Thi-Qar Medical Journal (TQMJ):Vol.(25),No.(1),2023

Web Site: https://jmed.utq.edu **Email:** utjmed@utq.edu.iq

ISSN (Print):1992-9218, ISSN (Online):1992-9218

Effect of Sex Difference on Meat and Fat Consumption in Type 2 Diabetes Mellitus Patients in Thi Qar Province 2022

Zainab Mohammed Ali Hasan,, University of Kerbala, College of Medicine, Family Medicine
alyasirihmf22@yahoo.com

Ali Abdulridha Abutiheen, University of Kerbala, College of Medicine, Community and Family Medicine

Ali Abid Saadoon, University of Warith Al-Anbiyaa_College of Medicine, ali.sa@uowa.edu.iq

Abstract

Background: Diabetes mellitus is a worldwide disease characterized by disturbance in insulin secretion and or action. Type 2 is the most commen and burden the body with several complication that may be eccelerated by un customized dietary intake.

Aim of the study is to check the relationship between the sex difference and meat and fat consumption in type 2 diabetes mellitus patients**.**

Patient and methods

In this cross-sectional comparative study, 300 T2 diabetic patients selected randomly in diabetes and endocrine center in Thi-Qar province/ Iraq from 1/4/2022-15/9/2022. 154(51.3%) patients were male and 146(48%) patients were female, their age range from25-83, mean= 50.97. Age, sex, residency, marital state, education, occupation, smoking, and the body mass index, dietary behavior and anthropometric measures were checked, and we send them RBS,HbA1c, lipid profile and body component examined by human body element analyzer (impedance electrochemistry). We use SPSS program, p value (0.05 or less)was significant using ANOVA, pearson, chi square and X^2 test.

Conclusion:

There is no effect of sex difference with meat and fat consumption in type 2 diabetes mellitus patients.

Key world: Diabetes mellitus, fat , consumption , sex

Introduction

Diabetes mellitus (DM) is a metabolic disease can involve inappropriately raised or altered blood glucose levels(**Diagnosis and classification of diabetes mellitus, 2013**). Consisting of several types.

Diabetes Mellitus can be categorized as type 1(T1DM), type 2(T2DM), maturity-onset diabetes of the young(MODY),gestational diabetes, neonatal diabetes, and also secondary causes due to endocrinopathies or steroid intake (**Diagnosis and classification of diabetes mellitus, 2009**).

The chief subtypes of Diabetes Mellitus (DM) are Type 1 Diabetes Mellitus (T1DM) and Type 2 Diabetes Mellitus (T2DM) that starkly result from defective insulin secretion (T1DM) and/or action (T2DM). T2DM that involves middle-aged and older adults, who may present with asymptomatic hyperglycemia that may be influenced by poor lifestyle and dietary choices(**Corish CA& Bardon LA 2019**).

T1DM and T2DM have different pathogenesis and each type of DM has various etiologies, clinical presentations and treatment(**Stankov K, Benc D& Draskovic D 2013**).
DM is very common amongst Iraqi Population and may compromise both nutritional status and functional ability of the patient, which will in turn negatively With approximate occurrence about 422million people worldwide have diabetes the majority lies in low and middle income countries and 1.5 million deaths are directly attributed to DM.(**WHO Diabetes, September 2022**).

Aim of the study: To check the relationship between the sex difference and the consumption of meat and fat.

Patient and methods

The study was performed in diabetes and endocrine center in Thi-Qar province/ Iraq. Thi Qar is a governorate in southern Iraq. 300 randomly selected patients as cross-sectional comparative study, this study was performed from 1/4/2022-15/9/2022

Inclusion criteria: All diabetic patients type 2 who are more than 30 years old attend the center of diabetes were eligible for the study.

Exclusion criteria: We exclude patients with severe renal, cardiac or liver dysfunction, malignancy, requirement of intensive care unit.

Random blood sugar(RBS) was checked by using minividus and the kit used is Germany, glycosylated hemoglobin (HbA1c) was checked by pelvic, waist,, wrist and mid-arm circumferences had been calculated by the tape measure. Body mass index (BMI), which calculates

the ratio of weight to the height. We use windows 10 program in our computer and SPSS-26 as mentioned above, numbers expressed inform of frequency and percentages by using the Excel sheets for drawing graphs and figures and by using the statistical package of social sciences.

Results

A three hundred Patients were included in this study. All of them were diagnosed as DM. The males were slightly higher in their number than female 154(51.3%) for male versus 146(48.7%)female figure (1). Most of our patient were live in urban area which is equal to 198 (66%). The majority of our patient were married 255 (85%), the others where widow's 25 (8.3%) and about 17 (5.7%) patients were single, the others were divorce. The majority of our patients were either overweight 112 (37.3%)patients, obese154 (51.3%), the others was a normal weight 31 (10.3%) and underweight just a 3(1%). (As shown in fig 2).

