Descriptive Characteristics of Cancer Patients in İstanbul University Institute of Oncology

İstanbul Üniversitesi Onkoloji Enstitüsü Hastalarının Tanımlayıcı Özellikleri

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ABSTRACT **Objective:** The present study was conducted to determine the profile and preferences of the recently diagnosed cancer patients at the İstanbul University (İ.U.) Oncology Institute. **Material and Methods:** The hospital's patient registration system and a questionnaire were used to collect data on 9306 patients. Patients who presented to the İ.U. Oncology Institute from 2001 to 2003 were investigated for sex, age, social security, education levels and distances traveled to the I.U. Oncology Institute. **Results:** Male/female ratio was 1.01 in 2001, 1.05 in 2002 and 1.11 in 2003, respectively. The five most frequent cancer types were breast (36.7%), gastrointestinal tract (15.2%), genital system (14.9%), respiratory (6.6%) and lymphoid system (5.6%) cancers for females, and the respiratory system (31.7%), gastrointestinal system (20.6 %), genital system (10.7%), lymphoid system (6.6%) and oral cavity (5.4%) for males. Smokers were 68.5% for males and 27.0% for females. Overall, 79.8% of cancer patients were living in Istanbul, 20% were coming from different cities in Turkey and 0.2% was foreigners. The mean distance traveled by the patients to the institute was 325 km (111-2400 km) for outsiders and 11 km (1-68 km) for residents in Istanbul; 90.3% of the patients accessed from the Marmara region followed by the Black Sea region. **Conclusion:** Cancer control depends on defining the number of cancer cases, the most common cancer types and the geographic spread of cancer through Turkey.

Key Words: Epidemiology; incidence; cancer

ÖZET **Amaç:** İstanbul Üniversitesi (İ.U.) Onkoloji Enstitüsüne kanser tanısı ile başvuran hastaların profilinin ve geldikleri bölgelere göre dağılımlarının belirlenmesi amaçlanmıştır. **Gereç ve Yöntemler:** Çalışmada, 9306 hastanın verileri, İ. Ü. Onkoloji Enstitüsü hasta kayıt sistemi ve anket yöntemi ile toplanmıştır. 2001-2003 yılları arasında Enstitü'ye başvuran hastalar, cinsiyet, yaş, sosyal güvenlik, eğitim düzeyleri ve kat ettikleri mesafe açısından araştırılmıştır. **Bulgular:** Başvuran hastaların erkek/kadın oranı 2001 yılında 1.01, 2002'de 1.05 ve 2003 yılında 1.11'dir. Kadınlarda en sık rastlanan beş kanser tipinin başında meme (%36.7), sindirim sistemi (%15.2), genital sistem (%14.9), solunum (%6.6) ve lenfoid sistem (%5.6) gelmektedir. Erkeklerde ise bu sıra akciğer (%31.7), sindirim sistemi (%20.6), genital sistem (%10.7), lenfoid sistem (%6.6) ve oral kavite (%5.4) olarak sıralanmıştır. Sigara içenlerin oranı erkeklerde %68.5 kadınlarda ise %27,0'dir. Tüm kanser hastalarının %79.8'i İstanbul'da ikamet etmektedir; %20'si Türkiye'nin 80 ilinden ve %0.2'si yabancı ülkelerden gelmektedir. İstanbul dışından başvuran hastaların kat ettikleri ortalama mesafe 325 km (111-2400 km) hesaplanırken, İstanbul ilçelerinden başvuran hastalar için bu mesafe 11 km (1-68 km) bulunmuştur. En yüksek başvuru Marmara bölgesini (%90.3) takiben Karadeniz bölgesindendir. **Sonuç:** Sonuç olarak, kanser hastalığının kontrolü ancak Türkiye'deki gerçek kanser vakası sayılarının tespiti ve en sık görülen kanser tiplerinin coğrafik dağılımının belirlenmesi ile mümkün olacaktır.

Anahtar Kelimeler: Epidemiyoloji; insidans; kanser

Cancer is among the major health issues throughout the world.[1] In Turkey, cancer is the second fatal disease after cardiovascular disorders, like in other countries.[2] Cancer control and planning strategies depend on regular flow of information on cancer; however, data on incidence and prevalence in Turkey are lacking.

