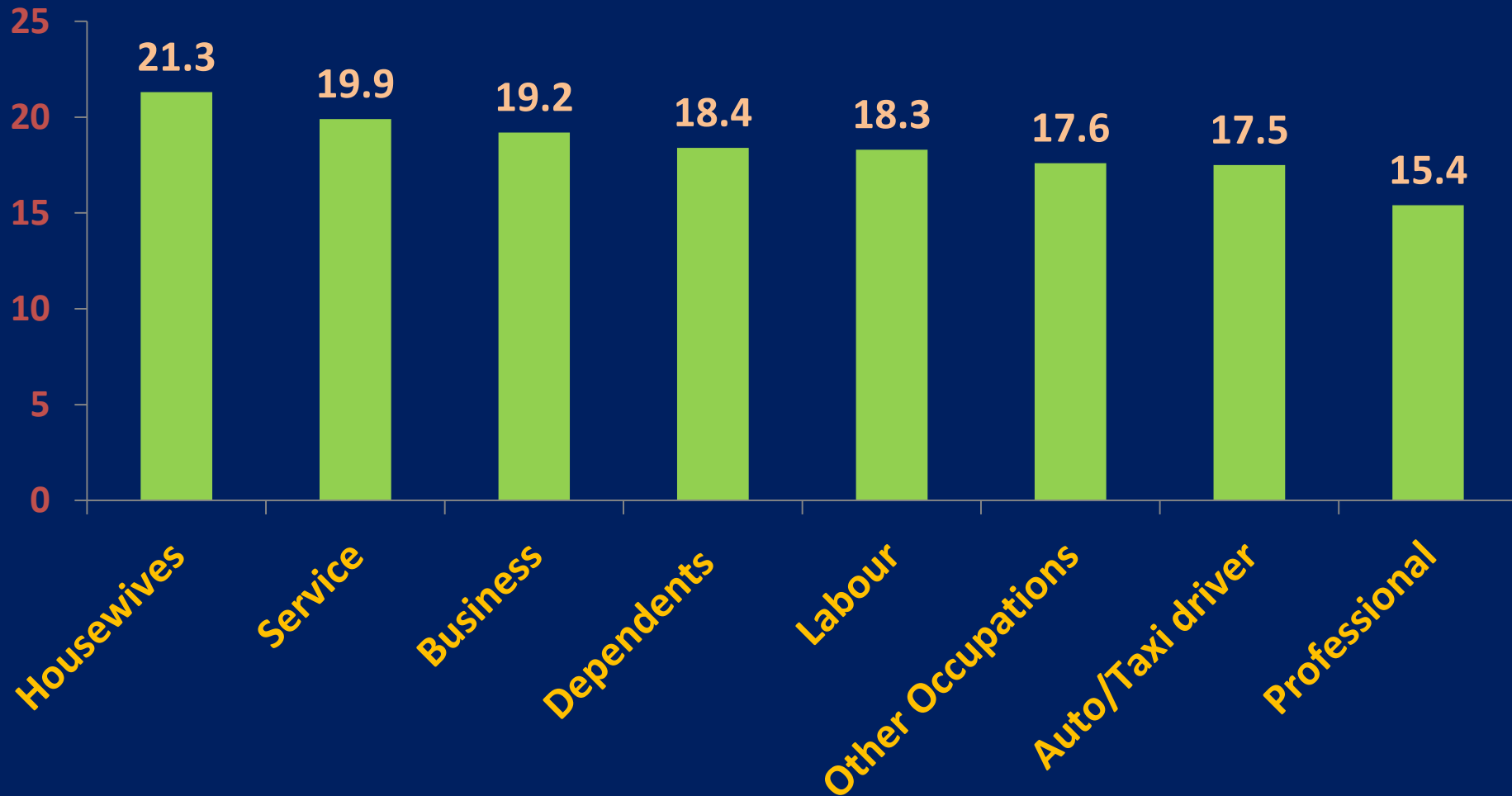
Average intake of added Sugar (g/day) among urban population in different age groups