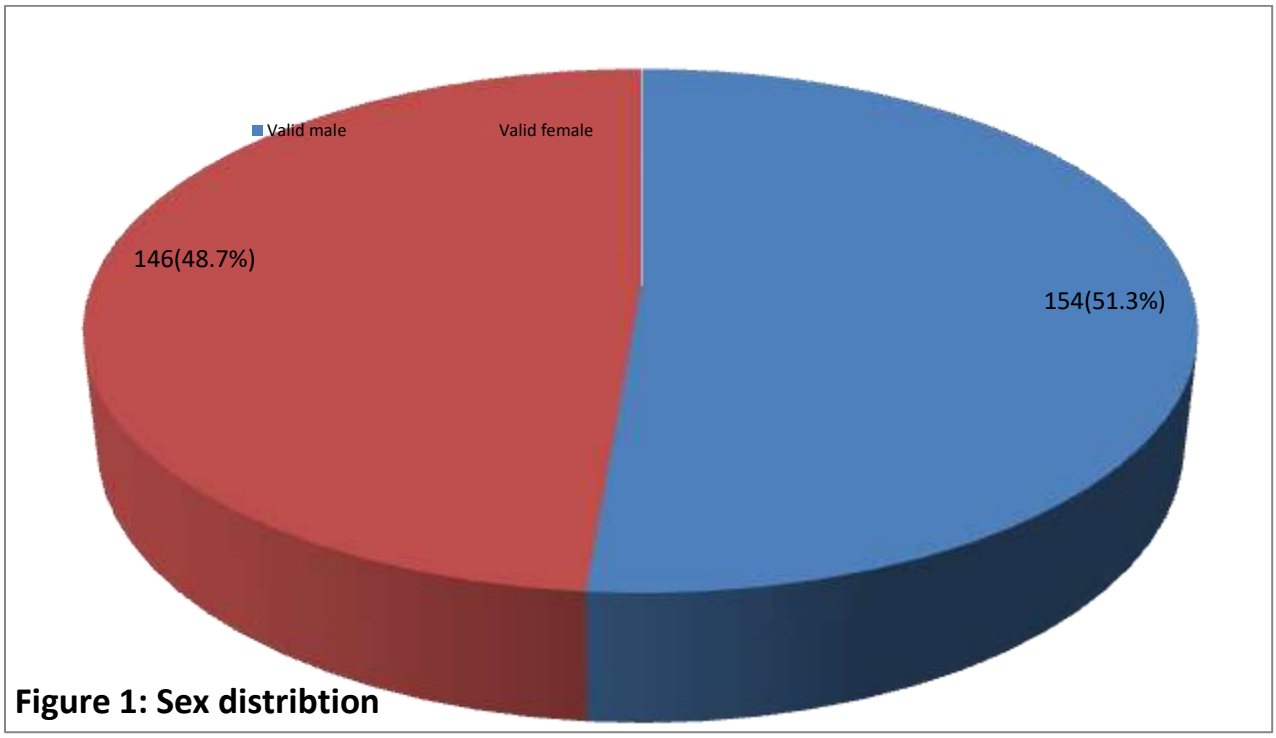

Figure 1: Sex distribtion

Thi-Qar Medical Journal (TQMJ):Vol.(25),No.(1),2023

Web Site: https://jmed.utq.edu Email: utjmed@utq.edu.iq

ISSN (Print):1992-9218, ISSN (Online):1992-9218

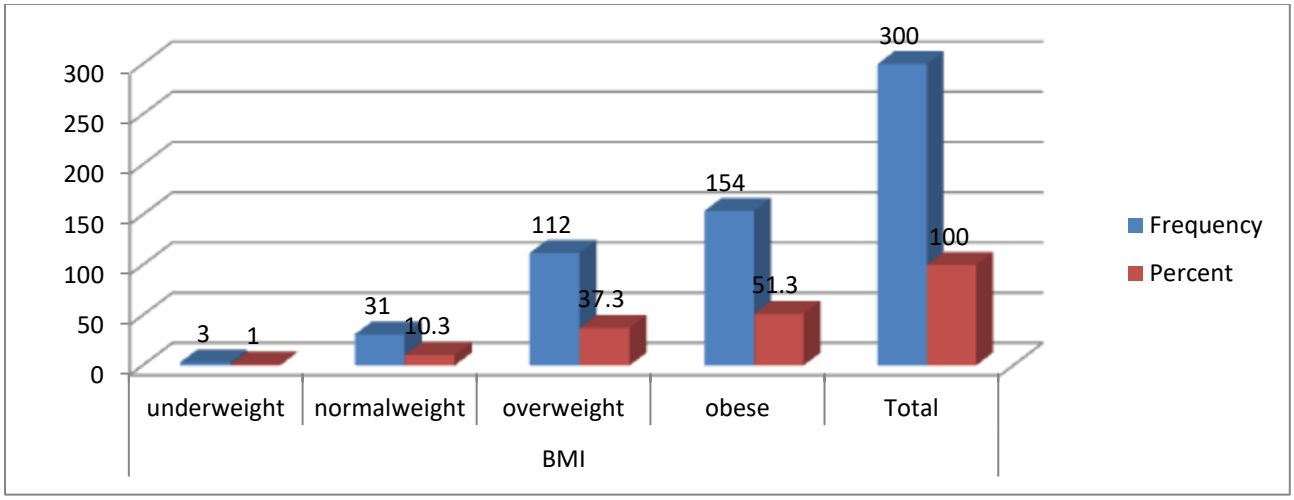

Figure 2. Body mass index of the studied population.

Regarding the relationship between some quantitative parameters and sex, a good relationship between sex and age (P=0.001) and poor correlation with the date of history of DM, HbA1c and RBS(P=0.4, 0.15 and 0.4 respectively) as shown in(table 1)

Table1. Quantitative parameters in relation to the sex

Sex		**Age**	**DM** Date	Hba1c	**RBS**
Male (154)	**Mean**	**48.7**	**7.3**	**9.01**	**178.9**
	S. D	**11.3**	**4.1**	**6.4**	**79.6**
Femal (146)	**Mean**	**52.9**	**7.7**	**10.6**	**186.5**
	S. D	**10.3**	**4.3**	**11.4**	**91.1**
Total	**Mean**	**50.8**	**7.5**	**9.8**	**182.6**
	S. D	**11.06**	**4.2**	**9.2**	**85.3**
	ANOVA	**11.05**	**0.8**	**2.1**	**0.6**
	P Value	**0.001**	**0.4**	**0.15**	**0.4**

Regarding the relationship between the sex with the anthropometric parameters, no correlation was found between the sex and the anthropomeric parameters like pelvis, waist, mid arm, wrist circumference(P= 0.12,P= 0.7,P= 0.2, and P= 02 respectively) while there is a good relationship between BMI and sex with P=0.0001)

Table 2. Anthropometric parameters in relation to sex

Sex		Pelvis	Waist	Midarm	Wrist	BMI
Male (154)	Mean	106.8	112.9	29.8	19.2	29.4
