# A Survey on the Evaluation of Dietary Intakes and Nutritional Knowledge in Female Patients with type 2 Diabetes Mellitus

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Abstract: This present study is an attempt to enhance the nutritional knowledge in the selected age group of women. Dietary education carries a significant role for the prevention of type 2 diabetes and also from its different types of complications. Hence, Providing the proper education and counselling are very much needed and also explain the meal planning and teaching carbohydrate counting for 40-60 age group women in selected area. <u>Method</u>: Cross-sectional study was conducted for 1 month & Complete Enumeration methods was used for sampling. <u>Result</u>: Majority (80%)of the respondent patients does not know the term diabetes, almost respondent patients (76.7%) does not follow a diet. <u>Conclusion</u>: The mentioned study has been shown to found that the female patients aged 50-60 years were most prone to be affected in type 2 diabetes. Since the referred female patients were unaccustomed to the different dietary plans that should be taken care of during this period of time, the chances of type 2 diabetes, that is diabetes mellitus, was found to be increased.

Keywords: Diabetes mellitus, Knowledge, diet, Education

#### 1. Introduction

Diabetes mellitus is a non-transmittable and quickest developing general medical issues in the sphere which is a group of metabolic infections designated by long-term hyperglycaemia coming about because of deformities in insulin emission, insulin activity, or both of this. In Carbohydrates, Proteins and Lipids the metabolic process are abnormal resulting from the significance of insulin which acts as an anabolic hormone. [1]. Womens are all the more seriously affected by its outcomes. Around one of every nine grown-up women in the United States has diabetes, as per the Canters for Disease Control and Prevention (CDC) [2]. Pre-menopausal ladies with diabetes lose the assurance against coronary illness that non-diabetic ladies have and are 50% bound to kick the bucket from coronary illness than men [3-6]. Type 2 diabetes mellitus is for the most part brought about by Dietary elements, way of life elements and hereditary qualities. The dietary components have impact on the danger of creating type 2 diabetes. Unnecessary utilization of sugar improved beverages is related with an expanded danger [7]. Driving proficient associations have presumed that appropriate nourishment treatment is a significant piece of the the establishment for treatment of diabetes. Notwithstanding, suitable nourishing intercession, execution, and extreme consistence with the arrangement stay probably the most vexing issues in diabetes the board for three significant reasons: First, there are a few contrasts in the dietary construction to consider, contingent upon the kind of diabetes and drug the Patients With Diabetes (PWD) is taking [8]. Dietary science is continually developing, so what might be viewed as obvious today might be obsolete soon. The present study is an attempt to assess the knowledge about the Type 2 Diabetes mallitus among the 40-60 aged group females & find out maintenance the proper diet affecting on the Study subject.

## 2. Literature Survey

- A descriptive study conducted on Evaluation of Dietary Intakes and Nutritional Knowledge with T2DM by Yotsapon Thewjitcharoen et al. in 2018 showed that a cross-sectional study of outpatients with T2DM at Theptarin Hospital and Ramathibodi Hospital (Bangkok, Thailand) was performed to assess dietary intakes by food records. Diabetes nutritional knowledge and dietary self-care behaviour was also evaluated. There was no association between diabetes nutritional knowledge and the actual dietary self-care behaviour.
- Another study by Vijay Viswanathan et al. on 7 February 2019 said that this is necessary to achieve the goals of improving overall metabolic measures beyond calorie restriction and weight loss. Misconceptions about nutrition in T2DM add to the challenges of executing MNT in a culturally sensitive population. The current review provides insights into MNT for the prevention and management of T2DM in India, based on both evidence and experience.
- A cross sectional study of Dietary beliefs and eating patterns influence metabolic health in type 2 diabetes on 3-Dec-2013 by <u>Susan L Colles</u>, <u>Shweta Singh</u>, <u>Chhavi Kohli</u>, <u>Ambrish Mithal</u> aimed to characterize the eating patterns, knowledge, beliefs, and determinants of food choice, and assess associations with the metabolic health among urban Asian Indians with type 2 diabetes. 258

individuals (mean age  $55.7 \pm 10$  years; body mass index  $27.1 \pm 4.8$  kg/m<sup>2</sup>; diabetes duration  $10.1 \pm 6.5$  years) attending two out-patient clinics in New Delhi, India and this Strategies to enhance diabetes control among Asian Indians are required and should encourage fruit/vegetable intake, personal accountability, and consider individual beliefs and preferences. Greater emphasis and resources directed to regular dietary and behavioral counseling may assist.

