



# Perspective of Turkish Medicine Students on Cancer, Cancer Treatments, Palliative Care, and Oncologists (ARES Study): a Study of the Palliative Care Working Committee of the Turkish Oncology Group (TOG)

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## Abstract

Cancer is one of the most common causes of death all over the World (Rahib et al. in *Cancer Res* 74(11):2913–2921, 2014; Silbermann et al. in *Ann Oncol* 23(Suppl 3):iii15–iii28, 2012). It is crucial to diagnose this disease early by effective screening methods and also it is very important to acknowledge the community on various aspects of this disease such as the treatment methods and palliative care. Not only the oncologists but every medical doctor should be educated well in dealing with cancer patients. Previous studies suggested various opinions on the level of oncology education in medical schools (Pavlidis et al. in *Ann Oncol* 16(5):840–841, 2005). In this study, the perspectives of medical students on cancer, its treatment, palliative care, and the oncologists were analyzed in relation to their educational status. A multicenter survey analysis was performed on a total of 4224 medical school students that accepted to enter this study in Turkey. After the questions about the demographical characteristics of the students, their perspectives on the definition, diagnosis, screening, and treatment methods of cancer and their way of understanding metastatic disease as well as palliative care were analyzed. The questionnaire includes questions with answers and a scoring system of Likert type 5 (absolutely disagree = 1, completely agree = 5). In the last part of the questionnaire, there were some words to detect what the words “cancer” and “oncologist” meant for the students. The participant students were analyzed in two study groups; “group 1” ( $n = 1.255$ ) were phases I and II students that had never attended an oncology lesson, and “group 2” ( $n = 2.969$ ) were phases III to VI students that had attended oncology lessons in the medical school. SPSS v17 was used for the database and statistical analyses. A value of  $p < 0.05$  was noted as statistically significant. Group 1 defined cancer as a contagious disease ( $p = 0.00025$ ), they believed that early diagnosis was never possible ( $p = 0.042$ ), all people with a diagnosis of cancer would certainly die ( $p = 0.044$ ), and chemotherapy was not successful in a metastatic disease ( $p = 0.003$ ) as compared to group 2. The rate of the students that believed gastric cancer screening was a part of the national screening policy was significantly more in group 1 than in group 2 ( $p = 0.00014$ ). Group 2 had a higher anxiety level for themselves or their family members to become a cancer patient. Most of the students in both groups defined medical oncologists as warriors (57% in group 1 and 40% in group 2;  $p = 0.097$ ), and cancer was reminding them of “death” (54% in group 1 and 48% in group 2;  $p = 0.102$ ). This study suggested that oncology education was useful for the students’ understanding of cancer and related issues; however, the level of oncology education should be improved in medical schools in Turkey. This would be helpful for medical doctors to cope with many aspects of cancer as a major health care problem in this country.

**Keywords** Medicine students · Cancer · Palliative care · Oncologists

## Introduction

The increasing incidence of cancer is one of the leading causes of death all over the world [1, 2]. Because of increased cancer prevalence and an aging population, new doctors need to understand and employ the basic principles of oncology [3].

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Oncology is a multidisciplinary specialty which interacts with other branches such as surgery, pathology, internal medicine, psychiatry, and palliative care [4]. Therefore, even if a doctor is not an oncologist, he or she will definitely encounter cancer patients and must be sufficiently knowledgeable in this regard. Because of rapid developments in the radiological and histopathologic methods for cancer diagnosis as well as progress in the treatment options in patients with cancer, new knowledge have increased in these fields currently [2, 5]. Moreover, information about cancer has been updated by new clinical and basic researches in a short time. For this reason, it can be considered that continuous education is inevitable for physicians and oncology professionals to follow these developments closely. In order to achieve this, it is necessary to question the adequacy of oncology education in medical faculties and to discuss the usefulness of increasing the duration of the oncology courses. Many clinical studies indicated that oncology teaching in medical schools has shown considerable variations worldwide. Several publications, using questionnaire surveys, have attempted to measure the knowledge levels of medical students about cancer [6]. But medical education is considered a difficult process and it is very hard for medical students to observe oncology patients who receive daily chemotherapy in this process. However, medical students all over the world should be well informed about cancer disease and cancer treatment during their medical education. What are the benefits of oncology education on students? Is the current training enough? The answers to these questions should be sought.

