Identify Prediabetes Risk Factors, Awareness and Dietary Pattern among People in Dijil Discrete- Iraq-2019

Ban Nadhum Abdul-Fatah

Ph.D. Assist Prof. Department of Community Medicine, College of Medicine, University of Anbar, Iraq

Abstract

Background: Diabetes is the major chronic metabolic disorder that affects 25 of the population in the world. uncontrolled diabetes leads to damage many systems of the body, especially the blood vessels and nerves. (1) Weight loss, Physical activity, healthy diet can reduce the progression from prediabetes to diabetes. (2)

Objectives

1. Identify prediabetes risk factors, awareness and dietary Pattern among people over 25 years.

Method: A Cross sectional descriptive-analytical study with convenience non probability sampling had been carried out during the period from February-April, 2019 that (200) persons over 25 years who attended the clinic in AL-Dijil Discrete were interviewed.

Results: The study revealed that 40% of the attendance who were over 45 had risk factors as family history, uncontrolled hypertension (≥140/90 mm Hg), hyperlipidemia ((LDLP >140mg/dl), (triglycerides >200mg/dl)), FBS (100-125mg/dl), HB A1c (5.7-6.5%) that mostly were females from urban areas with low education. More than half the of attendance were obese (BMI >30 kg/m²), with physical inactivity. About awareness of the disease, less than half of the attendance said that the disease presented as frequent thirst and hunger, less said that the disease presented as frequent urination or blurred of vision and occurred due to have family history, obesity and diet, there was statically significance between awareness & education. Regarding to dietary pattern, more than half of attendance had poor intake of white meet, fruits and vegetables, 60% had good intake of full cream milk product, too much intake of carbohydrate as white bread & rice with oil/daily. Most of them had tea with sugar/daily and less than half had sweets/daily for both sexes.

Conclusion: Less than half of the attendance who were over 45 years had prediabetes risk factors, poor life style and dietary habits that mostly were females from urban areas with low education.

Key Word: *age over 25 years, prediabetes risk factors, awareness, Dietary Pattern.*

Introduction

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia with disturbances of carbohydrate, protein and fat metabolism that results from defects in insulin action, secretion or both with reducing of life expectancy and quality of life. [(3)] Prediabetes is a condition in which the blood glucose levels are higher than normal but not high enough to be classified as diabetes and without symptoms, 37% of the individuals with prediabetes may have diabetes in 4 years. Overweight and physical inactivity are considered as prediabetes factors. [(4)] Diabetes mellitus is considered one of the main threats to human health in this century. The Epidemic of people with diabetes is due to urbanization, aging, population growth, and physical inactivity, and obesity. Worldwide, people with diabetes was expected to increase from 171 million to 366 million in 2030. [(5)] In 2012, the estimation of diabetes death was 1.5 million which mostly occurred in middle-and low-income countries. [(6)] The prevalence of diabetes in 2014 was 9% among over 18 years aged people and mortalities was 4.6 million for age 20–79 years with one death every 7 seconds. [(7)] In Iraq the prevalence is10.2%, in Turkey is 14.9%, while in Saudi

Arabia the prevalence is (23.9%). [8-9] In 2030 diabetes will be the 7th leading cause of death. [10] Healthy diet, maintaining of normal body weight, regular physical activity and avoiding tobacco can prevent or delay the onset of the disease, while uncontrolled risk factors as high blood sugar, dyslipidemia and high blood pressure is increasing the risk of stroke 150%. [11] By WHO using of glycated hemoglobin (HbA1c) for diagnosis of diabetes with levels ranging between 5.7–6.4% are considered to be pre-diabetic, for level ≥6.5% is considered diabetic. [12] Poor control of blood glucose levels lead to high glycated hemoglobin, are associated with nephropathy, neuropathy, retinopathy and cardiovascular disease. [13]

Methodology

Study design: A Cross sectional descriptive-analytical study with convenience non probability sampling had been carried out during the period between February- April , 2019 that (200) available attendance over 25 years in the clinic in AL-Dijil Discrete were interviewed

Population: An interview questionnaire had been used among (200) available attendance in the clinic in AL-Dijil Discrete.

The questionnaire form had been designed by researcher that bases on:

Demographic characteristics & risk factors that include age, gender, education, marital and job status, family history of diabetes millets, hypertension, other diseases smoking status, exercise.

