



# NUTRITIONAL AND DIABETIC PROFILE OF WOMEN AGRICULTURAL LABOURERS IN THRISSUR DISTRICT

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*Abstract:* Diabetes mellitus is a metabolic disorder caused by a deficiency in insulin secretion, action or both. Insulin deficiency causes chronic hyperglycemia, leading to problems with carbohydrate, lipid and protein metabolism. It is the most common endocrine disorder, it is estimated that more than 300 million people worldwide will have diabetes mellitus by 2025 (B Salim, 2005). Taking this into consideration a cross-sectional study was carried out on adult women agricultural labourers of Kerala Agricultural University in 2022. Data concerning the socio-economic status, medical history, anthropometry, physical activity, dietary pattern, food frequency, and 24-hour dietary recall were collected. Anthropometric measurements indicated that 42% of subjects were overweight, 43% obese and 80% were abdominally obese. Respondents reported strong family history of diabetes, hypertension, and hyperlipidemia. Meal skipping was persistent among the overweight and obese people. Almost all the respondents consumed high in fat, salt and sugar foods. Nutrients, consumed by the respondents were calculated using food composition tables (ICMR, 2020) and the results are comparing the mean intake of different nutrients, consumed by the subjects, with the Recommended Dietary Allowances (RDA) values, it was observed that the consumption of nutrients like carbohydrates and fat was found to be higher than RDA value. On the other hand consumption of nutrients like energy, protein, calcium and iron was found to be lower among the subjects than their recommended values.

**Index Terms-** Diabetes mellitus, Diabetic profile, Nutritional profile, RDA.

## Introduction

Type 2 diabetes mellitus (DM) is a chronic metabolic disorder in which prevalence has been increasing steadily all over the world. As a result of this trend, it is fast becoming an epidemic in some countries of the world with the number of people affected expected to double in the next decade due to increase in ageing population, thereby adding to the already existing burden for healthcare providers, especially in poorly developed countries. The prevalence of diabetes has increased worldwide as a result of changing lifestyles and rising obesity rates. With an increase in age, the prevalence of DM also increases (Carrillo-Larco et al, 2019). Type 2 Diabetic Mellitus also known as non-insulin dependent diabetic mellitus, is the most common form of DM characterized by hyperglycemia, insulin resistance, and relative insulin deficiency. Type 2 DM is due primarily to lifestyle factors and genetics (Ripsin et al, 2009). A number of lifestyle factors are known to be important to the development of type 2 diabetes mellitus like physical inactivity and sedentary lifestyle (Hu et al, 2001). Many cases of type two diabetes can be avoided by changing lifestyle, such as keeping a healthy weight, eating a balanced diet and

staying physically active (Zheng et al., 2018). On this backdrop a systematic study conducted with the objectives of evaluation of diabetic profile, dietary intake and nutritional habit of the women labours in Thrissur district.

## Materials and methods

The systematic study on lifestyle disorders conducted in 2022 on 150 adult women agricultural labours of Thrissur, Kerala. Taking prevalence of type 2 diabetes as 12.4% in urban areas followed by the midland (8.1%) and highland 5.8% in Kerala based on literature. A total of 150 samples were selected by random sampling techniques. Data pertaining to the study was collected by interview method. A pre tested interview schedule was used as tool to assess the medical history, anthropometric parameters such as weight, height, body mass index and waist hip circumference. Biochemical analysis such as fasting blood glucose level was assessed. The dietary pattern of the respondents were collected and assessed the relationship between dietary pattern and incidences of NCDs. The collected data's are collected and interpreted using various statistical tools.

## Result and discussion

### Socio-personal profile of the respondents

Socio-personal profile is the measurement that helps to understand the type and strength of an individual's relationship with others. Among the selected subjects, majority of them were from the age of 45. Marital status of the subjects revealed that (95.3%) were married. Nuclear family system (84.6%) was prominent among the subjects. Majority of the subjects (66%) had one to four members whereas rest of them (33.3%) had more than five members in their family. Educational status revealed that, majority (63.3%) received high school education. All of them were engaged in income generated activities. The subjects were categorized on the basis of monthly income and it dissipated that 78 per cent of the families were earning from 10000-30000 Rupees. Lifestyle pattern of the subjects revealed that eighty-five per cent of the subjects had a poor quality of sleep, about 4-6 hours a day. Most of the subjects were involved in moderate physical activity (83%) followed by heavy activity (17%). Exercise pattern of the subjects depicted that majority (63%) of the subjects were physically active among them (35%) did exercise. Physical inactivity is an established risk factor for premature mortality and several non-communicable diseases. It has been estimated that in 2008, physical inactivity caused 6%–10% of the cases of premature mortality, coronary heart disease, type 2 diabetes, breast cancer and colon cancer globally (Katzmarzyk *et al.*, 2022). Medical history of the subjects showed that forty eight percent of subjects were suffering from Type II Diabetes Mellitus and forty three percent from obesity. Among the selected subjects, 97 percent of subjects were taking allopathic treatment for various medical conditions. Majority (42%) had the history of hypertension and 16.6 percent had thyroid problems along with obesity and diabetes mellitus.