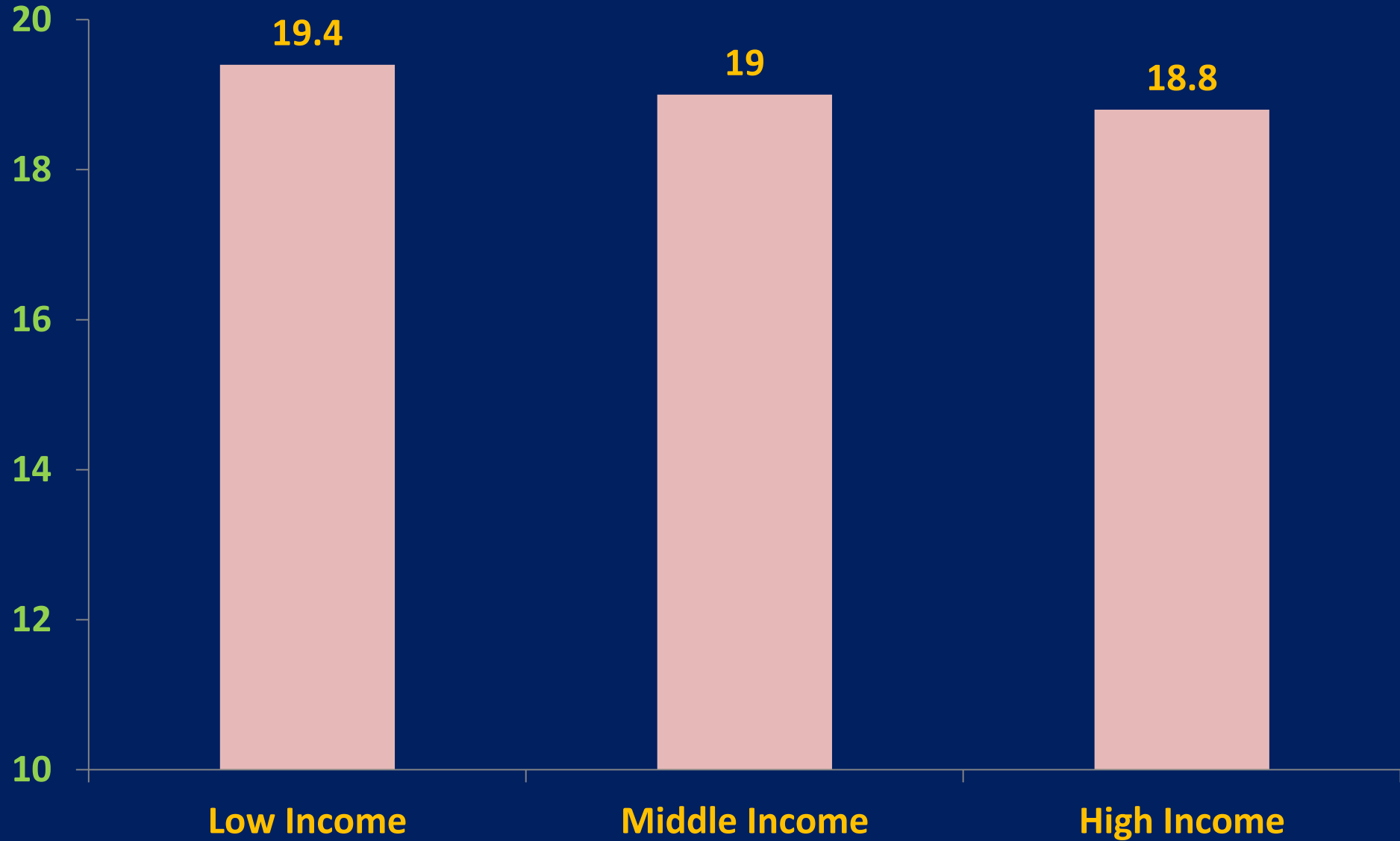
Average intake of Sugar (g/day) among urban population by Literacy Status



