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An epidemiological evaluation on cancer in the province of Burdur,Turkey.

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Abstract

For Turkey, the cancer registration record systems were started only recently. That's why, it's very hard to find the reliable information. In our, we aimed to find out not only the reasons of cancer related deaths; when, where these deaths happened, when and where they were diagnosed, ways of medical and alternate treatment but also the inside and outside situation of the person's house, such as telephone, water, electricity, water closet.

Five percent of the city total population was selected in Burdur as target points to be tested (n=11753) and the questionnaire was applied to 11904 people. Before applying the questionnaire, Burdur's Health Vice President gave an educational seminar to midwives and education information booklets were handed out to all of the midwives applied. There were 22 questions in total and if there were no cancer sign, some of the questions were skipped.

The number of people taking part in the research was 11904, 49% of whom were men and 51% women. Their average age was 34.4±21.3. 56.4% of the families lived in cities and 56.8% of them were married. The number of men having no social insurance was larger than that of women. 39.7% of the participants smoked and 15.1% had chronical disease. 77 of the participants had cancer themselves (0.6%). The most common cancer was prostate for men and breast for women, the percentages being 28.3% and 25.8% consecutively. The percentage of people who were diagnosed following a biopsy was 71.4%. The patients had had cancer for around 5.50±8.47(SD) years. 94.8% of the patients received treatment. Most common method of treatment was combined therapy (surgery+chemotherapy) with a percentage of 29.9. 19.5% of the patients used herbal therapy with a percentage of 15.6.

The cancer prevalence in the province of Burdur is 0.6% with breast cancer as the most common type of cancer among women, and prostate cancer the most common type among men. It has been determined that one in every five cancer patient consults to other treatment methods beyond medicine.

Introduction

Cancer is caused by a disorder occured in the genetic material of the cell and the diffusion of this disorder. With this regard, cancer is only recognized by the help of molecular researches. However, understanding fact that the cancer types differ between men and women, that different cancer types are found in different countries and that the prevalence of those change with time could impact our approach to cancer. In many countries,

more than a quarter of deaths are attributable to cancer. In 2000, 5.3 million men and 4.7 million women developed a malignant tumor and altogether 6.2 million died from the disease. The report also reveals that cancer has emerged as a major public health problem in developing countries, matching its effect in industrialized nations [1]. Cancer is a disease group with over 200 different types. Although they all have individual symptoms, they also share the common fact that uncontrolled body cells kill functioning body cells. Cancer also differs between age and sex groups [2].

In order to know this disease better, researches including cancer observation and risk factors, cancer prevention, screening and treatment were appeared recently [3].

Some communities are lack of variables. That causes to make investigation impossible. In this situation, cross-sectional investigation can prevent efficiency of casuality planning. Then comes cross-sectional investigation on the board. First of all, you must be aware of the community and the target varieties very well. Only the descriptive cross-sectional investigations can give information to the community [2].

In our country, the cancer registration record systems were started only recently. That's why, it's very hard for you to find the reliable information. But eveybody knows that it's a widespread illness. In Turkey, in 1970's, cancer was the forth sickness which causes death. Today, after the heartattack, it's the second [2]. In additon to this, there is a rumor in our country that the number of the people who died because of this, has increased. The Government had a request from universities to investigate this fact for their regions in a more detailed way.

This study was performed in Burdur city, which is the center for Lake District in Turkey. It was planned to detect the prevelance of cancer and its epidemiological features for this region.

Materials and Methods

Burdur is located in the east of Lake District in Mediterrean Region of Turkey, has a 6883 km. surface area, from the sea level its height is 1025 mt. It's 4 km away from Burdur Lake. It's cold in winters, and too hot in summer time. It's economy depends on agriculture and animal husbandry. 78 percent of the people deals with agriculture. In addition, there are industrial, hand-made art, tourism, metallurgy, and forestry.

The investigation was done on June 16-30, 2005 in Burdur. According to the Burdur's 2004 registration rates, Burdur's population was 235204. İn recent studies in Turkey, cancer prevalence was found %0.16 [4]; with 10% standard deviation and 99% confidence interval, 10488 people were detected as the sample greatness. İts taken into consideration that this population is about five percent of all city population. All midwives had gone to 5% of all houses in their region and questionnared all people in these houses. Both sexuality and all age groups living in the houses were considered as the study sampling.

