International Journal of Medicine Research
ISSN: 2455-7404
www.medicinesjournal.com
Volume 3; Issue 4; October 2018; Page No. 40-43

Dietary fat and incidence of type 2 diabetes in older women in Dakshina Kannada

Dr. Gireesh[1], Dr. Nishanth Gowda N[2], Dr. Shruthi Rai P[3], Dr. Sandesh KS[4]
[1] Associate Professor, Department of Medicine, KVGMC&H, Sullia, Karnataka, India
[2] Physiotherapist, KIMS, Bangalore, Karnataka, India
[3] Assistant Professor, Department of Biochemistry, KVGMC&H, Sullia, Karnataka, India
[4] Head, Department of PG Studies, NMC, Sullia, Karnataka, India

Abstract
Dietary fat is a major risk factor that increases the development and prevalence of incidence type 2 diabetes in older women. The increased rates of the disease among women in Dakshina Kannada increased the need for having to engage in an extensive study whose objective is to determine the relationship between the increased rates of disease among the older women with the intake of dietary fats. The research design and methods used in the study capitalizes on enhancing the reliability of the results and findings in order to make appropriate conclusions concerning the impact of the dietary fats in the development of incidence type 2 diabetes. The data collection methods implemented in the study involved the use of baseline questionnaire that sought different responses from the participants selected to engage in the study. The findings from the study indicated a significant impact of the dietary fats in increasing the prevalence rates of type 2 diabetes among older women in the given region.

Keywords: incidence of type 2 diabetes, dietary fats

Introduction

Diabetes mellitus is a metabolic disorder characterized by high blood sugar level known as 'hyperglycemia' and presence of sugar in urine known as 'glycosuria' [1].

Diabetes mellitus were broadly classified into two major categories based on the age of onset i.e, juvenile-onset diabetes (type 1) and adult onset diabetes (type 2) [1].

The increase in the dominance of type 2 diabetes in older women in Dakshina Kannada resulted to an escalation in the mortality rates associated with the disease thus creating the need to study various factors that contribute to the development of the condition. Epidemiological and metabolic studies indicate that intake of dietary fats is a primary factor that results to an increase in the prevalence rates of the disease among older womenin any given region (Meyer, Kushi, Jacobs, & Folsom, 2001) [6]. Among American Indians, ages 45-74 years, the prevalence is 43.5% for men and 52.4% for women. The prevalence is higher in the older population, higher in women than men [1]. The studies suggested that specific fatty acids in the diet played a critical role in increasing the prevalence rates of the condition through the modification of phospholipid composition within different cell membranes, which influences the functionality of the insulin receptor (Kahn, Cooper, & Del Prato, 2014) [3]. The general treatment for type 2 diabetes is mainly focused on three factors: weight loss, diet, and physical acivity [1]. In type 2 diabetes patients, alternative methods of physical exercise have clear beneficial effects, such as improving better glycemic values, controlling depression, and increasing Quality of life. The contraction and relaxation of skeletal muscles lower blood glucose levels; therefore it is said that physical exercise plays an important role in controlling diabetes, along with dietary therapy and medication. Physical exercise is usually correlated with adequate long-term glycemic control in terms of HbA1c levels and increased insulin sensitivity. However, the optimal exercise type for patients with type 2 diabetes has not yet been established [2]. Increased muscular glucose uptake during exercise is closely associated with exercise at any intensity This research focused on examining the baseline between dietary fat intake and overall development of the disease among older women while controlling other dietary and non-dietary factors. Hence this study aimed to determine the correlation between the development and incidence of type 2 diabetes with the intake of dietary fats among older women in Dakshina Kannada.

Research Design and Methods

The target population of the study involved a community of older women in Dakshina Kannada aged 55–69 years within a period of 5years. The study included a close follow up of the sample population to determine changes that are related to the development of type 2diabetes among the older women in the region. A random sample population of 15,000 older women was selected for the study to examine the factors that relate to the development and prevalence of the disease in older women within the given region. The chosen study sample included women without a medical history of the disease and others that had been diagnosed with the condition.

The population selected for the study included women from the urban and rural areas of Dakshina Kannada with different dietary intakes based on their individual needs and location. The study population selected for the research was appropriate considering their vulnerability to developing signs and symptoms associated with the disease considering their ages and dietary intake. The sample population received a questionnaire that sought to obtain crucial health information

concerning their lifestyle and dietary fat intake. The response obtained from the questionnaires helped in selecting a study population that was eligible for the study based on their personal and health information.

