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**DİYABETİK VE/YA OBEZ BİREYLERİN KANSERE BAKIŞ AÇILARI**  
PERSPECTIVES ON CANCER OF DIABETIC AND/OR OBESIC INDIVIDUALS

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**Özet**

**Amaç:** Aile hekimliği ve İç Hastalıkları polikliniğine başvuran obez veya diyabetli bireylerin artmış kanser riskleri hakkında farkındalıklarını değerlendirmek

**Gereç ve Yöntem:** Çalışmaya Mart 2021-Haziran 2021 tarihleri arasında İstanbul Medeniyet Üniversitesi Aile hekimliği ve İç Hastalıkları polikliniğine başvuran Tip 2 Diyabet tanısı veya obezitesi olan 500 hasta dahil edildi ve kesitsel olarak incelendi. Yüz yüze görüşme yöntemiyle araştırmacı tarafından yöneltilen, artmış kanser risk farkındalığı ve kanser tarama testleri hakkındaki bilgi düzeyi, tutum ve davranışlarını değerlendirmek amacıyla literatür eşliğinde hazırlanan anket soruları dolduruldu. Hastaların sosyodemografik özellikleri ve antropometrik ölçümleri alındı.

**Bulgular:** Çalışmamızda 346 kadın, 154 erkek katılımcı bulunmaktaydı. Katılımcılardan 81 (%16,2) kişi normal veya az kilolu, 419 (%83,8) kişi obez idi. Katılımcılardan 339(%67,8) kişi diyabet tanılıydı. Kadınların gaitada gizli kan baktırma oranları anlamlı düzeyde fazlaydı ( $p<0,001$ ). Kolonoskopi yaptırma oranlarında ise cinsiyetler arası anlamlı bir fark gözlenmedi. Genel olarak herhangi bir kanser (en az bir kanser) için tarama yaptıran katılımcı sayısı 349

(%69,8) idi. Bu oran kadınlarda 306 kişi ile %88,4, erkeklerde 43 kişi ile %27,9'du ve anlamlı olarak kadınlarda yüksek idi( $p<0,05$ ). Kanser taraması yaptıran oranı ailesinde kanser olanlarda %85,3, olmayanlarda %64,4 idi ve anlamlı olarak aile öyküsü olanlarda fazlaydı ( $p<0,05$ ). Kendilerine kanser taraması açısından bilgilendirme yapılan 92 kişiden 83'ü (%90,2) tarama yaptırdı, bilgilendirme yapılmayan 408 kişiden 266'sının (%65,2) kanser taraması yaptırdığı gözlemlendi ve bu fark istatistiksel açıdan anlamlı bulundu ( $p<0,05$ ).

**Sonuç:** Kadınlarda ve kendisine bilgilendirme yapılan kişilerde kanser taramalarına ilginin daha yüksek oranda olduğu görüldü. Sonuç olarak eğitim düzeyi düşük insanlara eğitim ve tanıtım faaliyetlerinin yapılarak farkındalık sağlanması kanserle mücadelede oldukça önemlidir.

**Anahtar kelimeler:** Aile hekimliği, iç hastalıkları, kanser taramaları, kanser risk faktörleri, Tip 2 Diyabet, obezite

### Abstract

**Aim:** To evaluate the awareness of the increased cancer risks of obese or diabetic individuals who applied to the Family Medicine and Internal Medicine outpatient clinic.

**Materials and Methods:** 500 patients with Type 2 Diabetes or obesity who applied to the Istanbul Medeniyet University Family Medicine and Internal Medicine outpatient clinic between March 2021 and June 2021 were included and analyzed cross-sectionally. Questionnaires prepared by the researcher using face-to-face interview method and prepared in the light of the literature were filled in order to evaluate the level of knowledge, attitudes and behaviors about increased cancer risk awareness and cancer screening tests. Sociodemographic characteristics and anthropometric measurements of the patients were taken.

**Results:** There were 346 female and 154 male participants in our study. Of the participants, 81 (16.2%) people were normal or underweight, and 419 (83.8%) were obese. Among the participants, 339 (67.8%) people were diagnosed with diabetes. The rate of checking the stool for occult blood in women was significantly higher ( $p<0.001$ ). There was no significant difference between genders in the rates of colonoscopy. In general, the number of participants who were screened for any cancer (at least one cancer) was 349 (69.8%). This rate was 88.4%

with 306 people in women, 27.9% with 43 people in men, and it was significantly higher in women ( $p < 0.05$ ). The rate of cancer screening was 85.3% in those with a family history of cancer, 64.4% in those without, and it was significantly higher in those with a family history ( $p < 0.05$ ). While 83 (90.2%) of 92 people who were informed about cancer screening had screening, it was observed that 266 (65.2%) of 408 people who were not informed had cancer screening, and this difference was statistically significant ( $p < 0.05$ ).