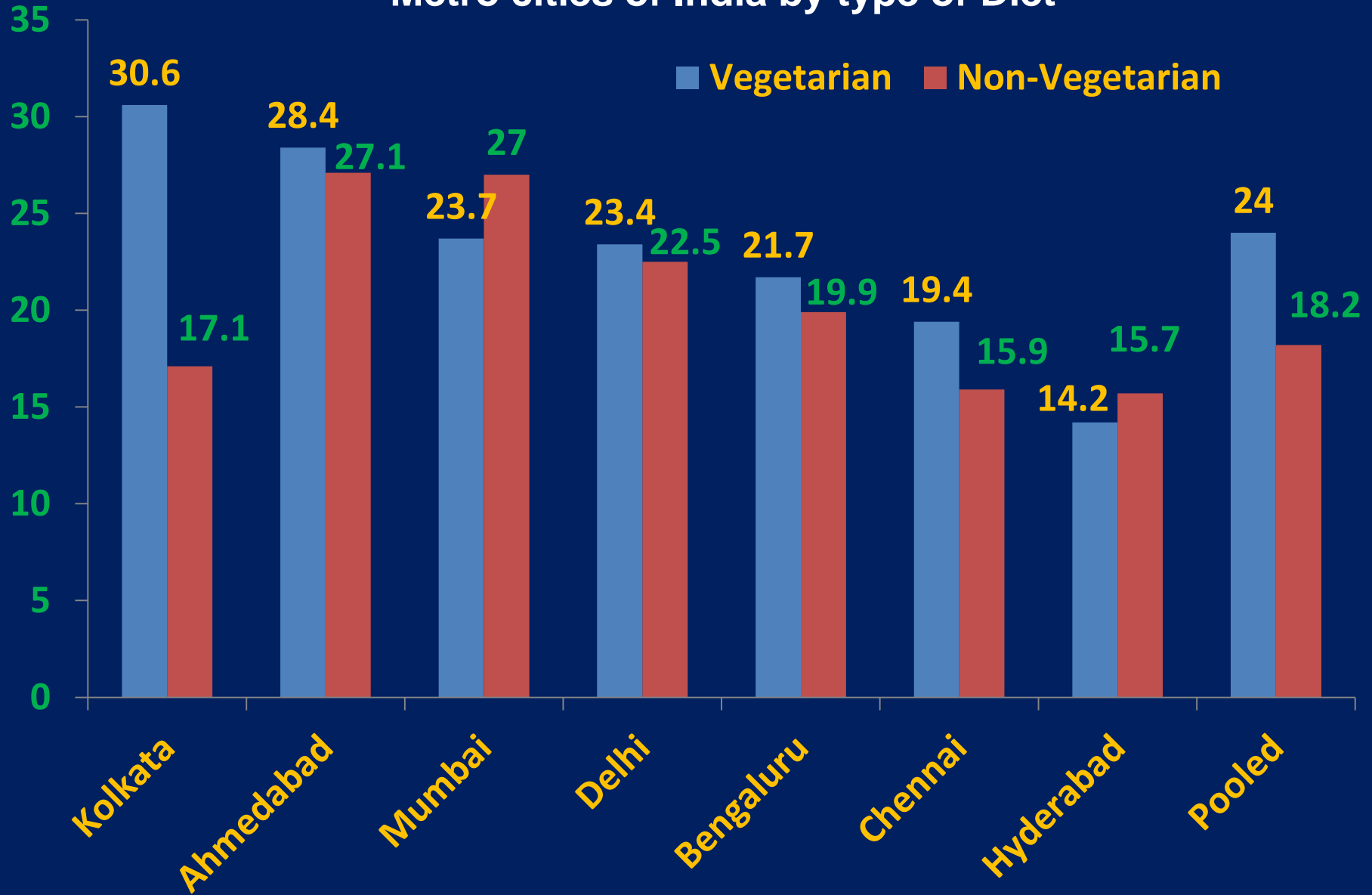
Average intake of Sugar (g/day) among urban population by Occupation Groups