2. Awareness about Diabetes Miletus:
- Has any knowledge about symptoms, risk factors of diabetes mellitus

3. Dietary pattern & Habits of drinking Tea with sugar will be rated by frequency distribution table as; Dividing the food parts according to their groups as meet group, milk group, starch, vegetable group, fruits, tea with sugar, sweets that consider a good dietary pattern when there is daily intake or more than 4 times/ week, average dietary pattern when there is 2-3 times/week intake of food group while consider poor dietary pattern when intake of food group less than 2 time / week. [14]

Inclusion Criteria: - over 25 years, gender

Exclusion Criteria: alcohol intake, pregnancy, below 25 years, diabetic patient .

Measurements: -

Body Mass Index (BMI): For calculating Body Mass Index, body height and weight will be measured for attendance by using the equation = weight(kg)/height (m^2), that regarded BMI above 30 obese. [15]

- Blood sugar: The AFIAS-6- Machine was used to measure blood sugar, the patient was considered prediabetes when fasting blood sugar FBS (100-125mg/dl), Hemoglobin HB A_{1c} (5.7–6.4). [16]
- Lipid profile: The akary-Machine was used to measure lipid profile, the patient was considered prediabetes when LDLP >140mg/dl, triglycerides >200mg/dl. [16]
Analyses: Data was analyzed by using Statistical tests as Proportions, Measurement of variability, X^2.

ResultsTable1: Distribution of socio- demographic characteristics showed that 20% of attendance were between age 25-35 years and between 36-45 years, 40% was between 46-55 years, 20% was above 56 years. Females formed 60% of the study. 50% of attendance were working, 50% was without work. 30% was illiterate and same completed primary school, 20% completed secondary school and the same were graduated.

Table (1) Distribution of persons according to socio demographic characteristics

1. Age	**Number of patient**	**%**
25-35 years	40	20%
36-45 years	40	20%
46-55 years	80	40%
>56	40	20%
Total	200	100%
2. Sex	Number of patient	%
Males	80	40%
Females	120	60%
Total	200	100%
3.Education	Number of patient	%
Illiterate	60	30%
1st school	60	30%
2nd school	40	20%
Gradated	40	20%
Total	200	100%
4. Occupation	Number of patient	%
Working	100	50%
Without working	100	50%
Total	200	100%

Table 2: Distribution of risk factors showed that 40% of attendance had family history of diabetes mellitus, hypertension, ((LDLP >200mg g/dl), triglycerides >240mg/dl, FBS (100-125 mg/dl) and HB A_{1c} between (5.7-6.5 %) for both sexes. 80% with physical inactivity. 60% had BMI >30. 40% of males were smokers and 10% of females had previous history of gestational pregnancy.

Table (2) Distribution of risk factors

Risk factors	**Number**						**Total**	
	Yes				**No**			
1. Family history	80		40%		120	60%	200	100%
2. Hypertension	80		40%		120	60%	200	100%
4. Gestational diabetes	40		10%		160	90%	200	100%
5.Smoking cigarette	80		40%		120	60%	200	100%
6. Physical inactivity	160		80%		40	20%	200	100%
7. Lipid profile								
Triglyceride	>200mg/dl		<200mg/dl					
	80	40%	120	60%			200	100%

Cont... **Table (2) Distribution of risk factors**

LDLP	>140mg/dl		<140mg/dl					
	80	40%	120	60%			200	100%
8.Blood Sugar								
FBS	100-125		<100					
	80	40%	120	60%			200	100%
HB A1c	5.7-6.5%		<5.7%					
	80	40%	120	60%			200	100%
7. BMI	>30 kg/m²		<30 kg/m²					
	120	60%	80	40%			200	100%

Table 3: Distribution of attendance according to knowledge and awareness of diabetes showed that 40% of patients said that the disease presented as frequent thirst and hunger. 30% presented as frequent urination ,30% presented as blurred of vision. 30% said that the disease occurred due to have family history, obesity and 40% said that occurred due to the diet.