**Conclusion:** It was observed that the interest in cancer screening was higher in women and people who were informed. As a result, it is very important to raise awareness by conducting educational and promotional activities to people with low education levels in the fight against cancer.

### **Introduction**

Cancer is a leading cause of death worldwide, causing nearly 10 million deaths in 2020 (Sung, 2021). In our country, it is in the second place after circulatory system diseases in the list of causes of death (Turkey Cancer Control Program, 2016). One of every 6 deaths in the world and one out of every 5 deaths in our country is due to cancer (Sung, 2021).

8.8% of newly diagnosed cancers in women and 3.2% in men are associated with increased body mass index (Avgerinos, 2018). Especially in recent large prospective studies, both obesity and diabetes are associated with increased cancer risk; It is stated that it is frequently associated with many cancer types such as breast, endometrium, kidney, bladder and gastrointestinal system cancers (Giovannucci, 2010). Parallel to the increasing prevalence of obesity and diabetes, when it is predicted that there may be an increased risk of cancer in these individuals; Routine cancer screening should be done more carefully, especially in diabetic or obese individuals compared to non-diabetic and normal body weight individuals. It should be known that individuals with diabetes or obese need regular training and counseling in recognizing individual cancer risk factors, taking preventive measures against cancer, and getting screening tests done on time. Maintaining a healthy body weight also plays an important role in the prevention of cancer types. In previous studies, it was concluded that the majority of obese or diabetic individuals did not have sufficient awareness and information about increased cancer risks, and they had cancer screening at low rates (Engquist, 2011).

We will also aim to evaluate the awareness of obese or diabetic individuals about increased cancer risks and the rate of cancer screening among patients in the Family Medicine and Internal

Medicine outpatient clinic of Istanbul Medeniyet University Göztepe Training and Research Hospital.

### **Materyal and Method**

The research is a cross-sectional study. The study was carried out between 01.03.2021 and 01.06.2021 in the Istanbul Medeniyet University Family Medicine and Internal Medicine outpatient clinic. Volunteers aged 18 years and over who applied to the Family Medicine and Internal Medicine outpatient clinic were included in the study. Necessary information about the study was given to the patients, and informed consent was obtained from the individuals who wanted to participate in the study. A face-to-face interview method was applied to the participants in the polyclinic waiting areas for the demographic information and increased cancer risk awareness and the evaluation of their knowledge, attitudes and behaviors about cancer screening tests. A questionnaire consisting of 11 questions prepared to question the sociodemographic characteristics of the participants and 14 questions prepared in the light of the literature was conducted to evaluate the awareness and attitudes of the participants about increased cancer risks. Participants' age, gender, marital status, educational status, employment status, and having a child were questioned. Educational status was grouped as illiterate, primary school graduate, secondary school graduate, high school graduate, university and above.

Occupations were grouped into working and non-working. With the demographic information questionnaire, the sociodemographic characteristics of the participants, smoking and alcohol use, which are risk factors for cancer, the amount of pack/year if smoking, and the history of cancer in the first degree family were questioned.

Concomitant diseases, the years of these diseases and the drug groups they used were questioned. The drugs they used were grouped according to their use of oral antidiabetic, insulin therapy, antihypertensive, anticoagulant and antipsychotic drugs. The status of informing or directing in terms of cancer screenings was questioned. It was questioned whether female participants had breast, cervix and CRC screening, and whether male participants had CRC screening.

It was questioned whether low-dose contrast-enhanced lung tomography was performed in both sexes who smoked 30 packs/year or more.

Those who were diagnosed with cancer and had a mental disorder that could not continue the interview during the study were excluded.

Data IBM SPSS Statistics 18 © Copyright SPSS Inc. It was analyzed using the 1989, 2010 software. Conformity of continuous variables to normal distribution was examined by

Kolmogorov Smirnov test. Categorical variables in the study were presented with frequency (n) and percentage (%), and continuous variables with mean±standard deviation (SD), median (smallest and largest) values. Pearson Chi-square, Fisher Exact Test were used in the analysis of categorical variables, and Yates and post hoc Bonferroni corrections were made. The statistical significance level was accepted as 0.05 in the study.