- Chad Yixian Han et al. on 23 Jan, 2020 examined that the exploratory study of Patients with Type 2 diabetes mellitus is to gain insights into the relationship between diabetes-related nutrition knowledge (DRNK) and diet quality in Singapore. They observed fair diet quality scores which have similar to other studies reporting scores ranging from 40.2 to 58.8, with poor intake of wholegrains, dairy, fruits and vegetables.
- Forouhi, N., Misra, A., Mohan, V., Taylor, R., & Yancy, W. on 2018 found that Dietary and nutritional approaches for prevention and management of type 2 diabetes. They also examined the influence of nutrition transition and population specific factors in the global context and discuss future directions for effective dietary and nutritional approaches to manage type 2 diabetes and their implementation.
- Alison Gray et al. on October 13, 2019. Said that the **Nutritional Recommendations for Individuals with Diabetes and** designed to take these guidelines and provide an overview of practical applications and tips in one place for health care practitioners who treat Patient with Diabetes (PWD).
- Anil Kapur and Veeraswamy Seshiah examined that 199 million women living with diabetes, and this is projected to increase to 313 million by 2040 on November, 2017. Diabetes is the ninth leading direct cause of death in women globally, causing 2.1 million deaths each year, most of them were pre-mature. The issue of women and diabetes is important for several reasons.
- Another study showed that the Prevalence and Risk Factors Associated with Type 2 Diabetes in Elderly Patients Aged 45-80 Years by Debrah Asiimwe Godfrey O. Mauti and Ritah Kiconco on 30 January,2020.The overall prevalence of type 2 diabetes was 18.7% among the tested patients. 22.8% of diabetic patients were females as 7.8% were males. The age group most affected by diabetes was 61-65 years. Alcoholism, smoking, body mass index (BMI), and family history were found to be significantly associated with type 2 diabetes.
- NP Steyn, J Mann,PH Bennett,N Temple,P Zimmet,J Tuomilehto,J Lindstro"m, and A Louheranta said about the Diet, nutrition and the prevention of type 2 diabetes on February 2004. Based on the strength of available evidence regarding diet and lifestyle in the prevention of type 2 diabetes, it is recommended that a normal weight status in the lower BMI range (BMI 21–23) and regular physical activity be maintained throughout adulthood; abdominal obesity be prevented; and saturated fat intake be less than 7% of the total energy intake.
- Rami H. Al-Rifai , Maria Majeed, Maryam A. Qambar, Ayesha Ibrahim, Khawla M. AlYammahi and Faisal Aziz observed that the Type 2 diabetes and pre-diabetes mellitus and meta-analysis of prevalence studies in

women on 8 November 2019. Rami H. Al-Rifai , Maria Majeed, Maryam A. Qambar, Ayesha Ibrahim, Khawla M. AlYammahi and Faisal Aziz observed that the Type 2 diabetes and pre-diabetes mellitus and meta-analysis of prevalence studies in women on 8 November 2019.T2DM and pre-DM are common in women of childbearing age in many countries. The high Diabetes mellitus burden in this vital population group could lead to adverse pregnancy outcomes and acceleration of the intergenerational risk of Diabetes Mellitus. Our review presented data and highlighted gaps in the evidence of the Diabetes Mellitus burden in women of childbearing age.