In some studies which were to evaluate the impact of an introductory clinical oncology course on first-year or second-year medical students provide evidence that an introductory oncology course can increase student comfort with issues related to living with cancer, with confronting and dealing with death and dying, and with coping with uncomfortable emotional situations as related to cancer care [7, 8]. In addition, oncology education in the first years may increase the students' interest and awareness about oncology during their education.

The aim of this study is to determine the knowledge of medical students about the definition, screening, diagnosis, treatment, and end-stage and palliative care for cancer show a meaningful difference in terms of whether they see clinical oncology lesson or not.

## Individuals and Methods

### Study Design and Individuals

The study group was created by choosing medical students that would likely see the same trainee program in their medical school. In this study, a simple random sampling method was used to recruit participants for the survey. A total of 15,000 medical students were used as a target population for our survey. The

sample size of the study group was calculated as 5112 with a relevance of 0.05, a margin of error of 3%, and a 95% confidence interval of 44–50 with 50% of participants answering the questions.

The participant students were analyzed in two study groups; "Group 1" (n = 1.255) were phase I and II students that had never attended an oncology lesson, and "Group 2" (n = 2.969) were phase III to VI students that had attended the oncology lessons in the medical school.

### Invitation to Survey and Data Collection

The questionnaires were completed face-to-face in all of the medical schools in this study between February 2012 and June 2016. The first part of the questionnaire collected data on the demographic and occupational characteristics of participants and their knowledge of common information about cancer and supportive/palliative care definitions. The second part of the survey included six questions about participants' perspectives regarding cancer, chemotherapy, and oncologists. The last part included six questions about their perspectives and attitudes with regard to palliative care. Questions from the second and third portions of the survey were in the 5-point Likert form (strongly disagree, disagree, neither agree nor disagree, agree and strongly disagree). The expected time required to complete the survey was approximately 20 min. It was requested that participants complete the questionnaire honestly.

### Ethics

This study was approved by the academic ethics committee, and only consenting participants answered the questionnaire.

### Statistical Analysis

For statistical analysis, descriptive statistical methods, Student's *t* tests, chi-square tests, correlation tests, and univariate and multivariate analyses with logistic regression tests were used.  $P < 0.05$  was accepted as statistically significant. All of the statistical analyses in this study were performed using the Statistical Program for Social Sciences (SPSS) version 15.

## Results

A total of 4224 students participated in our questionnaire. The characteristic properties of the participants and their family history about cancer disease are shown in Table 1.

The majority of the participants were female (58%) and 77% of participants had a family history of cancer. The proportion of death due to cancer in the family was 92%. First- and second-year medical students (group I) constituted 29%.

**Table 1** Personal findings of medical students who attended the survey

Characteristics	All classes	First year	Second year	Third year	Fourth year	Fifth year	Sixth year	<i>P</i> *
The number of participants ( <i>n</i> , %)	4224 (100)	698 (16)	547 (13)	703 (17)	842 (20)	520 (12)	914 (22)	0.248
Sex ( <i>n</i> , %)								
Female	2450 (58)	434 (62)	310 (57)	388 (55)	486 (58)	311 (57)	521 (57)	0.208
Male	1774 (42)	264 (38)	237 (43)	315 (45)	356 (42)	209 (43)	393 (43)	
Family history of cancer ( <i>n</i> , %)								
Present	3252 (77)	496 (71)	432 (79)	541 (77)	653 (72)	400 (75)	730 (74)	0.104
Absent	972 (23)	202 (29)	115 (21)	162 (23)	189 (22)	120 (23)	184 (20)	
Death from cancer in the family ( <i>n</i> , %)								
Present	3873 (92)	650 (93)	494 (90)	646 (92)	781 (93)	462 (89)	840 (92)	0.214
Absent	351 (8)	48 (7)	53 (10)	57 (8)	61 (7)	58 (11)	74 (8)	

Significant difference is shown by single symbol indicating \* $p < 0.05$

Students' responses according to the cancer medicine curriculum are shown in Table 2. In group 1 students, the participation rate of the phrases with "Cancer is a contagious disease," "Early diagnosis is not possible in cancer," "Cancer patient's recover is absolutely impossible," "Gastric cancer is one of the cancer in the national cancer screening policy," was found to be significantly higher than in group 2 students. On the other hand, "Breast cancer is one of the cancer in the national cancer screening policy" the participation rate of this phrase was significantly higher in group 2 than in group 1. Both groups were aware of the definition of palliative care and that it is necessary for cancer patients. In addition, they believed that the oncology specialists were responsible for the treatment of the symptoms such as pain, nutrition, and shortness of breath in the patients.