All individuals living in the house answered questions by themselves. If somebody can't be found at home; mother of the house answered questions instead of him/her. If mother of the house can't be found; father of the house or somebody, living in the same house, older then 18 years old answered questions. Information about children are directly received from their mothers. Midwives had gone to the next house, if they couldn't find anybody at home. Within 15 days; 55 midwives questionnaired total 11904 individuals. (Almost 215 questionnaires per midwife were performed and average questionnaires per midwife per day were 15)

The midwives at Burdur's Health Center filled in the questionnaire in June 2005. Before applying the questionnaire, Burdur's Health Vice President Selçuk Kılınç gave an educational seminar to midwives, to make certain standardization between all midwives on May 30, 2005 and the education information booklets were handed out to all of the midwives applied. Moreover; it helped us to make certain standardization between midwives that, all of them already took lessons about questionnaring, statistics and epidemiology during their university educations. Preliminary study for midwives, about questionnaring people was performed on June 9, 2005 at Health Center no. 5. There were 22 questions in total and if there were no cancer sign, some of the questions were skipped.

The questionnaire was made up in 4 sections:

1. Sociodemographic information: Age, gender, place of birth, marital status, occupation, economical status, social insurance, place of residence (center, urban, rural)
2. Number of people in the household, number of smokers, chronical diseases.
3. Does the person who is filling out the questionnaire have cancer, if yes, which type. when, where and how was the diagnosis made. Having been exposed to carcinogenics. Medical and alternative treatment possibilities (herbal therapy).
4. The water, electricity, telephone, heating, bathroom and the building's construction (reinforced concrete, wood, adobe) conditions of the house the person who is filling out the questionnaire lives in.

The investigation's analysis was done at SPSS 9.0 statictical program. For the analysis; descriptive statistics, chi-square, Fisher's Exact Test X^2, independent two groups avarages t-test were used. The level of meaningfullness was taken into consideraton in two ways and p was accepted as $p<0.05$.

Results

The two addresses, the participants in the research lived frequently were central Burdur with 35.9% and district of Bucak with 22.7%. The percentage of people coming to Burdur from other cities was 4.6. The number of people taking part in the research was 11904, 49% of whom were men and 51% women. Their average age was 34.4±21.3. 9.6% of the group were older then 65 years old. Dissociation of the investigation group according to age groups and age average is shown in Table 1.

Table 1: Dissociation of the investigation group according to age groups and age average.

Age groups	Cancer patients		Total	
	Sayı	%[1]	Say[1]	%[2]
0-5	2	0.2	962	8.1
6-10	1	0.1	958	8.0
11-15	3	0.3	899	7.6
16-20	2	0.2	903	7.6
21-25	3	0.3	898	7.5
26-30	1	0.1	886	7.4
31-35	2	0.2	896	7.5
36-40	3	0.3	931	7.8
41-45	2	0.2	908	7.6
46-50	10	1.2	805	6.8
51-55	6	0.9	656	5.5
56-60	12	2.1	570	4.8
61-65	4	0.8	489	4.1
65+	26	2.3	1143	9.6
Total	**77**	**0.6**	**11904**	**100.0**

[1]*Line percentage*
[2]*Column percentage*

In the research 56.4% of the families were living in cities and 56.8% of them were married. Widows were larger in number than widowers ($X^2= 351.057$, $p= 0.000$). 4.9% of women and 8.3% of men were university graduates. Educational level of men was higher than that of women. ($X^2= 529.405$, $p= 0.000$). 46.9% of the men had their own jobs and 63.1% of the women were housewives. In the research group, the kind of social insurance most widely seen was social insurance society with 28.8%. However the number of men having no social insurance was larger than that of women. ($X^2= 12.104$, $p= 0.033$). 64.3% of the group viewed their financial status as average. Some demographic datas related with the investigation group can be seen in Table 2.

The number of women however stating that their economical status was really bad was more than the number of men ($X^2= 7.522$, $p= 0.033$). 47.4% of the houses were made of concrete and 78.4% of the group lived in their own houses. There was water in 96.9% of the houses, telephone in 93.3% and electricity in 99.9%. 14.8% had their toilets outside the house and 10.7% had central heating. The number of family household was 3.9±1.5 people.