- Morten Malmborg, Michelle D. S. Schmiegelow, Caroline H. Nørgaard, Anders Munch, Thomas Gerds, Morten Schou, Caroline Kistorp, Christian Torp-Pedersen Mark A. Hlatky, and Gunnar Gislason observed the study on type 2 diabetes confer higher relative rates of cardiovascular events in women compared with men on 20 December 2019. Among 218 549 (46% women) individuals with diabetes, the absolute rate of MACE-HF was higher in men than in women (24.9 vs. 19.9 per 1000 person-years). Corresponding absolute rates in men and women without diabetes were 10.1 vs. 7.0 per 1000 person-years. Comparing individuals with and without diabetes, women had higher relative rates of MACE-HF than men [2.8 (confidence interval, CI 2.9-2.9) in women vs. 2.5 (CI 2.4-2.5) in men] with a women-tomen ratio of 1.15 (CI 1.11-1.19, P < 0.001). The relative rates of MACE-HF were highest in the youngest and decreased with advancing age for both men and women, but the relative rates were higher in women across all ages, with the highest women-to-men ratio between age 50 and 60 years. Although men have higher absolute rates of cardiovascular complications, the relative rates of cardiovascular complications associated with diabetes are higher in women than in men across all ages in the modern era.
- Emily Wahome, Willy Kiboi examined about the Nutritional Knowledge and Nutritional Status of Diabetes Type 2 Patients on 27 September 2016. The low level of nutritional knowledge revealed and demonstrates the need to scale up community interventions programs enhancing nutritional knowledge among diabetic patients. Regular screening of high risk persons should also be initiated and people should be advised to adopt healthy lifestyle for prevention and control of diabetes mellitus.
- Frank B Hu, JoAnn E Manson, Meir J Stampfer, Graham Colditz, Simin Liu, Caren G Solomon, Walter C Willett Observed that Diet, lifestyle, and the risk of type 2 diabetes mellitus in women on 13 September , 2001.They documented 3300 new cases of type 2 diabetes. Overweight or obesity was the single most important predictor of diabetes. Lack of exercise, a poor diet, current smoking, and abstinence from alcohol use were all associated with a significantly increased risk of diabetes, even after adjustment for the body-mass index. As compared with the rest of the cohort, women in the low-risk group (3.4 percent of the women) had a relative risk of diabetes of 0.09 (95 percent confidence interval, 0.05 to 0.17). A total of 91 percent of the cases of diabetes (95 percent confidence interval, 83 to 95

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percent) could be attributed to habits and forms of behavior that did not conform to the low-risk pattern.they findings support the hypothesis that the majority of cases of type 2 diabetes could be prevented by the adoption of a healthier lifestyle.

Teresa T. Fung, Marjorie McCullough, Rob M. van Dam, and Frank B. Hu, examined a Prospective Study of Overall Diet Quality and Risk of Type 2 Diabetes in Women on 30 July, 2007. They ascertained 5,183 incident cases of type 2 diabetes during 18 years of follow-up. Women who scored high on the AHEI had a lower risk (RR comparing top to bottom score quintile 0.64 [95% CI 0.58–0.71], Ptrend < 0.0001) for diabetes. Women with consistently high AHEI scores throughout follow-up, compared with those with consistently low scores, had the lowest risk for diabetes. In addition, women whose AHEI scores improved during follow-up, even during recent years, had a lower risk of diabetes than did women whose (low) score did not change.A higher AHEI score is associated with a lower risk of type 2 diabetes in women. Therefore, the AHEI score may be a useful clinical tool to assess diet quality and to recommend for the prevention of diabetes.

## 3. Methodology

Study design: Cross sectional study.

**Sampling selection:** Complete Enumeration Method will be used for collecting the information in selected area.

**Sample size:** 40-60 aged group of female who suffer from T2DM in selected area.

**Data Analysis:** Data thus collected will be tabulated and analyzed using Microsoft by which proportion, means will be calculated.

As this study will be conducted in census method, no statistical test will be applied.

## 4. Results and Discussions

Total no. of enumerated patients =30

Total No. of respondents in the study= 30

Response rate= 100%

<b>Table 1:</b> Frequency Distribution Tables for the various
characteristics/variables used

Criteria	No. of respondents	Percentage
(a) Distribution of respondents based on age		
Age (in year)		
• 40-45	5	16.7
• 46-50	5	16.7
• 51-55	9	30
• 56-60	11	36.7
Total	30	100
(b) Distribution of respondents based on gender		
Gender		
• Female	30	100
• Male	0	0