	Std. Deviation	7.61	12.41	4.2	2.5	4.5
Female (146)	Mean	108.3	113.6	31.4	18.7	32.1
	Std. Deviation	9.17	10.67	11.4	2.8	6.31
Total	Mean	107.57	113.3	30.6	18.9	30.7
	Std. Deviation	8.43	11.6	8.5	2.7	5.6
	ANOVA	2.5	0.2	2.6	1.9	17.5
	P Value	0.12	0.7	0.2	0.2	.0001

Dietary intake with the sex: Dietary intake had been also check separately and we find there's no difference of both sex on fatty diet intake as shown in (table 3)(P=0.12)

Table 3. Fatty diet * sex

Crosstab						
			Sex		Total	
			Male	Female		
Fatty Diet	No	Count	35	37	72	
		% Within Sex	22.7%	25.5%	24.1%	
	Rarely	Count	72	54	126	
		% Within Sex	46.8%	37.2%	42.1%	
	Sometime	Count	34	30	64	
		% Within Sex	22.1%	20.7%	21.4%	
	Always	Count	13	24	37	
		% Within Sex	8.4%	16.6%	12.4%	5.882[a]
Total		Count	154	145	299	0.12
		% Within Sex	100.0%	100.0%	100.0%	

There is no effect of sex difference on meat and fish (whether grill or fried)consumption(P=0.7 and P=0.2 respectively)(table 4-a and4-b).

Thi-Qar Medical Journal (TQMJ):Vol.(25),No.(1),2023

Web Site: https://jmed.utq.edu Email: utjmed@utq.edu.iq

ISSN (Print):1992-9218, ISSN (Online):1992-9218

Table 4-A. Meat * Sex

Crosstab						
			Sex		Total	
			Male	Female		
Meat	No	Count	11	11	22	1.3[a]
		% Within Sex	7.1%	7.5%	7.3%	P=0.7
	Rarely	Count	59	61	120	
		% Within Sex	38.3%	41.8%	40.0%	
	Sometime	Count	59	47	106	
		% Within Sex	38.3%	32.2%	35.3%	
	Always	Count	25	27	52	
		% Within Sex	16.2%	18.5%	17.3%	
Total		Count	154	146	300	
		% Within Sex	100.0%	100.0%	100.0%	

