

Assessing Gap in Food Habits of Diabetic Population in Field Practice Areas of Kims Hubballi

¹Dr. Dattatreya D. Bant, (Professor and HOD); ²Dr. Ganesh Kamalakar Vernekar, (Post-Graduate); ³Dr. Preeti R., (Post-Graduate)
Department of Community Medicine, KIMS, Hubballi

Presenting Author:- Dr. Ganesh Kamalakar Vernekar

Abstract:-

➤ *Background:*

India has the largest population with diabetes. Despite the rising prevalence of Diabetes, data on the dietary profile of the Indian population in relation to the recommendations are scarce. As India has diversity even in diet patterns changing from region to region, the diet plannings are standardised without taking into consideration of the regional variation. This study is intended to know the dietary pattern of diabetic patients of this region and the gaps in their dietary patterns.

➤ *Objectives:*

- To study the diet patterns among the diabetic patients in Hubballi taluk.
- To understand the gaps in food habits among the diabetic patients in Hubballi taluk.
- To understand the diabetic diet and compare it with the recommended dietary plan for diabetic patients recommended by other standards.

➤ *Methodology:*

A cross sectional study was conducted in Adult Diabetic Population of field practice area of KIMS, Hubballi with a semi- structured questionnaire to assess the gap in food habits as per ICMR guidelines and data is analyzed by SPSS version 25.

➤ *Results:*

In our study 35.1% are overweight and 37.7% are obese their mean calorie intake per day is 1500 Kcal/day in that around 50% of carbohydrate is consumed, 25% of protein and 25% of fats is consumed as compared to 40% of carbohydrates, 35% of proteins and 25% of fats recommended for diabetic patients.

➤ *Conclusion:*

From this study, it is evident that majority of the diabetic population have adequate knowledge about diabetic diet and practices that are to be followed. It is also evident that carbohydrate consumption is more and protein is less in our study participants and there is a need of formulating a diet plan according to the regional diet pattern and personal BMI.

Keywords:- BMI Variation; Diabetes Mellitus; Gaps in Food Habits; South India.

I. INTRODUCTION

India has the largest population with diabetes next to China. The difference in the growing trends in the prevalence of diabetes within the country is least explored in India. The incidence of diabetes is higher in low socioeconomic group (LSEG) in developed countries.¹ Recent studies conducted in developing countries like India¹ also showed similar trends in the prevalence of diabetes in LSEG compared to the study conducted a decade earlier.¹ Although, the risk factors associated with diabetes are similar between the socioeconomic groups, the awareness levels and the insight of the people of LSES on health care access particularly for the screening and management of non-communicable diseases differ¹.

Despite the rising prevalence of Diabetes in India, data on the dietary profile of the Indian population in relation to the recommendations for prevention of Diabetes are scarce. This study was conducted to assess the dietary intake of a south Indian population in relation to the current dietary recommendations for the management of Diabetes¹.

As India has diversity even in diet patterns which changes from region to region, whereas, the diet plannings are standardised without taking into consideration of the regional variation. Hence this study is intended to know the dietary pattern of diabetic patients of this region and the gaps in their dietary patterns.

➤ *Objectives*

- To study the diet patterns among the diabetic patients in Hubballi taluk.
- To understand the gaps in food habits among the diabetic patients in Hubballi taluk.
- To understand the diabetic diet and compare it with the recommended dietary plan for diabetic patients recommended by other standards.

II. METHODOLOGY

- Study_Setting: A cross sectional study was conducted in urban, rural and semi urban field practice area of KIMS, Hubballi.
- Study Population: Adult Diabetic Population (above 20 years)
- Study Duration: 18/09/2023- 07/10/2023
- Study Design: Cross sectional study.

- Type of Sampling: Convenience sampling.
- ✓ Inclusion criteria: General population of Hubballi who are diabetic and gave consent i.e. Study participants.
- ✓ Exclusion criteria: People who are admitted or seriously ill and those who didn't give consent_
- Data Collection Tools: A semi- structured questionnaire was prepared using google forms to access the gap in food habits among selected diabetic population from ICMR guidelines.

• *It Contains the Following Sections:*

- ✓ Personal details
- ✓ Diet information
- ✓ Opinions about Diabetic diet
- ✓ Medical data
- Data Collection Method: Google forms are filled after personal interviews.
- Data Analysis: The data was entered in google forms, excel sheet was downloaded. Data was Cleaned and results were expressed in frequency and percentage. Test of significance. Chi-square was applied wherever required.