Turkey harbors many radiotherapy centers and medical oncology departments widely distributed throughout the country. In addition, there are three oncology institutes in Turkey including the İstanbul University (İ.U.) Oncology Institute in İstanbul, the Dokuz Eylül University Oncology Institute in İzmir and the Hacettepe University Oncology Institute in Ankara). İstanbul University Oncology Institute consists of three main departments-preventive oncology, basic oncology and clinic oncology. İ.U. Oncology Institute is the first radiotherapy clinic in Turkey and still fulfills the needs of contemporary multi-disciplinary oncology researches and treatments. The high number of opinion leaders in the academic team of the İ.U. Oncology Institute creates a center of attraction for cancer patients. The institute is still a leading cancer center in Turkey and uses new treatment modalities such as brachytherapy in male genitourinary system cancers and neoadjuvant treatments in gastrointestinal tract cancers and head-neck cancer in the clinical oncology department. Genetic researches in hereditary cancers and molecular biology and new tumor marker researches are carried out in the basic oncology department. The institute has contributed a considerable amount to the literature with published data in the ISI Web of Knowledge database. However, despite several attempts, actual cancer incidence data have never been available for a defined population in Turkey.[3]

The aim of the study was to investigate the cancer types and their relationship with social demographic profiles of the patients in Istanbul, where the Institute is located, its surrounding and throughout Turkey.

MATERIAL AND METHODS

The present study is a descriptive study and was conducted to define the profile and preferences of the recently diagnosed cancer patients in the İstan-bul University Oncology Institute. We investigated 9306 patients who presented to the institute between 2001 and 2003 for sex, age, social security, education levels and distances traveled to the İ.U. Oncology Institute. The residence of the patients was recorded by residence country, city in Turkey and district of Istanbul. The distances were calculated from the archives of the General Directorate of Highways in Turkey for each patient.

The anatomic sites of involvement were grouped on a pathological basis according to the American Joint Committee of Cancer (AJCC) classification. Frequency tables for the parameters sex, age, social security, education levels and distances traveled to the İ.U. Oncology Institute were established by using SPSS 11 software (SPSS, Chicago, IL).

Cross-tabulations of predicted (based on distance) and actual clinic usage were used to generate a matrix.

In Turkey, actual cancer incidence data have never been available for a defined population.

Thus, a hospital-based registry was used. The distance that patients traveled to the İ.U. Oncology Institute was considered a measure for the power of attraction. The hospital's patient registration system and a questionnaire were used on 9306 patients for data collection. The main reason of presenting to the İ.U. Oncology Institute was classified as medical professional advice, advice from patients/relative, media news and distance to travel, respectively.

The report design was adopted from the standards for reporting diagnostic accuracy (STARD) group.[4]

RESULTS

The study included 9306 patients with a male/female ratio of 1.01 (1433/1422) in 2001, 1.05 (1592/1510) in 2002 and 1.11 (1764/1585) in 2003.

The patients were most frequently grouped in the 40-70 years of age (Figure 1). The median age and range in the male patient group according to years were 56 years (13-93) in 2001, 57 years (13-96) in 2002 and 57 years (13-92) in 2003. The corresponding figures for female patients were 53

years (13-92) in 2001, 52 years (13-94) in 2002 and 53 years (13-96) in 2003. The percentage of patients without social security decreased from year 2001 to 2003 from 19.5% to 10.9%.

The education levels of patients were categorized in 5 groups; no education (2.2%), primary school (53.9%), high school (18.0%), university degree (16.5%) and unknown (9.4%).

The most frequent five cancer types according to the the American Joint Committee on Cancer (AJCC) classification were breast (36.7%), gastrointestinal tract (15.2%), genital system (14.9%), respiratory (6.6%) and lymphoid system (5.6%) cancers for females and respiratory system (31.7%), gastrointestinal system (20.6%), genital system (10.7%), lymphoid system (6.6%) and head-neck (5.4%) for males. The frequency of cancer types were shown in Table 1 according to years for both sexes.