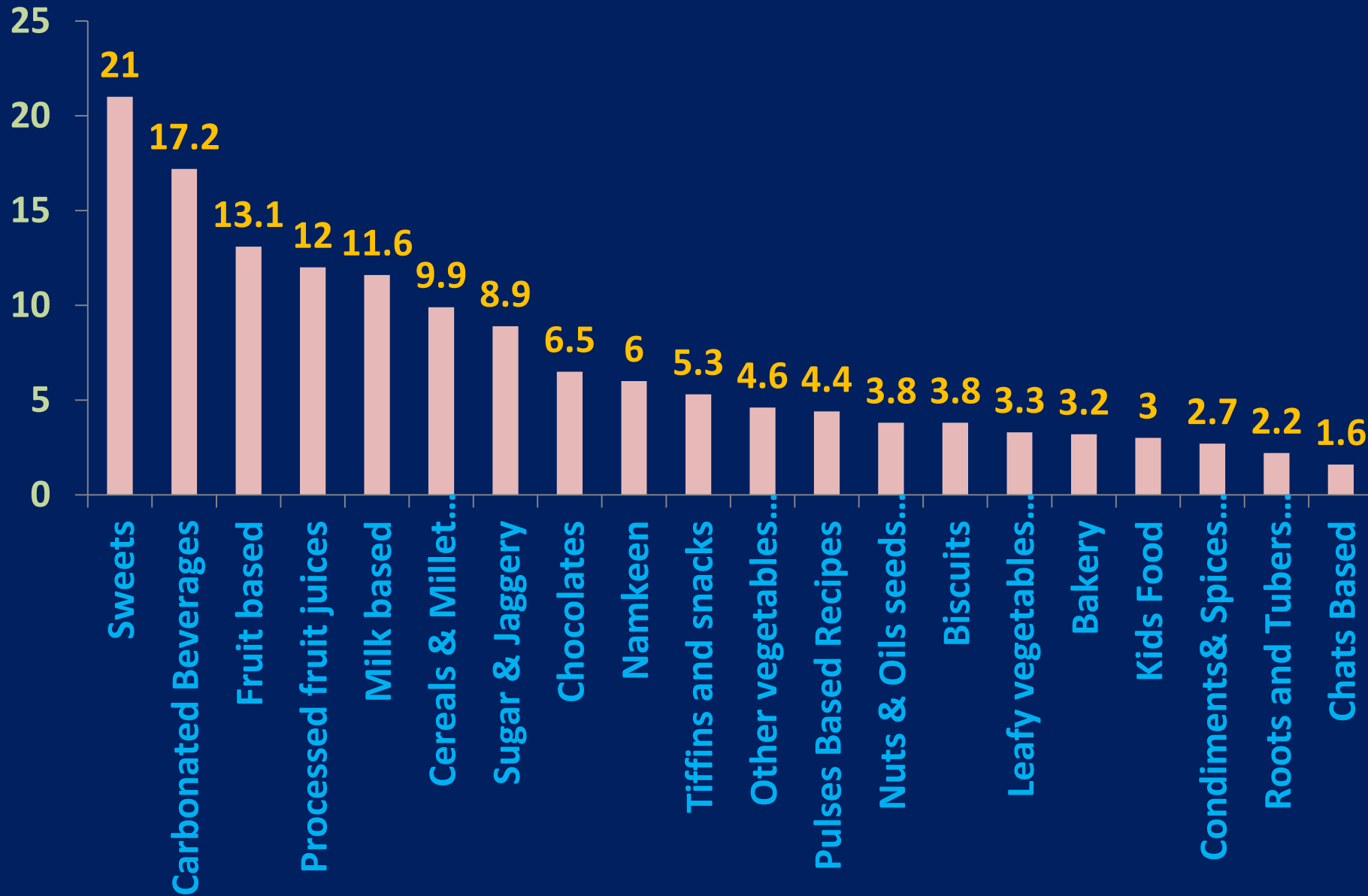
Average intake of Sugar (g/day) among urban population by Income Groups



Average intake of added sugar among urban population of Metro cities of India by type of Diet