III. RESULTS

Table 1: Age Distribution

	Variables	Percentage
Age (in years)	21-40	11.9
	41-60	63.6
	61-80	23.2
	More than 80	1.3

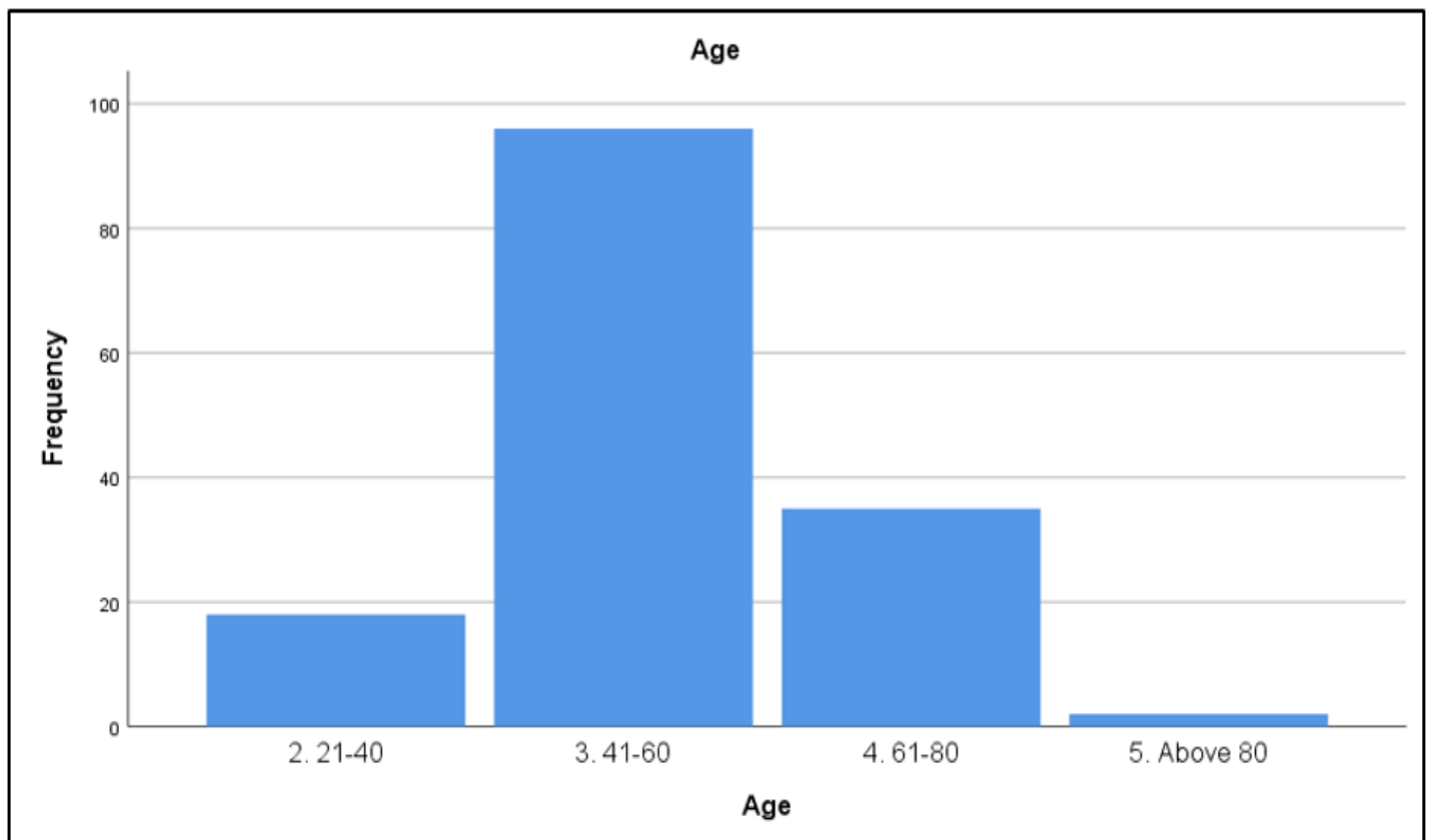


Fig 1: Age

- Observation –Out of 151subjects, majority of them were from the age group of 41-60 accounting for 63.6%.