The rates for the most common five cancer types in both sex groups are parallel to the rates in developed countries. The most frequent five cancer types in both sexes according to the age groups were shown in Table 3.

The highest access to the institute was from İstanbul (79.8%) and other cities in the Marmara region (90.9%) followed by the Black Sea region (3.9%). The remaining geographic regions in decre-

asing order were Central (1.5%), Eastern (1.5%), Mediterranean (1.1%), South eastern (0.9%) and Aegean (0.8%) regions (Figure 2).

Considering access to the institute from districts of Istanbul the most common access was from far districts. Istanbul was divided in four districts (1-9 km, 10-24 km, 25-40 km and 41-68 km). The majority of Istanbul resident patients traveled a distance up to 24 km (71.2%) (Figure 3).

The results of the questionnaire suggested that the main reason of presentation to the institute was professional medical advice (70.5%). The distance was only a minor reason for our patients (12.1%) (Table 2).

TABLE 1: Five most common cancer types in both sexes according to years.						
	Female (%)			Male (%)		
Cancer Type	2001	2002	2003	2001	2002	2003
Breast	35.7	38.3	36.1	-	-	-
Gastrointestinal tract	15.4	15.2	15.2	19.8	19.8	22.0
Genital system	16.5	13.0	15.4	10.6	11.3	10.2
Respiratory system	5.4	6.7	7.5	30.6	33.1	31.4
Lymphoid system	6.9	6.3	4.8	6.3	6.2	7.3
Head-neck	-	-	-	5.9	4.8	5.5
Other	20.1	20.5	21.0	26.6	24.8	23.6
Total	100	100	100	100	100	100

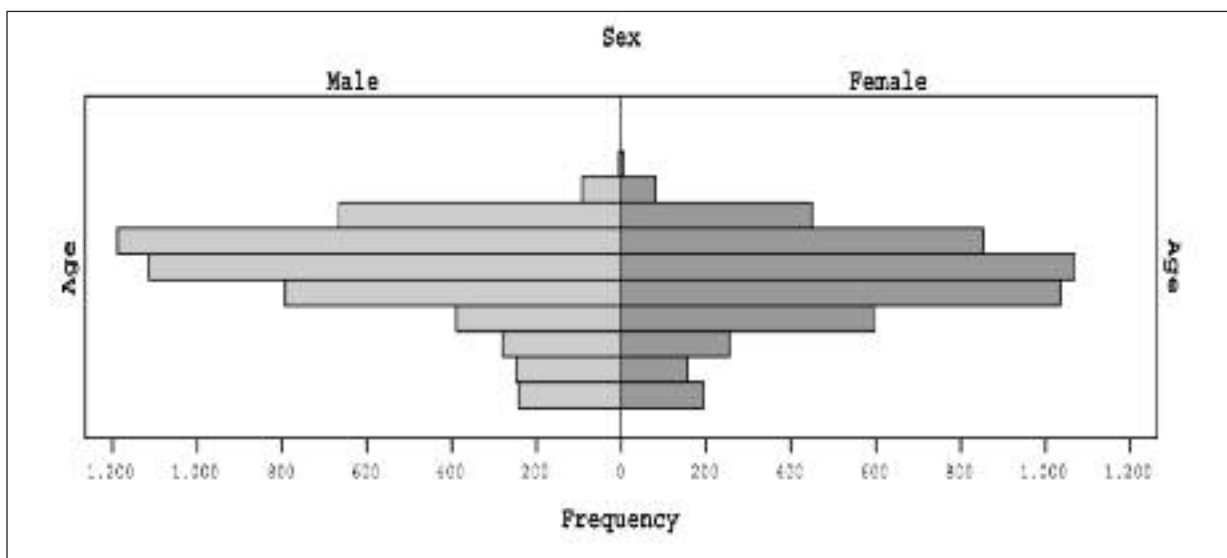**FIGURE 1:** Age groups according to sex.