Subgroup analyses showed that in group 1 students who had a family history of cancer or whose family member died in the last 6 months were significantly less likely to participate to statements of "Cancer is a contagious disease," "Early diagnosis is not possible in cancer," "Cancer patient's recover is absolutely impossible," "Stomach cancer is the one of the cancer which is in the national cancer screening policy" than students who did not have a family history of cancer. Group 1 students, who had a family history of cancer or whose family member died in the last 6 months, results' were similar with group 2 students results.

It was determined that the medical students in group 1 had information about cancer 34% from social media, 14% from public spots, and 8% from medical books and articles. On the other hand, the sources used by the students in group 2 to access the information were medical books and articles (64%), public spots (48%), and social media (10%), respectively.

"When I hear cancer word, I think that myself or my relatives will also have cancer and I feel sorry" and "When I see a cancer patient, I feel anxiety and fear that one day I will become a cancer patient," these statements which are aimed at determining the empathic approach, participated significantly more in group 2 students' than in group 1.

Results of the participants' beliefs and connotations regarding cancer and oncologists' are shown in Tables 3. Cancer and death words conjoined each other, and oncologists were perceived as warriors in all groups.

## Discussion

### The General Approach on Cancer Patients

Due to the abundance of the elderly population, a cancer diagnosis has significantly increased in developed countries [9]. Also, new treatments prolong survival in most patients and increase the number of cancer patients living in the community. Thus, cancer has begun to take place in the chronic diseases class in society. The awareness of the community about cancer should be increased, but still, there are studies in the literature showing that even non-oncologist physicians do not have enough knowledge about cancer and attitudes toward palliative care. In Pakistan, 236 non-oncologist physicians evaluated and reported that 44. [3]% of participants thought that chemotherapy was a miserable treatment option and 69.9% were uninformed about hospices; however, almost all (94.4%) understood the definition of palliative care [10]. The other study found that the majority of non-oncologist physicians (71%) believed that all metastatic patients were terminally ill and that chemotherapy was not beneficial (61%) [11].

In our study, we found that the students who have not yet seen a clinical oncology course, have an insufficient knowledge of cancer diagnosis, cancer screening, and they have no predictions about metastasectomy or the new treatments which prolong the survival of patients. A significant number of students in group 1 thought cancer is a contagious disease ( $p = 0.00025$ ). Their information about last-stage cancer patient definition was rather negative and wrong compared to group 2. They thought that every patient who received a cancer diagnosis will absolutely die and chemotherapy was