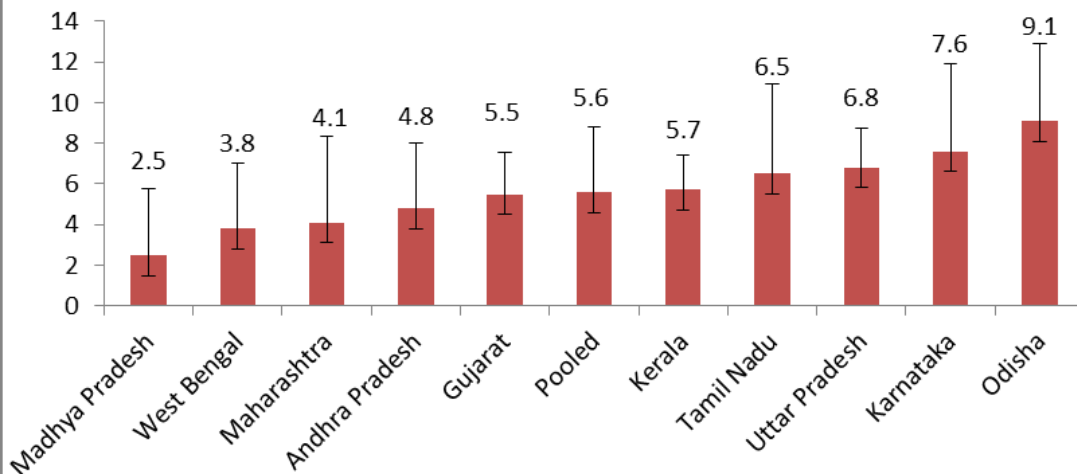
Average intake of Sugar (g) through different recipes



RESULTS

SALT CONSUMPTION DATA

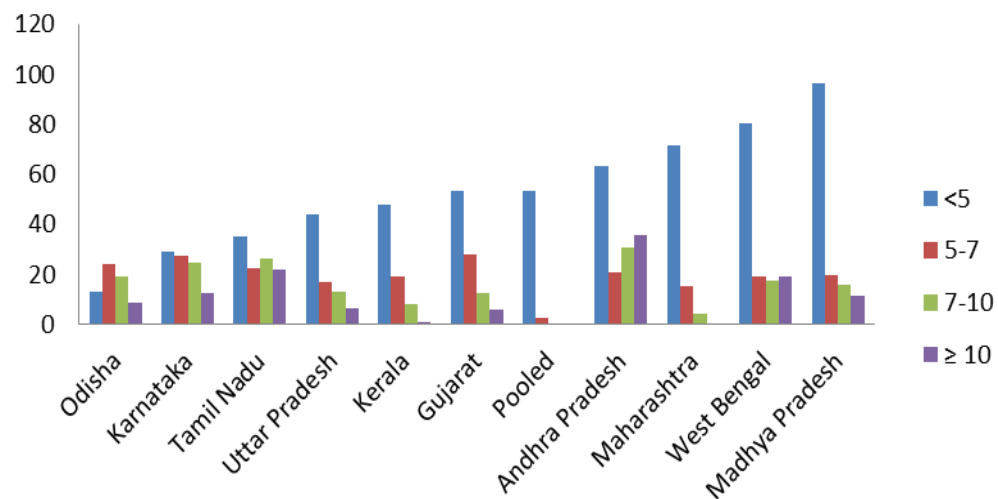
Mean salt consumption (g/CU/Day) by State among rural communities by state – NNMB survey 2011-2012



Salt (NaCl) consumption was maximum in the state of Odisha (9.1g/CU/day), followed by Karnataka (7.6g/CU/day) and Uttar Pradesh (6.8g/CU/day), while it was minimum in the state of MP (2.5g/CU/day).

Half of the population (53.2%) was consuming salt <5g/CU/day as suggested by the WHO. However, the proportion of population consuming salt 7-10g/CU/day was maximum in the state of Odisha (30.6%) and Karnataka (26.6%).

Frequency distribution of salt consumption (g/CU/Day) among rural communities by state – NNMB survey 2011-2012



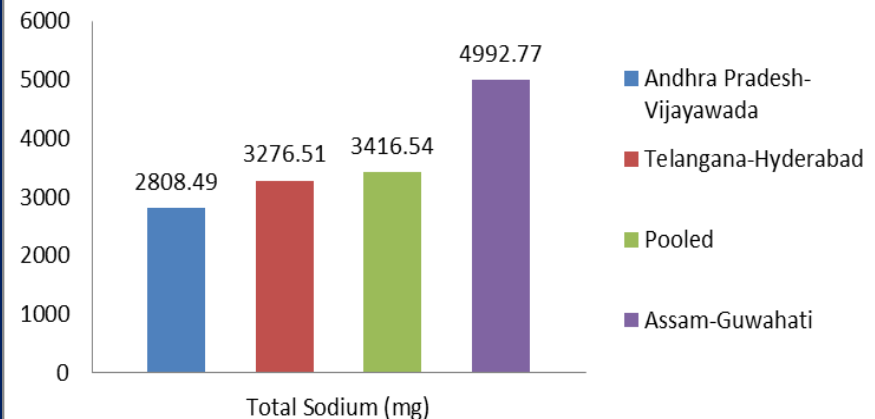
Mean Consumption of Salt and Sodium (Na) through Dietary consumption and invisible salt in the foods in Hyderabad, Vijayawada & Guwahati cities