Table 2: Gender Distribution

	Variables	Percentage
Gender	Male	57
	Female	43

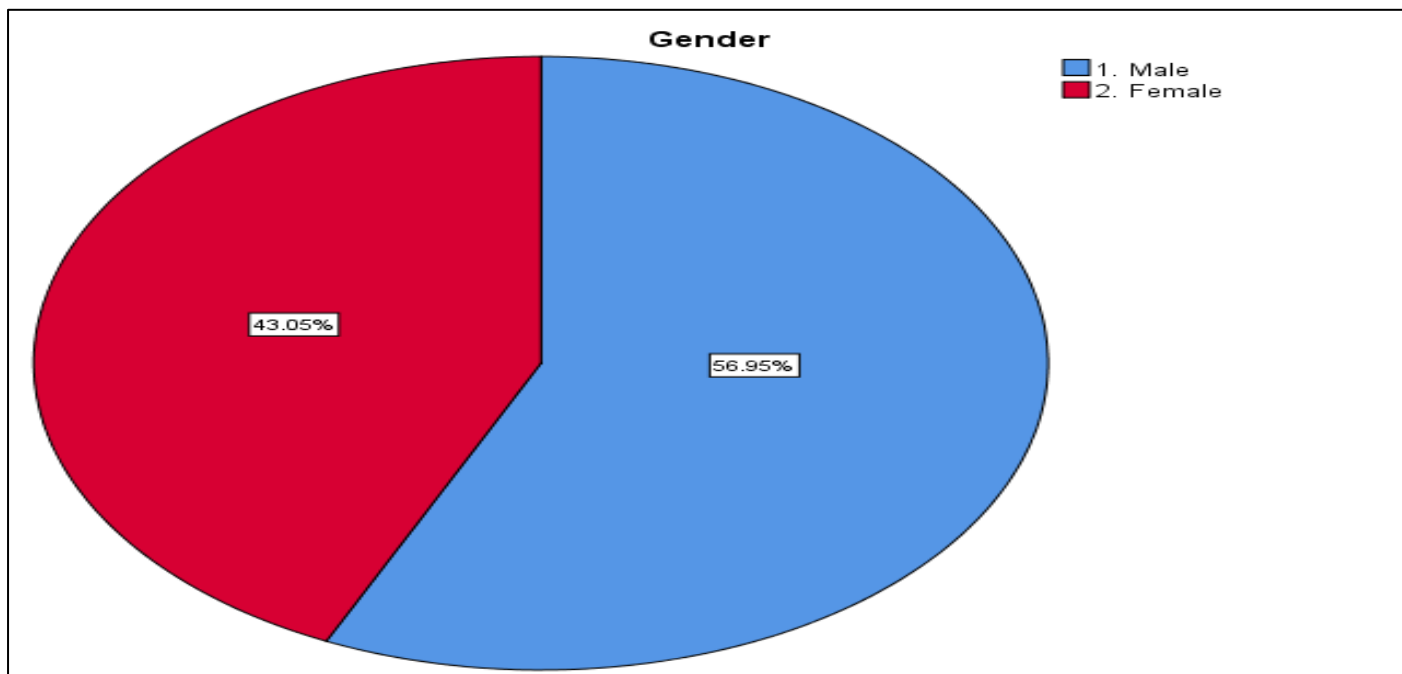


Fig 2: Gender

- Observation- majority of the subjects were male accounting for 57% and females were 43%.

Table 3: Locality Distribution

	Variables	Percentage
Locality	Urban	45
	Semi urban	7.9
	Rural	47

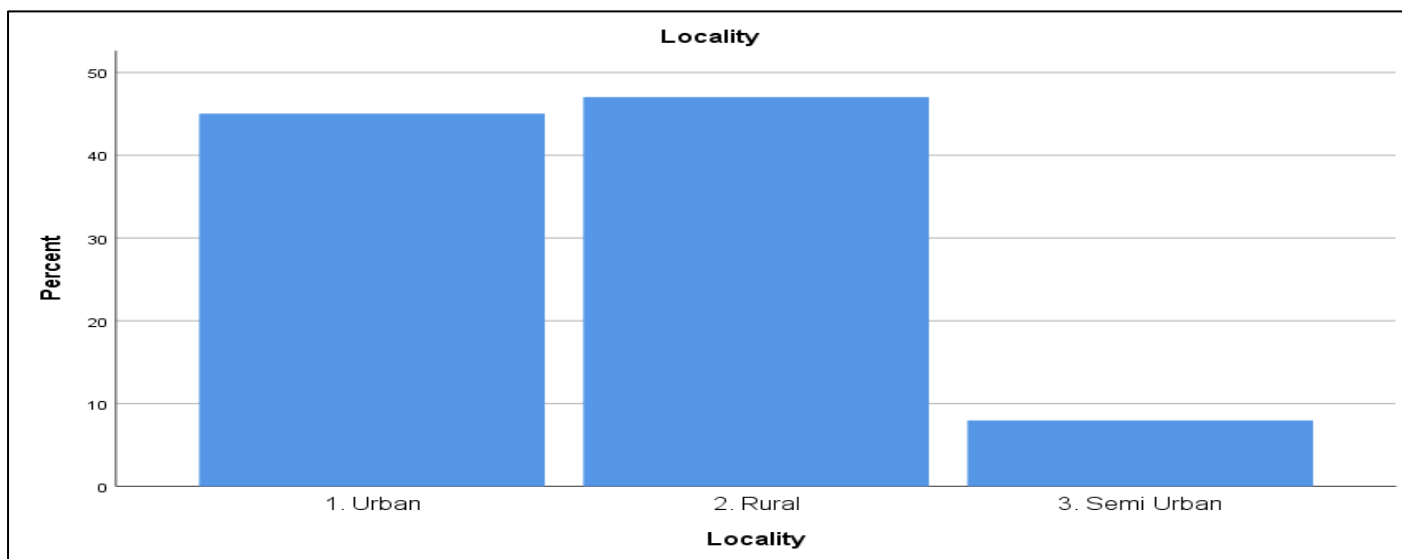


Fig 3: Locality

- Observation – Majority of the subjects belonged to rural locality (47%) followed by urban (45%), semi urban (7.9%)