| TABLE 2: Five most common cancer types in both sexes according to the age groups.										
	Female (%)					Male (%)				
Cancer Type	Age <40	Age 41-50	Age 51-60	Age 61-70	Age >71	Age <40	Age 41-50	Age 51-60	Age 61-70	Age >71
Breast	50.38	58.80	44.38	33.69	35.16	-	-	-	-	-
Gastrointestinal tract	13.01	17.14	20.66	23.63	23.44	20.85	33.16	25.24	28.66	27.51
Genital system	14.67	16.08	19.86	23.48	21.35	30.77	4.71	6.37	13.90	20.59
Respiratory system	4.84	4.69	10.10	11.43	12.24	20.85	41.25	25.24	47.67	41.87
Lymphoid system	17.10	3.29	4.99	7.77	7.81	28.54	11.62	5.90	4.67	4.84
Head-neck	-	-	-	-	-	7.49	9.26	9.32	5.10	5.19
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
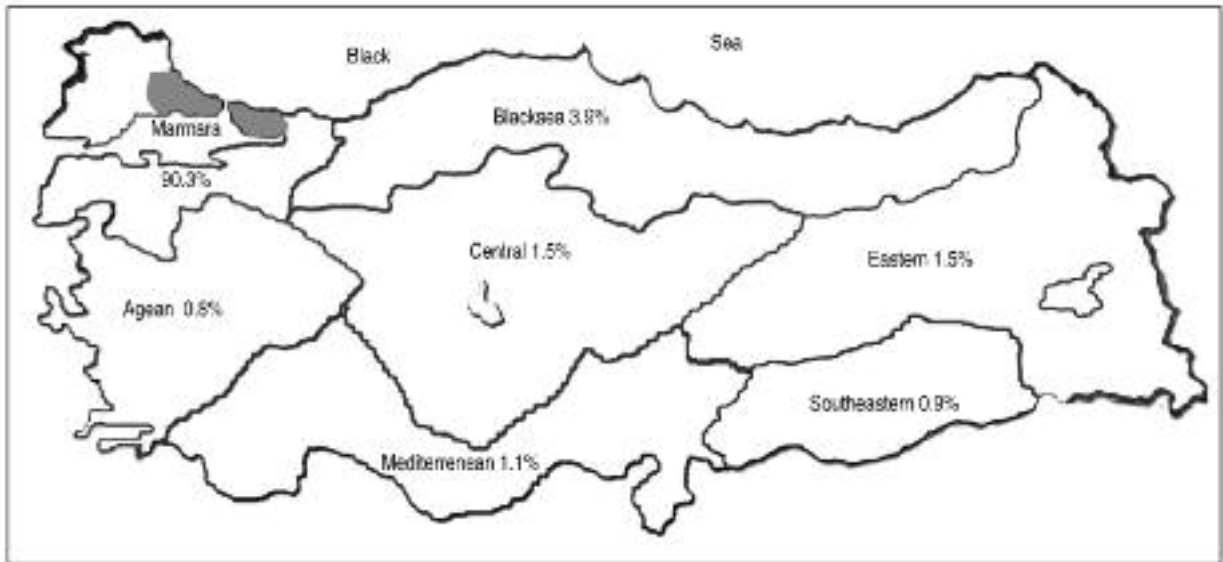
FIGURE 2: Patients access throughout the geographical regions of Turkey

DISCUSSION

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells.[1] If the spread is not controlled, it may result in death. Since the development of cancer increases with age, most cases affect adults starting in middle age. About 77% of all cancers are diagnosed at ages 55 and older in the United States of America. The median age of diagnosis for the patients in the İ.U. Oncology Institute was 53 years.

Despite several attempts, actual cancer incidence data have never been available for a defined population in Turkey. The Ministry of Health es-
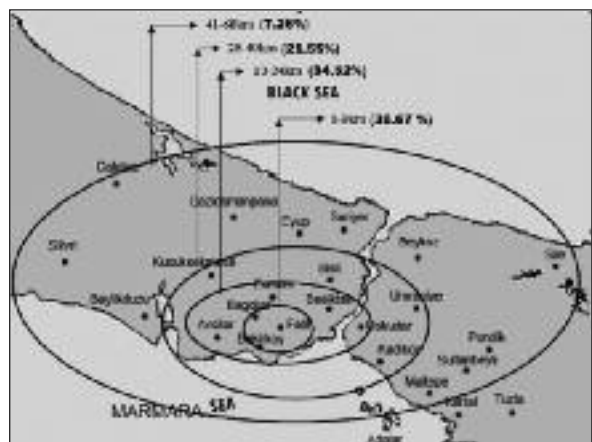

FIGURE 3: Patients access throughout İstanbul districts.
(Population: 1-9 km = 3.225.279; 10-24 km = 1.633.266; 25-40 km : 2.246.640; 41-68 km = 1.551.760 people)

TABLE 3: Distribution of patients in Istanbul districts.