State & City	N	Salt (NaCl) (g)	Mean Sodium (Na) through added salt (mg)	Mean Na Through food (mg)	Total Na through added salt and food (invisible)
Telangana-Hyderabad	160	8.4	3276	0.51	3276.51
Andhra Pradesh-Vijayawada	67	7.2	2808	0.49	2808.49
Assam - Guwahati	40	12.8	4992	0.77	4992.77
Total	267	8.8	3416	0.54	3416.54

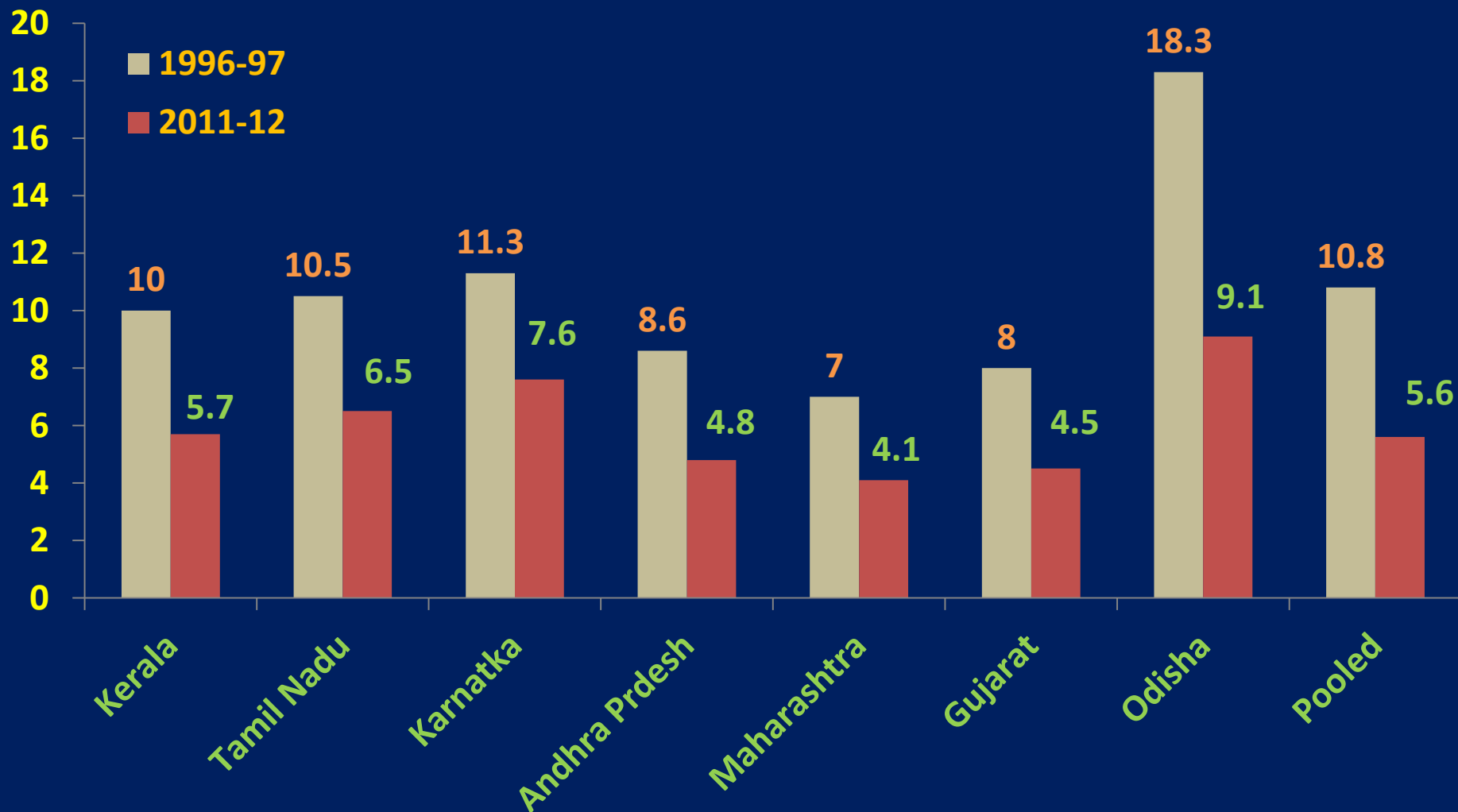
Mean salt (NaCl) intake through diet was maximum in the city of Guwahati (12.8g/person/day), followed by Hyderabad (8.4g/day) and Vijayawada (7.2g/day).