Table (3) Distribution of attendance according to knowledge and awareness of diabetes

1. knowing of symptoms	Number of patients	%
a. frequent thirst & hunger	80	40%
b. excessive urination	60	30%
c. blurred of vision	60	30%
Total	200	100%
2. knowledge about risk factors		
a. family history	60	30%
b. obesity	60	30%
c. diet	80	40%
Total	200	100%

Table 4: Association between awareness & education with statically significance

Table (4) association between awareness & education

Education	Awareness	No awareness	Total
Illiterate	15	30	45
Primary	15	30	45
Secondary	30	20	50
Gradated	40	20	60
Total	100	100	200

X^2 = 21.3, df = 3, P value =0. 05, statistically significant

Figure1: distribution of dietary pattern showed that 40% had white meet weekly, 60% monthly. 60% had full cream milk product daily, 20% weekly and monthly. 80% had white bread & rice with oil daily, 20% weekly. 40% had fruits and vegetables weekly. 80% had tea with sugar daily, 20% weekly. 40% had sweets daily, 40% weekly,20% monthly.

Discussion

40% of the attendance who were over 45 years had pre-diabetic risk factors as family history, uncontrolled hypertension (≥140/90 mm Hg), hyperlipidemia ((LDLP >140mg/dl), (triglycerides >200mg/dl))) that mostly were females from urban area with low education. Same finding was found in Egypt that 13.5% of type II diabetes occurs among low education status in urban areas, in contrasts, in Lebanon 20% has type II diabetes with a higher population in urban areas. [17] Diabetes and cerebro-cardiovascular complications increase with high risk factors as high blood pressure (≥140/90 mm Hg), LDLP >140mg/dl, triglycerides >250mg/dl, BMI >30kg/ kg/m² with physical inactivity, age older than 45 years with family history of the disease. [18] 40% of those (over 45 years) attendance had FBS between 100-125mg/dl, HB A_{1c} between 5.7-6.5%. People are considered pre-diabetic when have impaired fasting glucose (100–125 mg/dl and HB A_{1c} levels (5.7–6.4%).

More than half of the attendance were obese with physical inactivity. Obesity and sedentary lifestyle increases the risk of developing diabetes [20] while healthy diet and exercise are reducing 42% risk for developing diabetes. There was poor awareness about the symptoms, risk factors of the disease which was highly associated with education that the level of education allows increased awareness about type II diabetes. [21] A study in Kuwait reported that 27.5% of diabetic patients were illiterate and 15.5% were educated. [22] Similar findings were reported in Jordan and Qatar that the prevalence of diabetes was 34% among the illiterate population and 23.5% respectively, while the prevalence was 7.7% and 11.3% among the educated people, respectively. [23] [24]

More than half of the attendance had poor intake of white meet, fruits and vegetables, good intake of full cream milk product with too much intake of carbohydrate as white bread & rice with oil. Most of them had good intake of tea with sugar for both sexes while the kind of food for pre-diabetic patients suggests reducing carbohydrate & fat with good intake of fruits and vegetables. [25] These dietary habits are associated with rising in the prevalence of chronic diseases and obesity in the region. [26] In a study from Saudi Arabia, the odds ratio for eating Kabsa was 5.5, while for eating vegetables was 0.4. [27]

Conclusion

Less than half of the attendance who were over 45 years had prediabetes risk factors, poor life style and dietary habits that mostly were females from urban areas with low education.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both MOH and MOHSER in Iraq