Istanbul districts actual distance	2001 (%)	2002 (%)	2003 (%)
1- 9 km	38.0	35.8	36,3
10-24 km	34.0	35.3	34,2
25-40 km	20.5	22.0	22,0
41-68 km	7.5	6.8	7,5
Total	100.0	100.0	100.0

tablished a 'passive cancer registration system' for the entire country in 1983. Since it was a passive system based on notification of newly diagnosed cancer cases, it provided information for about only one-quarter of the estimated total of cancer cases.[1] Mortality data in Turkey are incomplete and are published only for selected urban areas; in addition, they are confounded by the inaccuracy of the certified cause of death.[3] These data are essential for cancer hospitals and country cancer policies.

Currently, the most recent comprehensive estimates for the incidence of and mortality from cancer at a European level can be extracted from the GLOBOCAN (Global Cancer Registry) 2002 project of the International Agency for Research on Cancer (IARC). There are 2.9 million new cancer cases in the European countries and the male/ female ratio is 1.17 (1558872/1327928).[5] The number of patients who presented to the İ.U. Oncology Institute was 9306 and the male/female ratio was 1.06 (4789/4517); this is similar to the European male/female ratio. Ecirli et al. found a male/female ratio of 1.54 in their study with 3640 cancer patients.[6]

According to the cancer statistics report published by The American Cancer Society, the most common three cancer locations in men accounted for more than 56% of all cancer types, while this ratio was more than 54% in women,[5] similar to the results of our study with 52.36% for males and 59.68% for females.

The data from the "Surveillance Epidemiology and End Results" (SEER) the most common ages that cancer develops are 30-34 years (7.9%) and 40-49 years (16%), including childhood cancers.[7] The

most common age groups, except childhood cancers were 51-60 years (22.4%) and 61-70 years (21.0%) in cancer patients.

The effect of distance on patients' travel to health care facilities has been the subject of different studies.[8,9] The highest access to the institute was from the Marmara region with 8282 patients (90.9%), where İstanbul is located. Although the Black Sea region is not the second after Marmara with respect to distance to the institute, it had the highest access rate with 372 patients (4.0%) after the Marmara region between the years 2001 and 2003. All clinics situated along major public transport routes have greater clinic catchments. However, in clinics with large distance, clinic catchments will be predisposed to having patients travel longer distances to seek primary health care; it is because of necessity and not relative attraction of a particular clinic that patients will travel longer distances.[10] Distances were used as a measure of power of the İ.U. Oncology Institute attraction.

Our study suggested that there was no significant relationship between distance and clinic catchments in Istanbul (Table 2) and that distance did not create a challenge for our patients. The major reasons for the preference of the İ.U. Oncology Institute in the questionnaire were stated as follows in decreasing order: referral of patients by medical professionals in 6551 patients (70.4%), the institute being located on main transport routes in 1126 patients (12.1%), having relatives working in the hospital in 996 patients (10.7%) and the influence of media in 633 patients (6.8%). These results suggest that medical professionals all over the country preferred and trusted to the Institute in the treatment of cancer. Although admissions from distant regions in Turkey accounted for only 10% of all patients, the distances traveled were higher than the distances covered for cancer treatment in developed countries.

Cancer is a prevalent disease in the community with a high morbidity, which leads to disablements and a high mortality. High treatment cost of cancer causes considerable economic and labor losses. The primary step to control cancer is to define

the cancer problem. This only could be achieved by defining the number of cancer cases, the most common cancer types and the geographical distribution of cancer throughout Turkey.

In conclusion, cancer control depends on defining the number of cancer cases, the most common cancer types and the geographic spread of cancer through Turkey.

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