The average number of cigarettes smoked was 0.5±0.7. 39.7% of the participants smoked and 15.1% had chronical disease. The most common chronical diseases were diabetes, hypertension and rheumatism-osteoporosis with the percentages 22.5%, 16.7% and 16.6% consecutively.

77 of the participants had cancer themselves (0.6%). The most common cancer was prostate for men and breast for women; the percentages being 28.3 and 25.8 consecuti vely. Dissociaton of cancer types according to sexuality for patients in the study group can be seen in Table 3.

Antalya State Hospital was, where the highest number of diagnosis were made with a percentage of 24.7. The percentage of people who were diagnosed following a biopsy was 71.4%. The patients had had cancer for around 5.50±8.47 years.

The existence of cancer increased along with aging. (Spearman correlation $p= 0.0009$, $r= 0.68$). 55% of the cancer patients were exposed to a cancer causing agent, the most common of them being smoking with a percentage of 35.1. 94.8% of the patients received treatment and combined therapy (surgery + chemotherapy) with a percentage of 29.9 was the most common method of treatment. 19.5% of the patients used herbal therapy and with a percentage of 15.6 nettle herb was the most popular.

The ratio of people in whose families cancer was seen, was higher for those who had cancer themselves, than the ones who didn't have cancer themselves (2.4%) (Fisher's Exact Test, $p= 0.011$). In the families of those who had cancer, the ratio of death (23.4) was 10.3% higher than the number of those who didn't have cancer themselves.

Table-2. Some demographic datas related with the investigation group.

Characteristics		Cancer patients		Total		χ^2	P[3]
		number	%[1]	Number	%[2]		
Place of residence	Center	47	0.7	6712	56.4	0,851	0,654
	Urban	7	0,5	1393	11.7		
	Rural	23	0,6	3799	31.9		
Marital status	Married	58	0.9	6760	56.8	20.797	0.000
	Single	10	0.2	4413	37.1		
	Widow	8	1.3	631	5.3		
	Divorced	1	1.0	100	0.8		
	Non	10	1.3	800	6.7	36.074	0.000
Education	Educated						
(n=11894)	Educated	11	2.4	464	3.9		
	Primary	38	0.7	5596	47.0		
	Secondary	2	0.1	1427	12.0		
	High	9	0.5	1690	14.2		
	Üniversity	5	0.6	781	6.6		
	Children	2	0.2	1146	9.6		
	House-wife	27	0.7	3825	32.2		
Occupation	Official	3	0.4	682	5.7	43.235	0.000
	Retired	17	2.4	700	5.9		
	Free working	19	0.6	3015	25.3		
	Not Working	2	0.7	268	2.3		
	Student	7	0.3	2250	18.9		
	Children	2	0.2	1146	9.6		
İnsurance type[4]	Officals Union	20	0.9	2283	19.2		
	Social insurance society	20	0.6	3433	28.8	5.482	0.360
	İndepend-ent asso-ciation	25	0.7	3354	28.2		
	Green Card	6	0.6	1018	8.6		
	No insur-ance	6	0.3	1812	15.2		
	Over 65	-	-	4	0.0		
Economical status[5]	Good	26	0.9	3044	25.6		
	Medium	43	0.6	7660	64.3	2.914	0.233
	Bad	8	0.7	1200	10.1		
Total		77	0.6	11904	100.0		

[1]*Line percentage,*[2] *Column percentage,*
[3]*Chi square test between cancer and noncancer groups*
[4]*Officals Union: Officals insurance society, Social insurance society: Social insurance society for workers, İndependent association: İndependent occupational insurance society, Green Card: govermental insurance for poor, Over 65: govermental insurance for disabled peopled over 65 years old*
[5]*Economy for this region depends on agriculture and animal husbandry; because of this people has no monthly-yearly fixed income. They sometimes manage to live with their own productions and sometimes work for monthly jobs; so their economical status were determined by asking themselves.*

Table 3: Dissociaton of cancer types according to sexuality for patients in the investigation group.