Total	30	100	
(c) Distribution of respondents based on religion			
Religion			
• Hindu	29	96.7	
Muslim	1	3.3	
Total	30	100	
(d) Distribution of responder	ts based on marital st	atus	
Marital Status			
Married	30	100	
Unmarried	0	0	
Total	30	100	
(e) Distribution of responder	its based on family me	embers	
No of the members in family			
• 2	2	6.6	
• 3	13	43.4	
• 4	9	30	
• 5 and above	6	20	
Total	30	100	
(f) Distribution of respondent	s based on monthly ex	xpenditure	
Expenditure INR per month			
• 2000-3000	1	3.3	
• 3001-4000	1	3.3	
• 4001-5000	1	3.3	
• 5001-6000	1	3.3	
• 6001 and above	26	86.7	
Total	30	100	
(g)Distribution of respondents	s based on per capita 1	monthly	
income			
Per Capita monthly income*			
• >6254	26	86.7	
• 3127-6253	3	10	
• 1876-3126	1	3.3	
Total	30	100	
(h) Distribution of respondent	s based on food habit	s	
Food habits			
Vegetarian	2	6.7	
<ul> <li>Non vegetarian</li> </ul>	28	93.3	
Total	30	100	
(i)Distribution of respondents	based on occupationa	al status of	
patients			
Occupation of patients			
House Wife	26	86.7	
Service	4	13.3	
Total	30	100	
(j) Distribution of respondents	s based on B.M.I		
B.M.I classification			
• 18.5-24.9 kg/m <sup>2</sup>	9	30	
• $\geq 25 \text{ kg/m}^2$	3	10	
• 25-29.9 kg/m <sup>2</sup>	14	46.7	
• 30-39.9 kg/m <sup>2</sup>	4	13.3	
Total	30	100	

\*According to B.G. Prasad scale

\*\*The International classification of adult underweight, overweight, and obesity according B.M.I (adapted from W.H.O,1995, W.H.O 2000 and W.H.O 2004)

Table No.1 shows that...

Majority of the respondents (36.7) belonged to age group 56-60 years, in terms of gender 30(100%) subjects were females. Majority 29 (96.7%) of the participants were Hindus. In case of the marital status total respondents are married that is 30 (100%). Majority of the patients 13(43.4%) had family members of 3.

## Volume 10 Issue 5, May 2021

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Majority 26 (86.7%) of the T2DM patients monthly expenditure were about INR 6000 and above.

Majority 26 (86.7%) of respondent patients belonged to families with per capita income more then equal to INR 6254.

The respondent T2DM patients were mostly nonvegetarian accounting of about 28 (93.3%) of total participants, remaining 2 (26.7%) were all vegetarian.

Majority 26 (86.7%) of the T2DM patients were housewife and only 4 (13.3%) patients had service.

Most of T2DM patients (46.7%) had pre obesity stage and 13.3% were already in obesity stage. Few patients (10%) were overweight and 30% patients were normal B.M.I

 Table 2: Distribution of patients those who have knowledge about the diabetes

Have you heard of the term diabetes	Frequency	Percentage
• Yes	6	20
• No	24	80
Total	30	100

• The results from the above table shows that most of the respondents patients (80%) Does not know the term diabetes.



**Figure 1:** Bar diagram showing the distribution of respondents and they (80%) does not know the term diabetes and few patients (20%) know the term diabetes

 Table 3: Distribution of respondents about the concept of glucose containing food

Concept of glucose containing food	Frequency	Percentage
• Yes	13	43.3
• No	17	56.7
Total	30	100

• The results from the above table shows that most of patients does not know about glucose containing food





 Table 4: Distribution of respondent based on dietary fibre intake

Intake			
Dietary fibre intake	Frequency	Percentage	
Yes	14	46.7	
No	16	53.3	
Total	30	100	

• The results from the above table shows that 53.3% T2DM patients does not consume dietary fibre and 46.7% patients consume dietary fibre.



Figure 3: Bar diagram showing the percentage of respondent patients consuming the dietary fibre

Follow a diet	Frequency	Percentage
Yes	7	23.3
No	23	76.7
Total	30	100

• The results from the above table shows that almost respondent patients (76.7%) does not follow a diet.



Figure 4: Bar diagram showing the percentage of respondent patients follow a diet

## Volume 10 Issue 5, May 2021

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 Table 6: Distribution of respondents based on used sugar throughout the day

Used sugar throughout the day	Frequency	Percentage
Medium amount	17	56.7
Less amount	7	23.3
Doesn't use	6	20
Total	30	100

• The results from the above table shows that majority (56.7%) respondents patients sugar used in medium amount and (23.3%) patients sugar used in less amount and (20%) of patients doesn't use.