Data Collection

The study involved the use of a baseline questionnaire that included questions that sought to examine the known and suspected factors that contribute to the advancement of the symptoms associated with the condition among older women. The risk factors include in the questions included age, physical activity, BMI, alcohol consumption, waist-to-hip ratio, smoking history among other factors that increase the prevalence and development of the disease among the older women (Salas-Salvadó, Guasch-Ferré, Lee, Estruch, Clish, & Ros, 2015) [2, 8]. The respondents were required to calculate their BMI from their weight and height and undertake measurements to determine their waist to hip ratio. An assessment of the physical activities undertaken by the women was conducted to indicate the frequency of the moderate and vigorous activities conducted by each of the participants. The main physical activities defined to be undertaken by the women during the study included undertaking exercises, long walks, swimming, and aerobics (Guasch-Ferré *et al*., 2015) [2, 8].

Fig 1

Another critical aspect of the study involved assessing alcohol consumption and dietary intake of the participants undertaking the survey. During the investigation, the initial nutritional exposure that was of interest involved the absorption of fat, which helped in the analysis of the saturated, polyunsaturated, monounsaturated fatty acids. The report provided an avenue for examining the risks involving the advancement of type 2 diabetes among older women within a study area (Malik, Li, Tobias, Pan, & Hu, 2016) [5]. As part of the study, a food-frequency questionnaire was used to evaluate food intake of the participants by making a comparison of the nutrients values in the diet of the participants. The examination of specific effects of the dietary fats required a simultaneous adjustment for the fat subtypes and the dietary protein (Muraki, Rimm, Willett, Manson, Hu, & Sun, 2016) [7].

Results

The study involving the examination of the dietary fats and type 2 diabetes indicated that fats obtained through the intake of food played a critical role in the development of the disease among the older women within a given region. In this case, women that had the highest category of saturated fatty acids presented high BMI and Waist to hip ratio (WHR). Additionally, women with a high concentration of animal fats had higher BMI and WHR, which is characterized by increased weight among women (Ericson *et al*., 2015) [1]. The participants that the presented large categories of the saturated and monounsaturated fatty acids submitted low consumption of alcohol, where a majority engaged in moderate and less vigorous physical activities. On the other hand, participants with high cholesterol levels presented indications comparable to the participants with high levels of fatty acids. However, the presentation of BMI and waist to hip ratio of the patients were not as pronounced as in the women with the saturated, monounsaturated, and animal fats (Ley, Hamdy, Mohan, & Hu, 2014) [4].

Table 1: Basic personal characteristics of the study population

Sociodemographic variables	**Total** (n=15,000)
Age group	
- 55-60	6705
- 60-65	5500
- >65	2795
Marital status	
- Unmarried	2000
- Married	9015
- Widow	3985
Educational status	
- Illiterate	1095
- Primary Level	3015
- High Level	5565
- Graduate Level	5325
Religion	
- Hindu	9,595
- Muslims	4,375
- Christians	1,030
Socio-economic status	
- Class 1	2,765
- Class 2	4,255
- Class 3	5,150
- Class 4	1,115
- Class 5	1,715

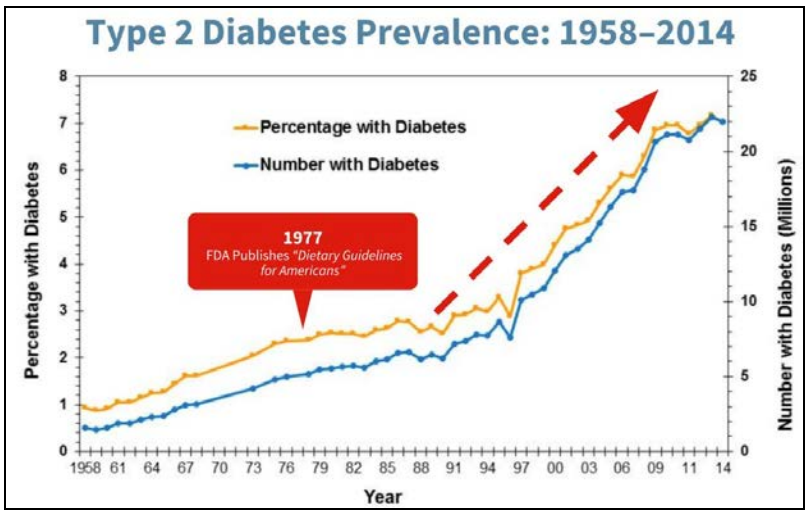

Fig 1: Type 2 Diabetes Prevalence: 1958-2014

The adjustments for non-dietary factors indicated that the saturated and monounsaturated fatty acids were not a significant risk factor of the disease among the older women within the geographical locations of Dakshina Kannada. However, the study indicated that Animal fats and cholesterol played a vital role in the advancement of the disease in older women. A comparison of the highest and lower levels of fat obtained from animal products presented an approximate 20% increase in the prevalence of the disease in older women (Satija *et al*., 2016) [10]. The analysis of food groups that had a significant contribution to fat intake indicated that meat had a positive correlation that relates to increased risks associated with the advancement of the disease in women (Salmeron, Hu, Manson, Stampfer, Colditz, Rimm, & Willett, 2001). On the other hand, vegetable fats, magnesium, and cereal fiber did not have a positive relationship regarding the increase in the prevalence of the condition.