**Table 2** Responses by curriculum

	Group 1 (n = 1245)				Group 2 (n = 2276)				KW	P*	Difference				
	n	Mean	SD	IQR	n	Mean	SD	IQR							
Cancer is a contagious disease.	1245	3.1	1.9	3.0	2.0	4.0	2276	2.1	1.1	2.0	1.0	2.0	37.944	0.00025*	1 > 2 3 > 1 3 > 2
Early diagnosis is not possible in cancer.	1245	4.5	1.8	4.0	4.0	5.0	2276	2.3	0.9	2.0	4.0	5.0	4.315	0.042*	
Cancer patient's recover is absolutely impossible.	1244	4.0	2.0	3.0	1.0	2.0	2273	2.1	0.8	2.0	1.0	2.0	1398	0.044*	
I think smoking is the first cause of cancer and that tobacco struggle is an effective method of protection.	1245	2.7	1.2	2.0	2.0	4.0	2275	3.0	1.2	3.0	2.0	4.0	2713	0.258	
Early diagnosis of cancer save lives.	1244	2.1	1.2	2.0	1.0	2.0	2276	2.4	1.3	2.0	1.5	3.5	3.971	0.137	
Breast cancer is one of the cancer in the national cancer screening policy.	1245	2.4	1.2	2.0	2.0	4.0	2276	1.0	0.2	1.0	1.0	2.0	8.92	0.012*	3 > 1
Gastric cancer is one of the cancer in the national cancer screening policy.	1243	2.4	1.2	2.0	2.0	4.0	2276	2.8	1.1	2.0	2.0	4.0	15.487	0.00014*	3 > 1
I do not think chemotherapy is beneficial for a metastatic cancer patient.	1245	4	1.1	4.0	4.0	4.0	2274	2.4	1.1	2.0	2.0	4.0	11.372	0.003*	1 > 2 1 > 3
Symptoms of cancer in patients and treatment-related side effects are referred to as supportive care.	1245	3.5	1.0	4.0	3.0	4.0	2276	3.4	1.1	4.0	3.0	4.0	2.2	0.333	
Supportive care in cancer is the conscientious and medical responsibility of all physicians.	1245	3.4	1.0	4.0	2.0	4.0	2276	3	1.0	3.0	2.5	4.0	1516	0.469	
In particular, the treatment of symptoms such as pain, nutrition, and shortness of breath belongs to the oncologist.	1245	3	1.2	4.0	2.0	4.0	2274	3	1.0	3.0	3.0	4.0	0.271	0.873	
Cancer patients, whichever organ or stage cancer is in, they experience the last days of their lives.	1245	4.6	1.1	2.0	2.0	4.0	2276	2.5	0.9	2.0	2.0	4.0	6.671	0.036*	1 > 3
When I hear cancer word, I think that myself or my relatives will also have cancer and I feel sorry.	1245	1.7	0.7	2.0	1.0	2.0	2276	2.3	1.2	2.0	2.0	2.8	26.937	0.00021*	2 > 1 3 > 1
When I see a cancer patient, I feel anxiety and fear that one day I will become a cancer patient.	1245	1.5	0.7	1.0	1.0	2.0	2276	2.2	1.3	2.0	1.0	3.0	42.21	0.00018*	2 > 1 3 > 1 3 > 2
When I talk to a cancer patient, I try to pay more attention to my sentences for not to make them sad.	1244	3.9	1.0	4.0	4.0	3.4	2276	3.9	0.9	4.0	4.0	4.0	1999	0.368	
When I see a patient whose mouth and nose is covered with a mask, I think she/he is a cancer patient and she/he will lose his/her life soon.	1243	3.9	1.1	4.0	4.0	5.0	2276	3.8	1.1	4.0	3.0	5.0	2468	0.291	

Significant difference is shown by single symbol indicating \*p < 0.05

**Table 3** Results of the participants' beliefs and connotations regarding cancer and oncologists

Characteristics	All classes	First year	Second year	Third year	Fourth year	Fifth year	Sixth year	<i>P</i> *
The number of participants ( <i>n</i> )	4224	698	547	703	842	520	914	0.248
The cancer word is (means):								
Disease	941 (22)	124 (18)	108 (20)	147 (21)	176 (21)	104 (20)	282 (31)	0.256
Despair	242 (6)	17 (2)	17 (2)	87 (12)	9 (1)	84 (16)	28 (3)	
Death	2145 (51)	384 (55)	288 (53)	366 (52)	430 (51)	243 (47)	434 (47)	
Hair loss	94 (2)	14 (2)	18 (3)	17 (2)	19 (2)	21 (4)	5 (1)	
Chemotherapy	104 (2)	14 (2)	18 (3)	14 (2)	16 (2)	16 (2)	26 (2)	
Black	684 (16)	142 (20)	96 (18)	70 (10)	190 (22)	50 (10)	136 (15)	
Hope of healing	14 (1)	3 (1)	2 (1)	2 (1)	2 (1)	2 (1)	3 (1)	
For me, the oncologist is a:								
Doctor	1025 (24)	108 (16)	86 (16)	241 (34)	311 (37)	132 (25)	147 (16)	0.032*
Warrior	1862 (44)	422 (60)	296 (54)	214 (30)	256 (30)	176 (34)	498 (54)	
Helpless	720 (17)	126 (18)	102 (19)	170 (24)	148 (18)	118 (23)	56 (6)	
Hope	74 (2)	2 (1)	8 (1)	14 (3)	16 (1)	23 (4)	11(2)	
Conscience	106 (3)	16 (2)	23 (4)	12 (2)	22 (3)	7 (2)	26 (3)	
Black	437 (10)	24 (3)	32 (6)	52 (7)	89 (11)	64 (12)	176 (19)	

Significant difference is shown by single symbol indicating \* $p < 0.05$

useless, especially in a metastatic disease. If we assume that group 1 students represent society, these results are an indication that the society has an inadequate knowledge about cancer in Turkey.