Table 4: Occupation

Occupation	Variables	Percentage
	Professional and semiprofessional	15.2
	Clerical ,Shop owner, Farmer	20.5
	Skilled Worker	9.3
	Semi Skilled Worker	9.3
	Unskilled	11.3
	Unemployed	34.5

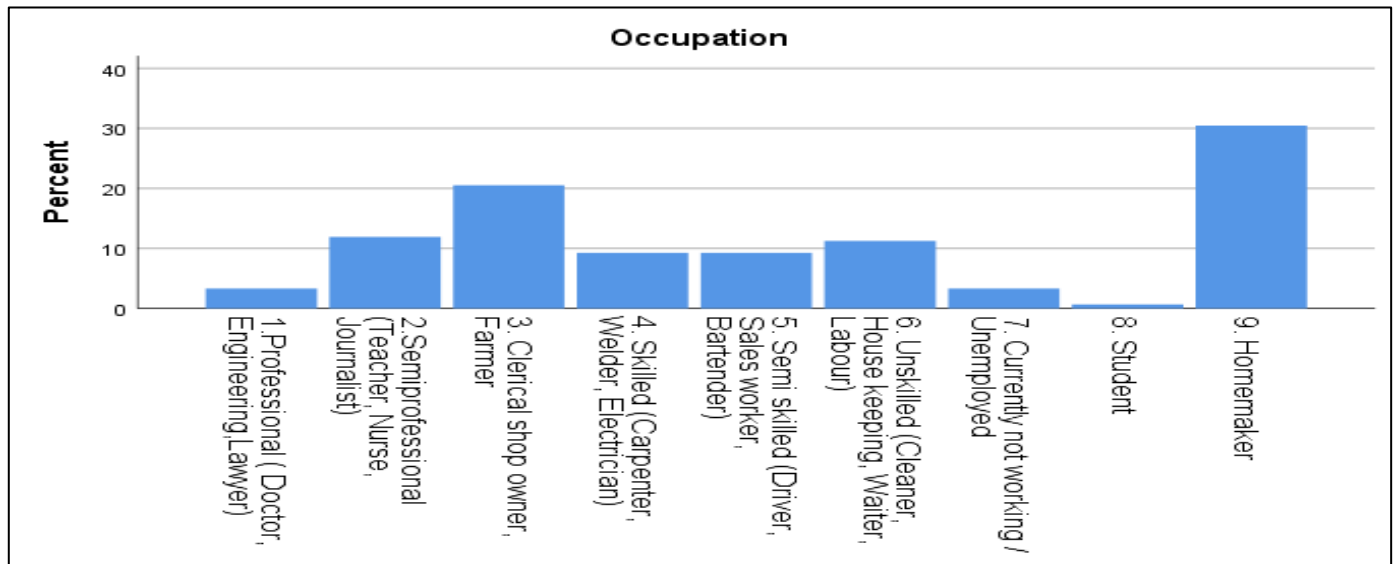


Fig 4: Occupation

- Observation – in the study it was found that majority of the subjects were unemployed (34.5%)

Table 5: Education Status

Education status	Variables	Percentage
	Professional	0.7
	Graduated or Postgraduate	11.2
	Intermediate or Diploma	19.2
	High school certificate	24.5
	Middle school certificate	14.6
	Primary school certificate	9.9
	Illiterate	19.9