Ethics committee approval, dated 24.02.2021 and numbered 2021/0158, was obtained from the Istanbul Medeniyet University Göztepe Training and Research Hospital Ethics Committee (Annex 3) to conduct the study. In addition, permission was obtained from the Provincial Health Directorate to conduct the study.

## Results

A total of 500 people participated in the study. The mean age of the participants was 51.24±12.09 years, the youngest age was 20, and the oldest was 80. The mean BMI of the participants was found to be 35.15±6.51 kg/m<sup>2</sup>, the lowest BMI was 20, and the highest BMI was 58 kg/m<sup>2</sup>. Sociodemographic characteristics are shown in Table 1. While the majority of the participants (87.2%) had a concomitant disease, only 12.8% did not have an additional disease. The most common additional diseases, in order of frequency, are as follows; Hypertension, hypothyroidism, hyperlipidemia, cardiovascular disease, chronic renal failure, cerebrovascular disease. Apart from these, 44 patients also had diseases such as benign prostatic hyperplasia, arrhythmia, bipolar disorder, deep vein thrombosis, epilepsy, fibromyalgia, heart failure, PCOS, vertigo, and psoriasis. 331 (66.2%) people are oral antidiabetic, 228 (45.6%) people are antihypertensive, 121 (24.2%) people are insulin, 101 (20.2%) people are anticoagulant, 90 (18.0%) people are antipsychotic was using drugs. 56.2% of the participants stated that they have never smoked, 19.6% of them used and quit, and 24.2% of them stated that they still use it. There were 129 (25.8%) people with a family history of cancer. The number of participants who stated that they were informed about cancer screening was 92 (18.4%).

When the screening status was analyzed according to age groups, it was observed that 46.1% of the people in the 18-39 age group, 73.8% of the people in the 40-59 age group, 74.6% of the people aged 60 and over were screened and it was statistically significant ( $p<0.05$ ).

In the further analyzes carried out to understand from which group the difference originated, it was determined that the participants in the 18-39 age group had statistically significantly less screening than the other age groups. According to gender, the rate of screening in males (27.9%) was found to be significantly lower than females (88.4%) ( $p<0.05$ ).

When the screening status was analyzed according to the marital status of the participants, it was determined that there was a significant difference again. The rate of screening was found to be significantly higher in married (70.0%) and separated/divorced people (84.3%) than in single people (51.2%) ( $p < 0.05$ ).

A significantly higher rate of screening was observed in people who have children (71.7%) than people who do not (56.5%) ( $p < 0.05$ ). Although the rate of screening according to the educational status of the participants did not change statistically, the rate of screening was found to be higher in illiterate and primary school graduates ( $p > 0.05$ ).

Screening rate of non-working participants (78.9%) was significantly higher than that of working participants (52.1%) ( $p < 0.05$ ).

When the rates of screening according to BMI groups are examined, 45.0% in the normal weight group, 44.3% in the overweight group, 74.7% in the obese group, 74.8% in the morbidly obese group, and 73.3% in the super obese group and significant differences were found. It was found that the screening rates of the normal-weight and overweight groups were significantly lower than the obese, morbidly obese and super-obese groups (Table 3).

Those who stated that they have never smoked have a significantly higher rate of screening compared to those who have used and quit smoking. While the rate of screening was 80.8% in never-smokers, it was 53.1% in those who used and quit, and 57.9% in current users ( $p < 0.05$ ). Those with a family history of cancer also have cancer screening at a significantly higher rate than those without. The rate of cancer screening is 85.3% in those with a family history of cancer, and 64.4% in those who do not ( $p < 0.05$ ). The screening rate of those who were informed about cancer screening was 90.2%, while the rate of those who were not informed was 65.2%, and this difference was statistically significant ( $p < 0.05$ ).

Is obesity/diabetes a risk factor for cancer?" The rate of those who answered "yes" to the question was 54.3% for those who are nonobese and have diabetes, 59.6% for those who are obese but have no diabetes, and 63.6% for those who are both obese and have diabetes. These rates were not statistically different ( $p > 0.05$ ) (Table 5).