Figure 5: Bar diagram showing the percentage of respondent patients amount of using sugar

## 5. Discussion

- In the current investigation the allout female respondents 23.3% who dependent on follow an eating regimen where 76.7 % female respondent patients doesn't follow an eating routine. In any case, among the complete female respondents, recurrence level is high who don't have keep up the eating routine diagram than the others had keep up the eating regimen outline appropriately. Thus, Nutritional schooling and changes the dietary example is a lot of successful for female patients to recuperate from type 2 diabetes.
- These discoveries are like past investigation led by Susan L Colles, Shweta Singh, Chhavi Kohli, Ambrish Mithal in 2013 on "Dietary convictions and eating designs impact metabolic wellbeing in type 2 diabetes" where it was likewise tracked down that the standard dietary example and social guiding may upgrade diabetes control and are required and ought to empower organic product/vegetable admission, individual responsibility, and think about singular convictions and inclinations.
- Those who had less taught female and consistently remained at home, the incessant utilization of food without follow an eating regimen graph was higher (100%) when contrasted with the individuals who had laborer female. This and different investigations by Gagliardino JJ, Aschner P, Baik SH, et al. in 2011 on Patients' schooling, and its effect on care results, asset utilization and working conditions, underline that the requirement for individual responsibility and dynamic support in diabetes self-administration and the requirement for more dietary training with the incorporation of those liable for feast arranging.

Majority (56.7%) of the female respondents who doesn't • think about the Glucose containing food, albeit those were working external the home. In that reason they devoured outside food much of the time. Be that as it may, In the past examination explored by Savoca M, Miller C. in 2001 on "Food choice and eating designs: Themes found among individuals with type 2 diabetes mellitus" tracked down that Accurate information about quality food decision and examples and observing of carb types and sums are foundations of diabetes the board. Notwithstanding an undeniable degree of instruction and financial benefit, this investigation bunch showed a by and large low degree of information identified with the good food decisions and the fundamental idea of "basic sugars" and dietary fiber. Unique accentuation ought to be given to the part of diet in diabetes mindfulness projects to complete eating routine related self-administration in an effective manner. Strychar et al. featured the significance of diet selfadequacy in the administration of type 2 diabetes mellitus. From Out of 19 articles that found the consolidation guidelines, only three experiments focused in on dietary self-practicality. The creators underlined the significance of tending to dietary self-adequacy utilizing a patient strengthening approach, as this can positively affect glycemic control. Moreover, for teaching and expanding mindfulness among individuals in the diabetes local area, social change correspondence material (BCCM) ought to be presented, which ought to be pictorial, alluring, and engaging grating as general media introductions, next to each other with print media.

## 6. Conclusion

The mentioned study has been shown to found that the female patients aged 50-60 years were most prone to be affected in type 2 diabetes. Since the referred female patients were unaccustomed to the different dietary plans that should be taken care of during this period of time, the chances of type 2 diabetes, that is diabetes mellitus, was found to be increased.

Majority of patients (80%) were found to have minimum knowledge about diabetes mellitus. It was found that 56.7% patients have very little knowledge about foods that contain high amounts of glucose. As it was found that the female patients taken in account had minimum dietary knowledge, therefore the understanding of the intake of dietary fibres in them is quite low.

Lack of proper awareness and communication lead to several problems that created obesity among those who were taken into account for the required study.

Different measures can be taken to educated people and create mass awareness on the chosen locality on a periodical basis. This will help the residents to gather information and knowledge on different facts of type 2 diabetes and create consciousness among the individuals.

The individuals will thus know to follow a dietary chart that will help them to control their disorder and lead a much better life standards.

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#### 7. Future Scope

If I would have got further investigate on this topic, I would have chosen to examine different age groups to see their contribution on the field of type 2 diabetes. I would have also worked on different localities and not remain concentrated on a single one if I would have got enough time to do so. Moreover I would have also acted and maintained a 7 day diet chart if there was much more time available to me. I would also have maintained this 7 day diet chart on the chosen people and see the effect of that on those people if, as mentioned, the time criteria wasn't a barrier. Thus I could have investigated further on this topic on various other issues related to this topic if enough time was available to me to do such researches and plans.

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742