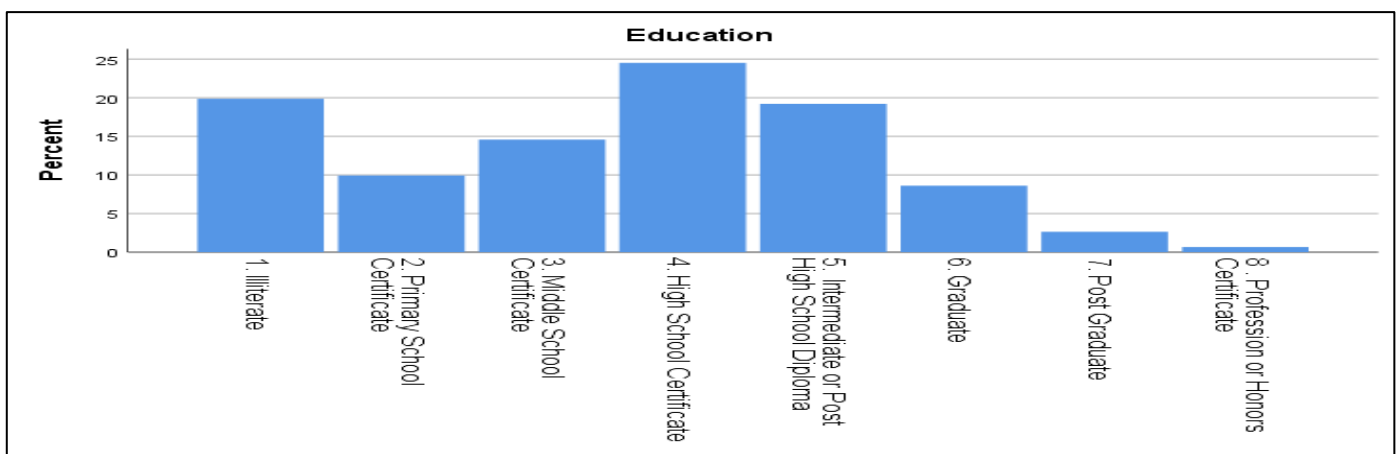


Fig 5: Education Status

- Observation – in the study it was found that majority of the subjects were high-school graduates (24.5%)

Table 6: Income

	Variables	Percentage
Income	Rs. 1272 to Rs. 2543	27.2
	Rs. 2544 to Rs. 4239	30.5
	Rs. 4240 to Rs. 8479	27.8
	> Rs. 8480	14.6

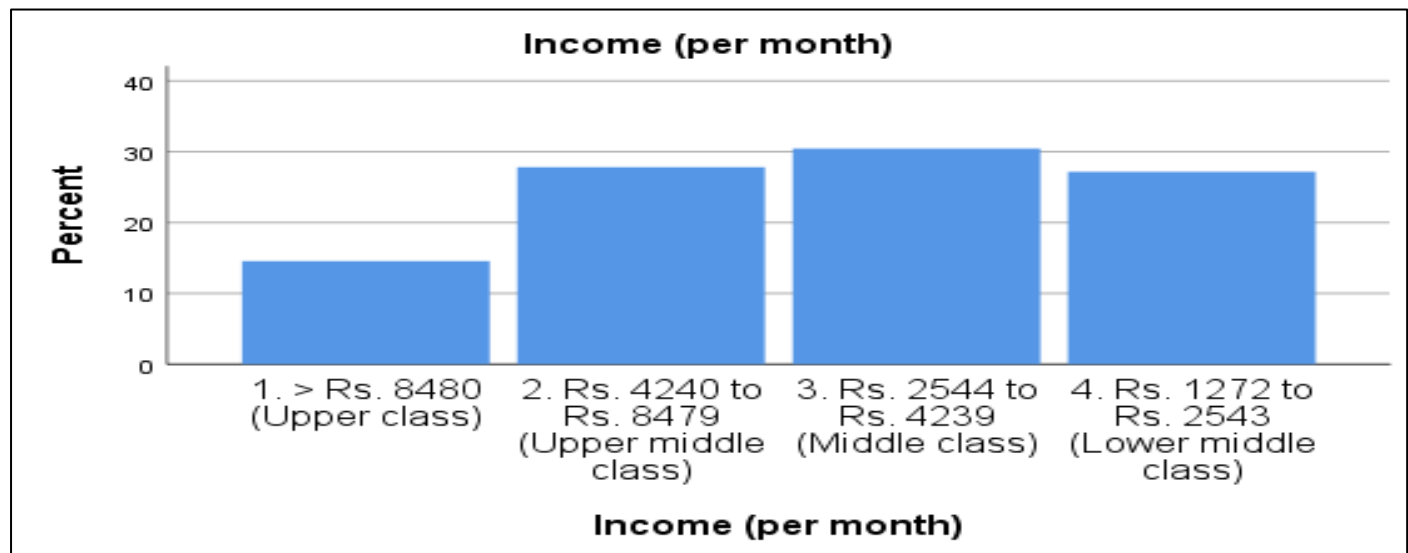


Fig 6: Income (Per Month)

- Observation – in the study it was found that majority of the subjects belonged to middle class considering their income

Table 7: Socio – Economic Status {Kuppuswamy’s Socio Economic Status Scale}

	Variables	Percentage
Socio economic status (Kuppuswamy’s socio economic status scale)	I class (Upper)	0
	II class (Upper middle)	36.4
	III class(Lower middle)	15.2
	IV class(Upper lower)	41.7
	V class(Lower)	6.6