## Discussion

This study showed that individuals' level of knowledge about national cancer screening programs and their knowledge that diabetes/obesity increases cancer risk are not sufficient. The rate of having at least one cancer screening in all people participating in the study was found to be 69.8%. The rate of having at least one cancer screening was found to be significantly higher

in women than in men. In a study that included 752 people who applied to Family Medicine, the rate of having been screened for at least one type of cancer before was 23.3% (Tekpinar, 2016)

We may think that the reason why this rate was higher in our study compared to other studies is due to the fact that the sample we selected had at least one of diabetes or obesity. In this study, similar to our study, the rate of women being screened was found to be significantly higher than that of men. In addition, the high rate of cancer screening in our hospital may be due to the fact that our hospital is located in a region of Istanbul with a high socio-cultural and economic level. This is a finding that supports the relationship between education level and the frequency of cancer screening.

One of the striking data in our study was that 35 (46.1%) of 76 people in the 18-39 age group had at least one cancer screening. In the light of this data, we can say that the awareness of having cancer screening in young people has started to emerge.

The rate of screening was higher in individuals who never smoked. This suggests that individuals who have never smoked pay more attention to their health, while heavy smokers are less sensitive to this issue. In the USA, the USPSTF (The US Preventive Services Task Force, 2006) recommends annual Low-dose CT scan for individuals aged 50-80, who have smoked 30 packs/year, are still using or have not been 15 years since they quit.

The lack of low-dose CT in the National Cancer Screening Program and, accordingly, the lack of guidance and information brochures by health professionals may be the reasons for the low awareness on this issue.

It was observed that only 24.9% of the women participating in our study had clinical breast examination. When the frequency of clinical breast examination was examined in several studies, it was 54.8% in the study of Sadler et al (Sadler, 2005) was found. In Razaee's study, it was found 15.4% (Razaee, 2008). The fact that Razei's work was done in Iran brings to mind the idea of privacy and suggests that it may be an indicator of this result. The reason for the lower rate of clinical breast examination in our study compared to studies conducted in Europe and America may be the consideration of privacy.

Women have occult blood tests in stool significantly more than men. In the study of Bayçelebi et al., the rate of having FTA is 18% (Bayçelebi, 2015). The reason for the high rates in our

study may be the high level of education of the individuals and their easy access to health services due to their location. The rate of colonoscopy in our study was 17.2%. Similar results were found in the study of Santos et al. (Santos, 2011). Fear, difficult and long bowel preparation, and a sense of shame are thought to be among the reasons for these low rates.

In our study, the rate of those who had Pap-smear was found to be 59.8%. In the study of Gunes et al., the rate of having a smear is 23.5% (Gunes 2009). The reason why it was found to be high in our study may be that the individuals participating in the study have a high level of education, the informative studies of the Ministry of Health are beneficial, and they can easily access health services due to their location.

In our country, three types of cancer are screened. These are breast cancer, cervical cancer and colorectal cancer. Screening rates for these cancers are not at the desired level. Primary health care services have a critical importance in achieving the desired targets in cancer screening programs, as in all periodic health care practices. At the same time, it is the responsibility of every physician to recommend that every patient who applies to a health institution, especially those with increased risk factors for cancer such as chronic disease and obesity, have cancer screening.

Our study is extremely valuable in terms of questioning all cancer screenings included in the national program together and separately, as well as comparing it with many parameters.



## Tables

Table 1: Sociodemographic characteristics of patient's

All	(n)	(%)
<b>Age groups</b>		
18-39 years	76	15,2
40-59 years	286	57,2
60 years and older	138	27,6
<b>Gender</b>		
Male	154	30,8
Female	346	69,2
<b>marital status</b>		
The married	406	81,2
Single	43	8,6
Divorced	51	10,2
<b>Childbearing status</b>		
Yes	438	87,6
No	62	12,4
<b>Educational status</b>		
Illiterate	25	5,0
Primary school graduate	212	42,4
Secondary school graduate	55	11,0
High school graduate	111	22,2
Graduated from a Universty	97	19,4
<b>Profession</b>		
Not working	331	66,2
Working	169	33,8
<b>BMI (%)</b>		
Underweight (<18,5)	0	0,0
Normal weight (18,5-24,4)	20	4,0
Overweight (25-29,9)	61	12,2
Obese (30-39,9)	297	59,4
Morbidly obese (40-49,9)	107	21,4
Super obese (>50)	15	3,03