Conflict of Interest: Non

Funding: Self-funding

References

1. World Health Organization. Global Health Estimates: Deaths by Cause, Age, Sex and Country**,** 2000-2012. Geneva, WHO, 2014.
2. Prediabetes, Strategies For Effective Screening, Interventions and Follow up. American Diabetes Association. Diabetes Care. 2014.37 Suppl 1: S81-90.
3. Wild, G. Roglic, A. Green, R. Sicree, and H. King, "Global prevalence of diabetes: estimates for the year 2000 and projections for 2030," *Diabetes Care*, 2004. 27, 1047–1053,
4. Karin R Riggs, MSW; Paula Lozano, MD, MPH; Amy Mohelnitzky, edtal. An Adaptation of Family-Based Behavioral Pediatric Obesity Treatment for a Primary Care Setting: Group Health Family Wellness Program. The Permanente journal, 2014.18(3); 4-10.
5. World Health Organization Department of Non-Communicable Disease Surveillance, "Diagnosis and classification of diabetes mellitus and its complications," WHO, 1999.
6. G. Roglic and N. Unwin, "Mortality attributable to diabetes: estimates for the year 2010," *Diabetes Research and Clinical Practice*, 2010. 87: 15–19,
7. Roglic G, Unwin N, Bennett PH, Mathers C, Tuomilehto J, Nag S et al. The burden of mortality attributable to diabetes: realistic estimates for the year 2000. Diabetes Care, 2005: 28(9)2130–2135.
8. Prevalence of Diabetes in the World, Analyzing health data, generating and communicating evidence to improve population health, Health Intelligence. 2013. 6:10:18-11.
9. Mohammad Badran and Ismail Laher . Type II Diabetes Mellitus in Arabic-Speaking Countries International Journal of Endocrinology. 2012: (2012), 11 pages.
10. Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL. Global and regional burden of disease and risk factors: Systematic analysis of population health data. Lancet 2006.367: 1747–1757.
11. G. M. M. Alberti, P. Zimmet, and J. Shaw, "International Diabetes Federation: a consensus on Type 2 diabetes prevention," Diabetic Medicine, 2007: (24) : 451–463,
12. L. Alhyas, A. McKay, A. Balasanthiran, and A. Majeed, "Prevalence of overweight, obesity, hyperglycaemia, hypertension and dyslipidaemia in the Gulf: systematic review," *Journal of the Royal Society of Medicine*, 2011: (2) , 55
13. Prevalence of Diabetes in the World, Analyzing health data, generating and communicating evidence to improve population health, Health Intelligence- 06:10 Mon, 18/11/2013.
14. Mahan K & Sylvia Escott – Stump. Krause's- Food Nutrition & Diet Therapy, China, 11th Edition. 2006; (4):565-568.
15. McGee, D.L. Body mass index and mortality: A meta-analysis based on person-level data from twenty-six observational studies. Annals of Epidemiology. 2005; 15, 87-97.
16. Diagnosis and classification of diabetes mellitus. Diabetes Care. American Diabetes Association. 2011. 34: S6 : 2–9.
17. Summary of revisions for the 2010 clinical practice recommendations," Diabetes Care. American Diabetes Association. 2010.: 33(Supplement 1): S3-S3.
18. K. G. M. M. Alberti, P. Zimmet, and J. Shaw, "International Diabetes Federation: a consensus on Type 2 diabetes prevention," *Diabetic Medicine*, 2007. (24): 451–463,
19. P. L. Santaguida, C. Balion, D. Hunt et al., "Diagnosis, prognosis, and treatment of impaired glucose tolerance and impaired fasting glucose," Evidence *Reports/Technology Assessments*, 2005. 128 : 1–11,
20. W. C. Knowler, E. Barrett-Connor, S. E. Fowler et al. "Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin," *New England Journal of Medicine*. 2002: 346, 393–403
21. M. V. Williams, D. W. Baker, R. M. Parker, and J. R. Nurss. "Relationship of functional health literacy to patients' knowledge of their chronic disease: a study of patients with hypertension and diabetes," *Archives of Internal Medicine*. 1998: 158: 166–172.
22. N. Abdella, M. Al Arouj. A. Al Nakhi, A. Al Assoussi, and M. Moussa. "Non-insulin-dependent diabetes in Kuwait: prevalence rates and associated risk factors," *Diabetes Research and Clinical Practice*. 1998: 42, 187–196.

23. K. Ajlouni, Y. S. Khader, A. Batieha, H. Ajlouni, and M. El-Khateeb."An increase in prevalence of diabetes mellitus in Jordan over 10 years," *Journal of Diabetes and its Complications*. 2008: 22: 317–324.

24. A. Bener, M. Zirie, I. M. Janahi, A. O. A. A. Al-Hamaq, M. Musallam, and N. J. Wareham, "Prevalence of diagnosed and undiagnosed diabetes mellitus and its risk factors in a population-based study of Qatar," *Diabetes Research and Clinical Practice*. 2009: 84: 99–106.

25. K. A. Meyer, L. H. Kushi, D. R. Jacobs, and A. R. Folsom, "Dietary fat and incidence of type 2 diabetes in older Iowa women," *Diabetes Care*, 2001: 24, 1528–1535, 2001.

26. H. N. Madanat, K. P. Troutman, and B. Al-Madi, "The nutrition transition in Jordan: the political, economic and food consumption contexts," *Promotion & education*. 2008: 15: 6–10

27. J. S. Rana, T. Y. Li, J. E. Manson, and F. B. Hu, "Adiposity compared with physical inactivity and risk of type 2 diabetes in women," *Diabetes Care*, 2007: 30: 53–58,