### The Medical Students' Approach on Cancer Patients

Gaffan et al. described in their meta-analysis that learning about cancer screening and prevention increases undergraduate medical students' knowledge, improves their self-rated skills, and changes their behavior. Also, cancer patients had an important role to play in teaching undergraduate communication skills [4]. In another study, medical students who were in their second year in the medical school curriculum took the preclinical oncology course. Students self-reported that a dedicated preclinical oncology block was effective in helping identify the basics of cancer therapy and laying the foundation for clinical electives in oncology, including radiation oncology. 68.4% of these students agreed or strongly agreed that the course was effective in contributing to their overall medical education [7]. Between 2004 and 2006, the European School of Oncology organized three courses on "Oncology for Medical Students." Analysis of the provided questionnaires demonstrated that during these 3 years, students became more satisfied with the quality of the education ( $p = 0.008$ ), the improvement of their knowledge in oncology ( $p = 0.0005$ ), and of their skills ( $p = 0.001$ ) [12]. Like other studies, our study results showed that oncology courses were important for medical faculty students. According to our questionnaire results, when medical students become 3rd grade, they believe that

early diagnosis in cancer is not possible. They do not know the cancers involved in the national cancer screening policy. For this reason, the student may have difficulties in clinical oncology lessons in the 3rd year. Also, in the current study, as students learn about clinical oncology, they get away from social media for getting information about cancer, their interest in public spots is increasing, and the medical books and articles are at the forefront in accessing information. This result shows us that early oncology education will help students achieve correct information from the right sources.

### The Medical Students' Approach to Living with Cancer and Oncologists

Granet et al. conducted a study to assess the impact of an introductory clinical oncology course on 29 first-year international medical students. This study provides evidence that an introductory oncology course can increase student comfort with issues related to living with cancer, with confronting and dealing with death and dying, and with coping with uncomfortable emotional situations related to cancer care [8]. But in our study, when the clinical knowledge about cancer increases, so do their anxiety about themselves or their family. It is important that the curriculum and education must take this into account in Turkey. In both groups, the words cancer and death seem to remind each other, and oncologists are perceived as warriors. Even medical school students who have taken oncology lessons still interpret cancer as a disaster and they connect it directly with death. Therefore, they see



oncologists not as ordinary doctors, but as those warriors who save from cancer disaster.

### The Medical Students' Approach to Palliative Care and Cancer

In this study, both groups conceptualized the meaning of palliative care. However, they thought that it was the oncologist's responsibility to treat symptoms such as pain, nutrition, and shortness of breath in the cancer patients. In ALONE study, non-oncologist physicians reported that supportive care for metastatic cancer and terminal stage cancer should be performed only by oncologists and that symptoms associated with all body systems should be evaluated by oncologists. When we looked at the studies about palliative care involving general practitioners or non-oncologist specialists in the literature, doctors need more effective education on palliative care in cancer. Studies recommend providing palliative care education in graduate and postgraduate courses in order to change the perspective of non-oncologist physicians and to increase their use of palliative care approaches as part of a multidisciplinary team [10, 11, 13, 14].

An article about medical education in 1983 suggested that, in the clinical area, the general practitioner will be involved, at intervals, from the time of diagnosis to the time of terminal care and death. An understanding of the principles of pre-clinical and para-clinical aspects are necessary for general practitioners to fulfill their role in explaining, advising, and reassuring the patient and family about cancer. In addition, the article emphasized the need of oncology lessons which will include preclinical (biology of cancer, epidemiology of cancer) and clinical (cancer diagnosis, the determination of disease extent and staging, cancer management, assessment of results and terminal care) topics in the medical faculty curriculum and underlined that a unifying discipline called "cancer medicine" should be defined in the medical faculties. It has developed because of the need to integrate and coordinate all activities relating to cancer [15]. We think that these basic requirements are still not met by the majority of the medical faculties' curriculum. We argue that this kind of education is necessary for non-oncologists clinicians to understand their role in the treatment of cancer.

### Conclusions and Recommendations

In conclusion, the community needs to be more informed about cancer. There is no doubt that oncology courses in medical faculties should be added in the early years and be more comprehensive into the curriculum. We recommend the increase of the duration of oncology education in medical faculties in order to change the perspective of non-oncologist physicians about cancer, to ensure more contributions from them for the cancer disease treatment process and the

palliative care, and to increase their understanding of oncology patients. Finally, society sees oncologists as warriors who save from cancer disaster. If non-oncological doctors play an active role in the treatment of cancer, perhaps the responsibility of oncologists will be shared.

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