Table 4-B Fish * Sex

Crosstab						
			Sex		Total	
			Male	Female		
Fish	Fried	Count	7	2	9	
		% Within Sex	4.5%	1.4%	3.0%	
		% Of Total	2.3%	0.7%	3.0%	
	Grilled	Count	50	41	91	
		% Within Sex	32.5%	28.1%	30.3%	3.6[a]
		% Of Total	16.7%	13.7%	30.3%	P=0.2
	Both	Count	97	103	200	
		% Within Sex	63.0%	70.5%	66.7%	
		% Of Total	32.3%	34.3%	66.7%	
Total		Count	154	146	300	
		% Within Sex	100.0%	100.0%	100.0%	
		% Of Total	51.3%	48.7%	100.0%	

Discussion

Limitations of the study

This study was a single-center investigation, and the enrolled participants were primarily residing in the city.

Overall, the association between dietary factors and type 2 diabetes has been extensively studied, but few of the associations were graded as high quality of evidence. Further factors are likely to be important in type 2 diabetes prevention; thus, more well conducted research, with more detailed assessment of diet, is needed.

As far as we are dealing with type 2 DM most of the patients were obese with mean BMI more than 30.7 as this dedicate the presence of insulin resistance with type 2 DM.

Because we are dealing with T2D most of our patient they are obese or over weight and this is well known fact and many researchers mention it like the Jordanian study (Hana Alkhalidy et al, 2021) and (Haslam D., 2010).

Men and women present with different diabetes phenotypes related to differences in muscle mass, muscle quality and fat topography

findings imply that the waist circumference is an important additional piece of information for assessing the risk of type 2 DM, particularly among persons of low or normal weight.(Silke Feller,2010)

study showed that different factors affect choice of fat-rich meat by gender, in addition to liking of and familiarity with fat-rich and cold meat and age. This suggests that strategies personalized by gender to reinforce or activate barriers to this type of consumption may be more effective at reducing fat intake, promoting the consumption of meat lower in fat. (Sara Spinelli, 2020)

Some studies found that high-fat diets may contribute to increased adiposity and concomitant insulin resistance and β-cell dysfunction in Mexican Americans.(Mary Helen Black, 2013)

Conclusion

The male predominance is slightly higher than female in T2DM. Most of our patients with T2DM are either overweight or obese which is equal to 266(88.6%), the sex difference doesn't affect the age, date of DM history, HbA1c and RBS.

There is a great effect of the sex difference on the BMI , meat consumption and type of fish cooking whether grilled or fried.

Recommendations

1. Body weight in patients with T2DM must be taken in consideration
2. Body mass index must be checked in both sex.
3. Both sex must customize meat and fat intake for control of DM.

References

Corish CA, Bardon LA. Malnutrition in older adults: screening and determinants. Proc Nutr Soc. 2019 Aug;78(3):372–379

Diagnosis and classification of diabetes mellitus. Diabetes care. 2013;36(1):67–74. Available from: https://care.diabetesjournals.org/ content/36/Supplement_1/S67.article-info.

Diagnosis and classification of diabetes mellitus. Diabetes care. 2009;32(1):62–7. Available from: https://care.diabetesjournals.org/ content/32/Supplement_1/S62

Hana Alkhalidy et al. Obesity Measures as Predictors of Type 2 Diabetes and Cardiovascular Diseases among the Jordanian Population: A Cross-Sectional Study. Int J Environ Res Public Health. 2021 Nov; 18(22): 12187. Published online 2021 Nov 20. doi: 10.3390/ijerph182212187.

Haslam D. Obesity and diabetes: the links and common approaches. Prim Care Diabetes. 2010;4(2):105–112. doi:10.1016/j.pcd.2010.04.002.

Mary Helen Black, High-Fat Diet Is Associated with Obesity-Mediated Insulin Resistance and β-Cell Dysfunction in Mexican Americans. J Nutr. 2013 Apr; 143(4): 479–485. doi: 10.3945/jn.112.170449

Silke Feller, Heiner Boeing. Body Mass Index, Waist Circumference, and the Risk of Type 2 Diabetes Mellitus. Deutsches Arzteblatt international . 2010 Jul; 107(26): 470–476. Published online 2010 Jul 2. doi: 10.3238/arztebl.2010.0470

Sara Spinelli. Gender Differences in Fat-Rich Meat Choice: Influence of Personality and Attitudes.Nutrients. 2020 May; 12(5): 1374. Published online 2020 May 11. doi: 10.3390/nu12051374

Stankov K, Benc D, Draskovic D. Genetic and epigenetic factors in etiology of diabetes mellitus type 1. Pediatrics 2013;132:1112–1122.

World Health Organization (WHO). Non-communicable diseases.16 September 2022. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.