	Man		Woman	
Cancer type	**Number**	**%[1]**	**Number**	**%[1]**
Prostate	13	28.3	-	-
Breast	1	2.2	8	25.8
İntestine	5	10.9	2	6.5
Skin	3	6.5	4	12.9
Lung	6	13.0	-	-
Stomach	4	8..7	1	3.2
Lymph	3	6.5	1	3.2
Blood	3	6.5	1	3.2
Brain	1	2.2	2	6.5
Bladder	2	4.3	1	3.2
Ovarian	-	-	3	9.7
Larynx	2	4.3	-	-
Rectum	1	2.2	1	3.2
Uterus	-	-	2	6.5
Liver	-	-	1	3.2
Pancreatic	-	-	1	3.2
Thyroid	-	-	1	3.2
Bone	1	2.2	-	-
Kidney	-	-	1	3.2
Musculer	1	2.2	-	-
Multiple Myeloma	-	-	1	3.2
Total	46	100.0	31	100.0

Discussion

In accordance with the General Hygiene Law number 1593 in Turkey, dated 1982, cancer was taken into the list of diseases which have to be reported. Still the exact number of cancer incidences is not known. The Ministry of Health established the 'Passive Cancer Record System' in 1983 but in this system based upon declaration only one fourth of the expected data was collected [5]. Cancer incidence in the developed countries is about 400 in 100,000, however the cancer ratio declared to the record center in Turkey was around 35-40 in 100,000 [5].

The deficiency of our study is that we can not provide the incidence and survival rates given in the international publications since there are no records dating back several years for the whole nation and as a matter of fact the records based upon a social follow-up is unavailable and the death records are also unreliable. We couldn't find any report about cancer prevalence in Turkey. Moreover; if we comment on our datas; in our, cancer prevalence was detected %0.6. İf we think that, a cancer patient lives for 3 years in region, cancer incidence can be expected as %0.2 (200/100,000). İf we think that, a cancer patient lives for 5 years in region, cancer incidence can be expected as %0.12 (120/100,000). Whereas; cancer incidence for Turkey is about 35-40/100,000 according to Passive Cancer Record System. We can wait for cancer incidence in Turkey lower then the other industrialized countries but at the same time we can anticipate a great deficiency for cancer recording.

In accordance with our study, according to the latest [2003] Population and Health research which is conducted every five years and covers the whole nation, 48.6%of the population are men and 51.4% are women. In the research mentioned 6.9% are older then 65 years old, however in our this percentage is 9.6%. In our, in line with the national research men have been found to have higher levels of education [6].

The economical status of the local citizens, the percentage of house ownership, the rate of dwelling in the city and the size of the family household specified in our, have all turned out to be compatible with the average values for Turkey as a whole [6,7,8].

Although the prevalence of smoking was found to be 60.3% in the study conducted by Ogel and his colleagues in Istanbul; Maral and his friends found that the percenttage was 33.2% for Ankara [9,10]. The same variable seems to be around 30% in the European countries. In our research however, the percentage was found to be 39.7 [11].

It is a fact that presence of cancer increases with aging and also the incidence rate of cancer among the elderly, that is people aged above 65, is very widespread. These two factors make us think that aging is a risk factor for cancer. This result can be explained with the duration of carcinogenesis, the low resistance of the aged cells, the weakening of the immunity system and the increase in the sitocin production and as a result these all provide the systemic effects [12].

İn the program 'Surveillance Epidemiology and End Results' (SEER) that was conducted by National Cancer İnstitute; frequent cancer ratios were 7.9% for 30-34 ages and 16% for 40-49 ages. İn our, ratios for these age groups were 1.3% and 10.4%. Age, mostly seen cancer (33.8%) was 65 in our and cancer prevalence was getting higher by age contrary to the American datas [13].

İn our , accordance with TNSA investigation; men had higher education levels [7]. Again in our, number of the people that were diagnosed as cancer, (n: 77) 59.7% were men and 40.3% were women (Fisher chi-square p= 0.067). That results are harmonious with the results in the world [14] and in İzmir city/Turkey [15].

When we investigate the chronical diseases; chronical diseases that were mostly seen were Diabetes and COPD, besides hipertension and rheumatoid diseases were the third. İn USA, we see hipertension and arthritis as mostly seen diseases and dementia as the third [16]. İn our, prevalence of diabetes, as a leading disease was 3.4% and its prevalence was between 4.75% and 11.9% in different studies in Turkey [17,18,19]. Moreover, we couldn't find any significant differance for cancer prevalence between patients who have chronical disease and have not.