### Diabetic profile of respondents

Lifestyle pattern and local environmental factors may play an important role in the development of metabolic disorders, which needs to be studied in detail (Hiremath *et al.*, 2013). Diabetic profile of the respondents assessed using American Diabetic Association (ADA, 2014) references values. On the reference of present study 49.3% of respondents were diabetic, 48% non-diabetic and 2.6% comes under the category of pre-diabetic. Basic anthropometric measurements were assessed along with body mass index and it was clearly understood that 43 per cent respondents were coming under the category of obesity. Spearman correlation test was used to determine the association between fat intake -waist hip ratio and fat intake - BMI. According to Table 1, there is a positive correlation between fat intake - waist hip ratio and fat intake – BMI, so the null hypothesis is rejected.

**Table 1: Association between fat intake - waist hip ratio and fat intake – BMI**

	Waist Hip ratio	
Fat intake	Correlation coefficient	-0.44192
	Sig.(2-Tailed)	0
	N	150
BMI	Fat Intake	
	Correlation Coefficient	-0.38687
	Sig. (2-Tailed)	0
	N	150

## Dietary habits and nutrient intake of the respondents

Dietary habits of the respondents depicted that majority (96%) of them were non-vegetarian. Meal patterns of the subjects revealed that 92.6% consumed meal three times a day. Food habits of the subjects said that majority of the respondent (64%) does not skip food. 4 per cent were skipping breakfast, 13.3 per cent were skipping lunch and 8.6 per cent were skipping dinner. Majority (61%) of the subject had the habit of eating food from outside and it is important to point out that the majority of these obese persons preferred to consume all type of foods (90.1%) such as fried, bakery, main dishes, side dishes and beverages from outside. In this study, 77.3 per cent of subjects used coconut oil for cooking whereas only 18 per cent used sunflower oil and 4.6 per cent used other types of cooking oil. Water intake of the subjects revealed that 43 per cent of subjects drank about eight glasses of water daily. Unhealthy diets are a key modifiable behavioral risk factor for non-communicable diseases (NCDs). They contribute to the occurrence of a cluster of disorders known as the metabolic syndrome like abdominal obesity, hypertension, dyslipidemia and disturbed metabolism of glucose or insulin. Which in turn accounts for a significant share of the global burden of disease. The presence of the metabolic syndrome increases the risk of developing NCDs such as cardiovascular diseases, diabetes, chronic respiratory diseases and cancer (Olatona *et al.*, 2018).

Nutrients consumed by the respondents were calculated using food composition tables (ICMR, 2020) and the results are presented in Table 2. Comparing the mean intake of different nutrients, consumed by the subjects, with the RDA values, it was observed that the consumption of nutrients like energy, carbohydrates and fat was found to be higher than that of RDA values. On the other hand, consumption of nutrients like protein, calcium and iron was found to be lower among the subjects than their recommended values. It had been claimed that people consuming energy rich foods were at a risk of developing overweight and other metabolic disorders.

**Table 2: Nutrient consumption of respondents**

Nutrients	RDA of moderate women	Mean nutrient intake
Energy (Kcal)	2130	2567
Protein (g)	45.7	43.11
Carbohydrates (g)	130	187.64
Fat (g)	20	38.95
Calcium (mg)	1000	215.56
Iron (mg)	29	6.39

## Conclusion

The findings indicates the high prevalence of NCDs among adult agricultural women labours. Obesity causes or exacerbates many health problems, both independently and in association with other diseases. In particular, it is associated with the development of type 2 diabetes mellitus in the present study 43 per cent respondents were coming under the category of obesity. BMI correlated strongly with densitometry measurements of fat mass. Findings of the study demonstrate most of the respondents were like eat from outside and most of them prefer coconut oil for cooking. Information regarding the consumption of nutrients like energy, carbohydrates and fat was found to be higher than RDA value. On the other hand consumption of nutrients like protein, calcium and iron was found to be lower among the subjects than their recommended values. It has been claimed that people consuming energy rich foods were at a risk of developing overweight and obesity. The present study disclose that there is strong correlation between the fat intake with WHR and BMI. As more and more studies are proving the necessity for taking intervention against type 2 diabetes and obesity to prevent the complications associated to

this, these results should alert us to the possibility of a large burden of disease in our community in the near future unless immediate and effective measures are instituted.

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