Table 2: Cancer screening status of the participants by gender

	Female n(%)	Male n(%)	All n(%)	p
<b>Breast self-exam (n:346)</b>				
Yes	271 (78,3)	-	271 (78,3)	-
No	75 (21,7)	-	75 (21,7)	-
<b>Clinical breast examination (n:346)</b>				
Yes	86 (24,9)	-	86 (24,9)	-
No	260 (75,1)	-	260 (75,1)	-
<b>Mammography (n:346)</b>				
Yes	192 (55,5)	-	192 (55,5)	-
No	154 (44,5)	-	154 (44,5)	-
<b>Pap smear (n:346)</b>				
Yes	207 (59,8)	-	207 (59,8)	-
No	139 (40,2)	-	139 (40,2)	-
<b>Hidden blood in stool (n:500)</b>				
Yes	108 (31,2)	33 (21,4)	141 (28,2)	<b>0,025</b>
No	238 (68,8)	121 (78,6)	359 (71,8)	-
<b>Colonoscopy (n:500)</b>				
Yes	57 (16,5)	29 (18,8)	86 (17,2)	0,519
No	289 (83,5)	125 (81,2)	414 (82,8)	-
<b>Any cancer (n:500)</b>				
Yes	306 (88,4)	43 (27,9)	349 (69,8)	<b>&lt;0,001</b>
No	40 (11,6)	111 (72,1)	151 (30,2)	-

Table 3: Cancer screening according to sociodemographic characteristics

	Cancer screening		p değeri
	No (n:151) n (%)	Yes (n:349) n (%)	
<b>Age groups</b>			<b>&lt;0,001</b>
18-39 years	41 (53,9)	35 (46,1)	*
40-59 years	75 (26,2)	211 (73,8)	-
60 years and older	35 (25,4)	103 (74,6)	-
<b>Gender</b>			
Male	111 (72,1)	43 (27,9)	<b>&lt;0,001</b>
Female	40 (11,6)	306 (88,4)	-
<b>marital status</b>			<b>0,002</b>
The married	122 (30,0)	284 (70,0)	-
Single	21 (48,8)	22 (51,2)	*
Divorced	8 (15,7)	43 (84,3)	-
<b>Childbearing status</b>			
Yes	124 (28,3)	314 (71,7)	<b>0,014</b>
No	27 (43,5)	35 (56,5)	-
<b>Educational status</b>			
Illiterate	5 (20,0)	20 (80,0)	0,086
Primary school graduate	53 (25,0)	159 (75,0)	-
Secondary school graduate	20 (36,4)	35 (63,6)	-
High school graduate	42 (37,8)	69 (62,2)	-
Graduated from a Universty	31 (32,0)	66 (68,0)	-
<b>Profession</b>			
Not working	70 (21,1)	261 (78,9)	<b>&lt;0,001</b>
Working	81 (47,9)	88 (52,1)	-
<b>BMI (%)</b>			<b>&lt;0,001<sup>#</sup></b>
Underweight (<18,5)	0 (0,0)	0 (0,0)	-
Normal weight (18,5-24,4)	11 (55,0)	9 (45,0)	a,b
Overweight (25-29,9)	34 (55,7)	27 (44,3)	b
Obese (30-39,9)	75 (25,3)	222 (74,7)	c
Morbidly obese (40-49,9)	27 (25,2)	80 (74,8)	a,c
Super obese (>50)	4 (26,7)	11 (73,3)	a,b,c

Table 4: Cancer screening status according to other independent variables

	Cancer screening		P
	No (n:151) n (%)	Yes (n:349) n (%)	
<b>Presence of concomitant disease</b>			
Yes	23 (35,9)	41 (64,1)	0,284
No	128 (29,4)	308 (70,6)	-
<b>Tobacco</b>			
Never	54 (19,2)	227 (80,8)	*
Former	46 (46,9)	52 (53,1)	-
Currently	51 (42,1)	70 (57,9)	-
<b>Family history of cancer</b>			
Yes	19 (14,7)	110 (85,3)	<0,001
No	132 (35,6)	239 (64,4)	-
<b>Have you ever been informed about cancer screening?</b>			
Yes	9 (9,8)	83 (90,2)	<0,001
No	142 (34,8)	266 (65,2)	-

The chi-square test was performed, and the results were presented with row percentages.

Table 5: Cancer awareness by presence of obesity and diabetes

	Is obesity/diabetes a risk factor for cancer?			p
	(n)	No, I do not know (n:196) n (%)	Yes (n:304) n (%)	
Obese (-) DM (+)	81	37 (45,7)	44 (54,3)	0,309
Obese (+) DM (-)	161	65 (40,4)	96 (59,6)	-
Obese (+) DM (+)	258	94 (36,4)	164 (63,6)	-

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