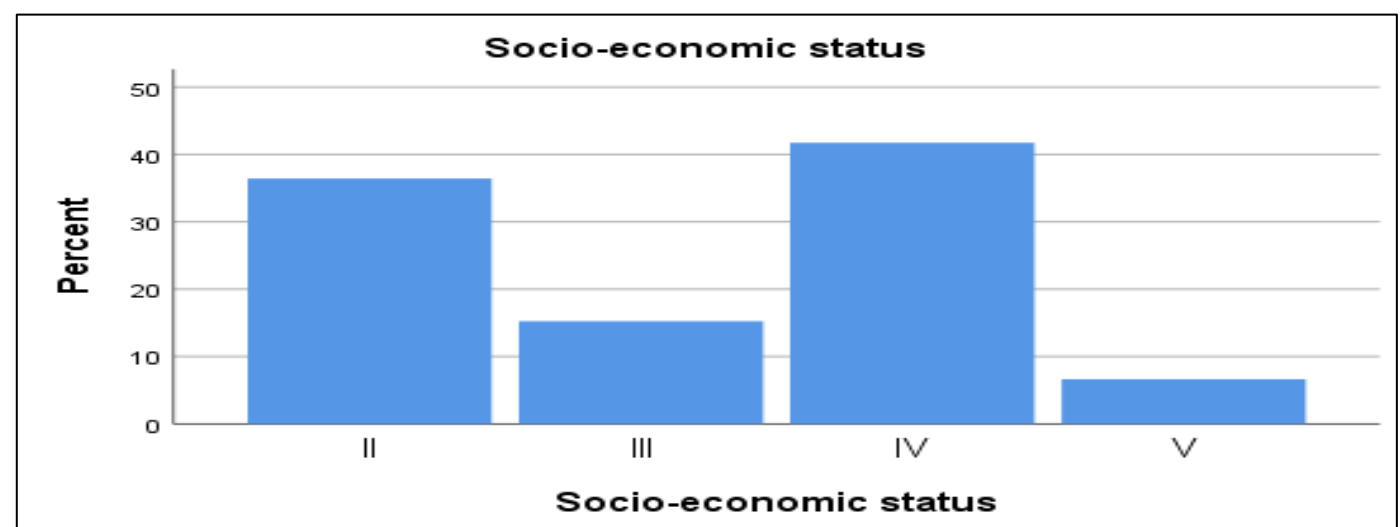


Fig 7: Socio-Economic Status

- Observation – in the study it was found that majority of the subjects belonged to IV class(Upper lower) of socioeconomic status (41.7%) according to Kuppuswamy’s socio economic status scale.

Table 8: Body Mass Index

	Particulars	Percentage
Body mass index	Underweight [<18.5]	0.7
	Normal [$18.5-22.9$]	26.5
	Overweight [$23-24.9$]	35.1
	Obese [≥ 25]	37.7

- Observation – majority of the subjects were found out to be obese (37.7%) followed by overweight (35.1%)

Table 9: Medical Data

	Particulars	Percentage
Other comorbidities	Hypertension	24.5
	Thyroid Problems	14.6
	Heart Problems	6.62
	Kidney Problems	3.97
	Lung Problems	1.32
	Bowel Problems	5.3
	Neurological Problems	0.66
	None	54.96
How long before the diabetes is diagnosed	Less than 1 year	8.6
	1-5 years	55.6
	6-10 years	26.5
	11-15 years	7.3
	More than 15 years	2.0
Diabetic family history	Father	32.45
	Mother	19.86
	Siblings	9.2
	None	52.37

Table 9: Continued (Medical Data)

	Yes (Percentage)	NO (Percentage)
Alcohol use	27.8	72.8
Tobacco use	16.6	83.4
Patients following dietary plans.	52.7	47.3
Patients believe that Diabetic Diet helps to manage blood glucose level.	97.4	2.6
Patients believe that sweet restrictions can control diabetes Mellitus.	94.7	5.3
Patients taking medications regularly.	79.5	20.5
Patients feeling regular physical activity is essential to improve condition.	97.4	2.6
Patients going for regular follow up.	65.6	34.4

- Observation – The above table gives the medical data of the subjects considered. It is evident that majority of the subjects have good knowledge about the dos and don'ts of a diabetic patients.

Table 10: Diet Information

	Diet	Percentage
Breakfast	2 Idli / Dosa	37.7
	1 Cup Upma/ Avalakki	43.7
	1 Cup Rice / 2 Chapati + Sabji	9.9
	1 Cup Rice / 2 Chapati + Sabji	4.0
	3 Puri + Kurma	4.6
Lunch	1 Chapati + Sabji+ 1 Cup Rice + Sambar	29.8
	1 Roti + Sabji + 1 Cup Rice + Sambar	51.7
	2 Chapati + Sabji	11.9
	2 Roti + Sabji	3.3
	Mudde + Sambar	1.3
	1 Cup Rice + Sambar	0.7
	Mudde + 1 Cup Rice + Sambar	1.3
Dinner	1 Chapati + Sabji+ 1 Cup Rice + Sambar	22

	1 Roti + Sabji + 1 Cup Rice + Sambar	33.1
	2 Chapati + Sabji	29.8
	2 Roti + Sabji	10.6
	Mudde + Sambar	1.2
	1 Cup Rice + Sambar	0.7
	Mudde + 1 Cup Rice + Sambar	2.6

Table 10: Continued

	Diet	Percentage
Beverages	Tea	59.6
	Coffee	15.9
	Milk	4.6
	None	19.2
Evenings Snacks	Unhealthy food (Pakoda, Girit, Samosa/Puff, Maggie)	45.8
	Healthy food (fruits)	29.8
	None	24.4
Desserts	Ice Cream	4.0
	Buttermilk	25.8
	Fruits	51.0
	None	19.2