When we investigate the cancer prevalence according to sexuality; prostate, lung and colon cancers were the frequent cancer types for men and breast, skin and ovarian cancers were the frequent cancer types for women. According to 2006 USA reports; accordance with our study, prostate, lung and colon cancers were seen more than 56% of the men [20]. In Izmir city/Turkey, in a study that was conducted by Haydaroğlu et all; lung, gis and head-neck cancers were detected as the leading cancers for men and breast, gynecologic and gis cancers were detected as the leading cancers for women [15].

UV rays are the part of sun energy and long contact with these rays makes some changes in DNA configuration. It is known that UVB and UVC form mutation in DNA configuration, destruction in cell composition, transformation on cells and genetic mutation on P53 gen that putes pressure on tumor formation [21]. Skin cancers were found to be second frequent cancers in our. That can be explained by the changing athmospheric conditions and it can inform us about the changehes in the cancer epidemiology.

According to the data obtained in 1999, despite the fact that the ratio of men to women having cancer was 2,04 in Burdur, it turned out to be 1,48 in our. The reason behind this was that women's exposure to carcinogenes and smoking have increased today. In the study conducted by Onat and his colleagues among 2569 adults, it was found that smoking had decreased by 7.1% among men but had increased by 38% among women over the past eight years [22].

According to the data provided by World Health Organization, cancer is the disease which is most widely examined and the various methods of treatment for which have been studied. Despite this, the inadequacy of the field of medicine in generating the kinds of treatment to provide complete recovery for cancer or AIDS is obvious [23,24]. This case leads to a dissatisfaction on the part of the patients with regards to the current treatment methods [25]. The main reason behind the trend to resort to applications outside the realm of conventioal medicine is that, the current treatments seem to fall behind in the combat against malignancies [26]. The spectrum of this trend in terms of application is that people seek full recovery either through complementary treatment methods or by starting to use conventional medical treatments. In our research 20% of the patients chose to resort to alternative ways of treatment. Although there are no conclusive figures with regards to the use of alternative therapy methods several studies have been made on the subject. In a research conducted in the USA it was revealed that 33% of the population resorted to complementary or alternative ways of treatment [27]. In another study again in the USA, it was found that the public visited the people who were practising alternative therapy methods, for around 425 million times. This number was higher than the number of visits paid to the family doctors [28].

The fact that the cancer patients who had relatives in their family having died of cancer, are more in number than the ones who didn't have cancer themselves might result from the potential genetic factors playing a role in carcinogenesis. This effect might develop either directly through the cancer carrying genes, present from birth onwards or indirectly in the form of some changes as a result of exposure to some environmental factors.

As in the rest of the world breast cancer in the top 10 most frequently encountered cancer type in our country with 7.32 in 100,000 [29]. This has also been in accordance with our research. However, although prostate cancer has been the most frequently encountered cancer type among men around the world, Ministry of Health's data from 1999 places lung cancer in the top while prostate cancer is placed at a sixth place. The reason for this might be that the data is based on patients who were still alive and that patients with much lower life span than the 5 years of prostate cancer, such as lung and gastrointestinal cancer, were no longer alive [30,31].

Conclusion

The cancer prevalence in the province of Burdur is 0.6%; with breast cancer as the most common type of cancer among women and prostate cancer the most common type among men. It has been determined that one in every five cancer patient consults to treatment methods beyond medicine. Alternative treatment methods should never replace standard treatment methods, and folk medicine should not be used during chemotherapy. Research on the succes of alternative treatment methods are fairly scarce and it must be kept in mind that they can cause side effects, decrease the efficiacy of chemotherapy and increase side effects. Physicians should be well informed about alternative/supplementary treatment methods, and it should be assured that patients can speak freely with their physicians about alternative treatment methods.

It should also be kept in mind that the increases in cancer and other cronical diseases go hand ind hand with the increases life span of the individual human being in our country. It should be the Ministry of Health's primary topic to attach importance to research on early diagnosis, to enlighten the public and keep a better order of records.

First step protection for people for cancer is gaining more importance even its etiology and sources are still ascertain. Cancers can take form from many different exposures, also exposure dose and duration are the important factors. That difficults the first step protection for the normal people. But first step protection efforts like care for clean air and environment, improvement for working conditions, changes in eating habits, decrease in cigarette and alchol consumption, regular exercise can make certain the decrease in cancer incidence.

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