- The mean excretion of sodium (Na) in the spot urine samples was 3.4g/day.
-
- It was ranged from a low 2.8g/day in Vijayawada to a high 5.0g in Guwahati city and Hyderabad (3.3g/day).

Average Consumption of Salt and Sodium by Diet Survey



Mean household consumption of Salt (g/CU/day) among Rural population by time trends



CONCLUSION

- The average daily intake of visible fat among urban population in 7 metro cities was 33g/day, which was higher than the recommended levels of ICMR (20g/CU/day).
- Overall, 18% of the total energy intake was obtained from visible fats.
- In general, adults and elderly people consumed more visible fat than of the other age groups.
- The intake of visible fat was highest in the urban population belonging to 'other forward communities' (34.7g) and surprisingly by scheduled tribes (34.5g), who migrated to urban towns.
- The overall consumption of visible fat was higher in the literate population than the illiterates.
- The intake of visible fat was found to be higher among individuals engaged in business (39.7g), professionals (37.3g) and service men (36.3g) and low among housewives (34g/day).
- The highest consumption of visible fat was observed among high income group (36.2g), followed by middle income (33.3g) and lower income groups (30.1g).

CONCLUSION

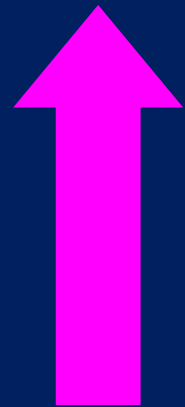
- The total sugar consumption levels were within the suggested levels of ICMR (30g/CU/day).
- The population of Mumbai (26.3g/day) and Ahmedabad cities (25.9g/day) were consuming more added sugar than the other 5 cities.
- Overall, the percent (%) of energy from added sugar, to the total energy was about 5%.
- Older adults (35-59years) and elderly urban population were consuming more added sugars compared to other age groups.
- The intake of added sugar was high in the low educated population than in the higher educated population.
- It was surprising to find that intake of added sugar was higher among laborers (18.3g) compared to professionals.
- The intake of sugar was high from the recipes such as wheat gruel, rice/corn flakes with milk and oats with milk.
- More amounts of sugar was consumed along with masala Tea/Tea, Coffee, Milk Shakes, Lassi etc. were consumed with.

CONCLUSION

- The maximum salt consumption was observed in the state of Orissa (18.3 g/CU/day, followed by Karnataka (11.3 g/CU/day) and Tamil Nadu (10.5 g/CU/day), whereas the minimum was observed in the state of Maharashtra (7 g/CU/day) during 1996-97.
- The Salt consumption was maximum in Orissa (9.1g/CU/day), whereas it was minimum in West Bengal (3.8 g/CU/day) during 2011-12.
- The proportion of population consuming 7-10 g/CU salt per day was maximum in the state of Orissa (30.6%) followed by Karnataka (26.6%) and the minimum was observed in Madhya Pradesh (0.4%).
- The proportion of population consuming >10 g/CU salt per day was maximum in the state of Orissa (35.5%) followed by Karnataka (22.2%).
- Overall, mean Salt consumption was high (10.8 g/CU/day) during 1996-97 and low (5.6 g/CU/day) during 2011-12.
- **FSSAI/NIN – RECOMMENDATION**
- **THODA KAM FAT, SUGAR AND SALT**

TAKEHOME MESSAGE

- Fats
- Sugars
- Salt
- Fruit and vegetables
- Dietary Fibre
- Physical activity
- Drink plenty of water





WISH YOU HEALTHY LIFE

THANK YOU

*Journey has just begun.
Miles to go...*