Table 11: Calorie Intake

	Variables	Percentage
Total no of calories (kcal)	<1200	9.3
	1200- 1700	74.1
	>1700	16.6
Carbohydrates (Kcal)	<765	51.7
	765-850	31.7
	>850	16.6
Proteins(Kcal)	<340	26.5
	340-425	56.9
	>425	16.6

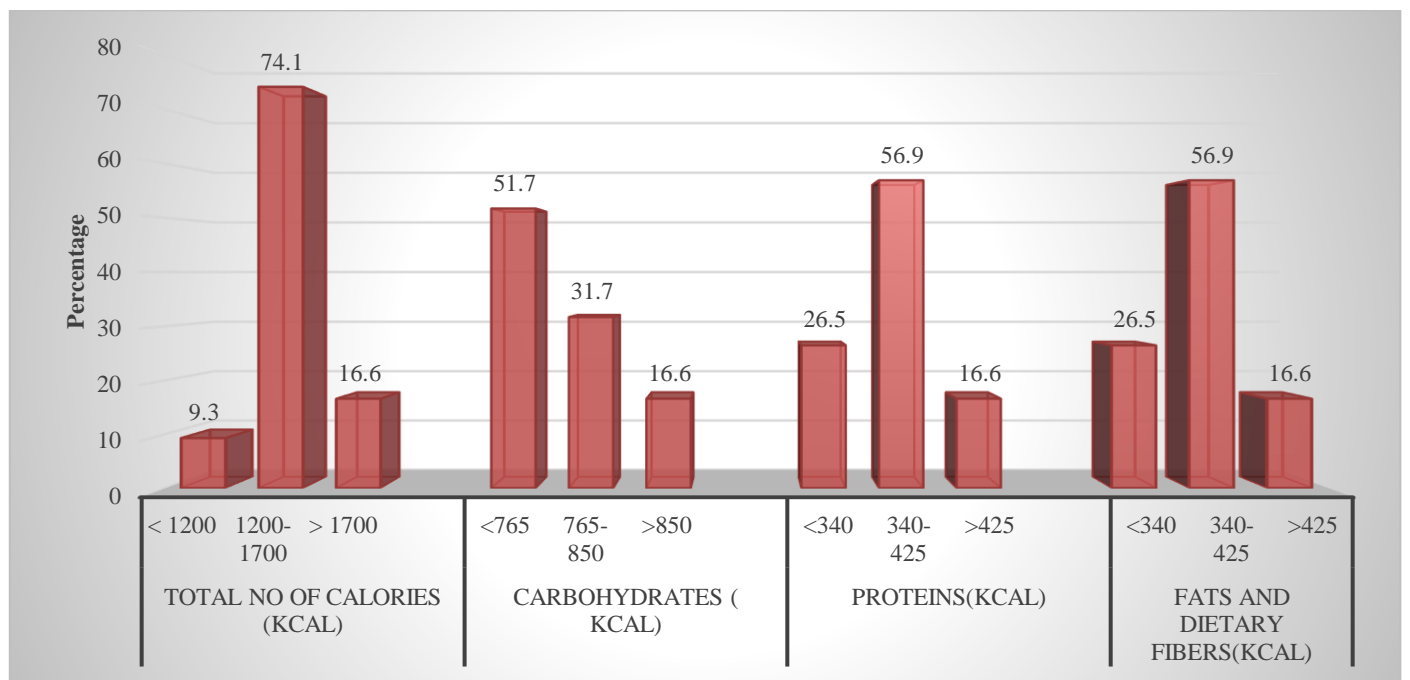


Fig 8: Calorie Intake

- Observation- majority (74.1%) of the people are consuming calories within the range (1200-1700kcal).

IV. DISCUSSION

- In our study 35.1% are overweight and 37.7% are obese their mean calorie intake per day is 1500 Kcal/day in that around 50% of carbohydrate is consumed, 25% of protein and 25% of proteins is consumed.
- When compared to the research conducted on comparison of dietary profile of a rural south Indian population with the current dietary recommendations for prevention of non-communicable diseases, according to which the median daily energy intake of population under consideration was 2034 kcal, out of which more than ¾th of the calories were given by carbohydrates.
- According to the recommendation, 40% of carbohydrates with 35% of proteins and 25% of fats are recommended for diabetic patients with comorbidities.
- Hence, it is evident that carbohydrate consumption is more and protein is less in our study participants.

V. CONCLUSION

- From the results that we obtained from this study, it is evident that majority of the diabetic population have adequate knowledge about diabetic diet and practices that are to be followed.
- It is evident that carbohydrate consumption is more and protein is less in our study participants and there is a need of formulating a diet plan according to the regional diet pattern and personal BMI.

LIMITATIONS

- The study was localized to only one area.
- Duration to conduct the study is less.