Type 2 diabetes does not have a known cure and can only be managed using a wide array of therapeutic approaches. One of the key aspects to consider is physiotherapy, which seeks to ensure that the persons affected are able to achieve a healthy weight through engagement in physical exercises including walking, jogging, and yoga among others. The focus for engaging in physiotherapy is to ensure that the persons affected are able to manage their weight effectively with the focus being towards ensuring that the body is able to burn dietary fat. The ultimate result is that the persons would experience a significant shift from risks associated with obesity among others. Thus, this acts as a clear indication of the need for individuals to take up effective physiotherapy approaches that would enhance their abilities to manage type 2 diabetes effectively.

Conclusion

In conclusion, the study involving the development of type 2 diabetes concerning dietary fats among older women in Dakshina Kannada indicated that dietary fat has a vital role in the prevalence of the disease. Based on the study, dietary fat among older adults is a significant risk factor that results in the development and incidence of diabetes. The adjustments of the potential confounding variables indicated the inverse relationship that exists between vegetable fat and the development of the disease in older women. Animal fat was presented as a critical risk factor, which is associated with the development of the condition among older women.

References

1. Ericson U, Hellstrand S, Brunkwall L, Schulz CA, Sonestedt E, Wallström P, *et al*. Food sources of fat may clarify the inconsistent role of dietary fat intake for an incidence of type 2 diabetes–. The American journal of clinical nutrition. 2015; 101(5):1065-1080.
2. Guasch-Ferré M, Hruby A, Salas-Salvadó J, Martínez-González MA, Sun Q, Willett WC, *et al*. Olive oil consumption and risk of type 2 diabetes in US women–3. The American journal of clinical nutrition. 2015; 102(2):479-486.
3. Kahn SE, Cooper ME, Del Prato S. Pathophysiology and treatment of type 2 diabetes: perspectives on the past, present, and future. The Lancet. 2014; 383(9922):1068-1083.
4. Ley SH, Hamdy O, Mohan V, Hu FB. Prevention and management of type 2 diabetes: dietary components and nutritional strategies. The Lancet. 2014; 383(9933):1999-2007.
5. Malik VS, Li Y, Tobias DK, Pan A, Hu FB. Dietary protein intake and risk of type 2 diabetes in US men and women. American journal of epidemiology. 2016; 183(8):715-728.
6. Meyer KA, Kushi LH, Jacobs DR, Folsom AR. Dietary fat and incidence of type 2 diabetes in older Iowa women. Diabetes Care. 2001; 24(9):1528-1535.
7. Muraki I, Rimm EB, Willett WC, Manson JE, Hu FB, Sun Q. Potato consumption and risk of type 2 diabetes: results from three prospective cohort studies. Diabetes Care. 2016; 39(3):376-384.
8. Salas-Salvadó J, Guasch-Ferré M, Lee CH, Estruch R, Clish CB, Ros E. Protective Effects of the Mediterranean Diet on Type 2 Diabetes and Metabolic Syndrome–3. The Journal of nutrition. 2015; 146(4):920S-927S.

9. Salmeron J, Hu FB, Manson JE, Stampfer MJ, Colditz G, A, *et al*. Dietary fat intake and risk of type 2 diabetes in women–. The American journal of clinical nutrition. 2001; 73(6):1019-1026.
10. Satija A, Bhupathiraju SN, Rimm EB, Spiegelman D, Chiuve SE, Borgi L, Hu FB. Plant-based dietary patterns and incidence of type 2 diabetes in US men and women: results from three prospective cohort studies. PLoS medicine. 2016; 13(6):e1002039.
11. HulyaYucel, Omer Uysal. Pilates-Based Mat Exercises and Parameters of Quality of Life in Women With Type 2 Diabetes.Iran Red Crescent Med J. 2016; 18(3):e21919
12. Jack Wilmore H, David Costill L. Physiology of Sports and Exercise. Chapter 21, 3rd edition, Human kinetics, 2004.