RECOMMENDATIONS

- The mean BMI of Indian diabetic patient is 24.75kg/m²(⁵).
- In our study, we have observed that in the project area mean BMI is 24.43kg/m². So, there is a need to formulate the diabetic diet plan for the BMI considering the regional parameters especially BMI.
- South Indian diet majorly involves rice as the staple food which is rich in carbohydrates, but diabetic patients need to shift the diet from carbohydrate rich to protein and fiber rich diet, which need proper awareness and education at the community level.

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QUESTIONNAIRE

➤ *Name –*

➤ *Age*

- Less than 20
- 21-40
- 41-60
- 61-80
- Above 80

➤ *Gender*

- Male
- Female
- Transgender

➤ *Address*

- Urban
- Rural
- Semi Urban

➤ *Native place –*

➤ *Religion*

- Hindu
- Muslim
- Christian
- Others

➤ *Education*

- Illiterate
- Primary School Certificate
- Middle School Certificate
- High School Certificate
- Intermediate or Post High School Diploma
- Graduate
- Post Graduate
- Profession or Honors Certificate

➤ *Occupation*

- Professional (Doctor, Engineering, Lawyer)
- Semiprofessional (Teacher, Nurse, Journalist)
- Clerical shop owner, Farmer
- Skilled (Carpenter, Welder, Electrician)
- Semi skilled (Driver, Sales worker, Bartender)
- Unskilled (Cleaner, Housekeeping, Waiter, Labour)
- Currently not working / Unemployed
- Student
- Homemaker

➤ *Marital status*

- Unmarried
- Married
- Divorced/ Separated
- Widowed

➤ *Does anyone in your family have history of Diabetes?*

- Father
- Mother
- Siblings
- None

➤ *Income*

- > Rs. 8480 (Upper class)
- Rs. 4240 to Rs. 8479 (Upper middle class)
- Rs. 2544 to Rs. 4239 (Middle class)
- Rs. 1272 to Rs. 2543 (Lower middle class)
- < Rs. 1272 (Lower class)

➤ *How Long Has it been since You were Diagnosed with Diabetes?*

- Less than 1 year
- 1- 5 years
- 6-10 years
- 11 - 15 years
- More than 16 years

➤ *What Other Comorbidities Do You Have?*

- Hypertension
- Obesity
- Thyroid problems
- Heart problems
- Kidney problems
- Lung problems
- Bowel problems
- Neurological problems
- None

➤ *Height –*

➤ *Weight –*

➤ *Body Mass Index –*

➤ *Tobacco Use*

- Yes
- No

➤ *Do You Follow Any Dietary Plans*

- Yes
- No

➤ *If Yes, Who Gave You the Dietary Plan?*

- Doctor
- Dietician
- Self
- Friends and relatives
- Social media

➤ *Do you Believe that Diabetic Diet Helps to Manage Blood Glucose Level?*

- Yes
- No

➤ *Do you Believe that Sweet Restrictions can Control Diabetes Mellitus?*

- Yes
- No

➤ *Do you take your Medications Regularly*

- Yes
- No

➤ *Do you Feel Regular Physical Activity is Essential to Improve your Condition*

- Yes
- No

➤ *Do you Go for Regular Follow Up?*

- Yes
- No

➤ *If Yes, How Frequently?*

- Monthly
- Quarterly
- Half yearly
- Annually

➤ *What Beverages do you Drink?*

- Tea
- Coffee
- Milk
- None

➤ *If u Drink, How Many Times a Day do You Drink –*

➤ *What do you Eat in a Typical Day and How Much?*

- *Breakfast*
- ✓ 1 Cup Upma/Avalakki
- ✓ 2 Idli/ Dosa
- ✓ 1 Cup Rice / 2Chapati+ Sabji
- ✓ Mudde+ Sambar
- ✓ 3 Puri +Kurma

- *Lunch*

- ✓ 1 Chapati+ Sabji+ 1 Cup Rice + Sambar
- ✓ 1 Roti + Sabji +1 Cup Rice +Sambar
- ✓ 2 Chapati+ Sabji
- ✓ 2 Roti +Sabji
- ✓ 5.Mudde + Sambar
- ✓ 1 Cup Rice + Sambar
- ✓ Mudde + 1 Cup Rice +Sambar

- *Evening Snacks*

- ✓ 1 Plate Pakoda
- ✓ 1 Plate Girmitt
- ✓ Samosa / Puff
- ✓ 1 Plate Maggi
- ✓ Fruits

- *Dinner*

- ✓ 1 Chapati +Sabji + 1 Cup Rice +Sambar
- ✓ 1 Roti + Sabji +1 Cup Rice +Sambar
- ✓ 2 Chapati + Sabji
- ✓ 2 Roti + Sabji
- ✓ Mudde + Sambar
- ✓ 1 Cup Rice + Sambar
- ✓ Mudde + 1 Cup Rice +Sambar

- *Desserts*

- ✓ Icecream
- ✓ Buttermilk
- ✓ Fruits

➤ *Total Calories Consumption Per Day --*