

## Chapter 29

# Cancer survival in Izmir, Turkey, 1995–1997

Eser S

### Abstract

The Izmir cancer registry, the first population-based cancer registry in Turkey, was established in 1992. Cancer registration is now done by active methods. The registry contributed data on survival for 12 cancer sites or types registered in 1995–1997. Follow-up was predominantly done by active methods with median follow-up ranging between 17–72 months for different cancers. The proportion with histologically verified diagnosis for various cancers ranged between 84–100%; there were no death certificate only (DCO) cases; 98–100% of total registered cases were included for the survival analysis. Complete follow-up at five years ranged from 79–98% for different cancers. Five-year age-standardized relative survival rates of common cancers were breast (77%), urinary bladder (70%), larynx (69%), colon (53%), rectum (52%), non-Hodgkin lymphoma (50%) and cervix (58%). Five-year relative survival by age group portrayed decreasing survival with increasing age at diagnosis for cancer of the cervix, and was fluctuating for other cancers. Decreasing survival with increasing clinical extent of disease was also noted.

### Izmir cancer registry

The Izmir cancer registry was the first population-based cancer registry in Turkey, established in 1992 by the Ministry of Health and Ege University, in collaboration with the Turkish-American Collaboration for Health Research and Programming, University of Massachusetts at the Izmir provincial health directorate. The Ministry of Health had earlier established a passive cancer registration system for the entire country in 1983, which ended registering one fourth of expected cancers. Cancer registration is now done by active methods. Over 40 sources of registration, comprising government and private sector hospitals, clinics, pathology laboratories and hospices, are visited for data collection from the hospital cancer registries and other medical records. The registry covers an area of 11 530 km<sup>2</sup>, of the entire Izmir province and caters to a population of about 3.3 million in 1998 with a sex ratio of 985 females to 1000 males. The average annual age-standardized incidence rate is 157 per 100 000 among males and 94 per 100 000 among females in 1993–1994. The top-ranking cancers among males are lung followed by non-melanoma skin, larynx and bladder. Among females, the order is breast, non-melanoma skin, corpus uteri and ovary [1].

The registry contributed data on survival for 12 cancer sites or types for the first time in this volume of the IARC publication on *Cancer Survival in Africa, Asia, the Caribbean and Central America*.

### Data quality indices (Table 1)

The proportion of cases having a histologically verified cancer diagnosis in our series is 95%, varying between 100% for haematopoietic malignancies and 84% for colon cancer. None are registered based on a death certificate only (DCO) in the series. The exclusion of cases from the survival analysis due to the non-availability of any follow-up information or other reasons was negligible. Thus, 98–100% of the total cases in the series are included in the estimation of the survival probability.

### Outcome of follow-up (Table 2)

The registry collects copies of death certificates mentioning cancer from the provincial health directorate, but because of poor quality and lack of information regarding socio-demographic data and addresses, these data could not be matched with the records of incident cases. Thus, follow-up information on the vital status of all incident cases are collected by one or more of the following ways: repeated scrutiny of records in the respective sources of registration, postal/telephone enquiries and house visits.

The closing date of follow-up was 31<sup>st</sup> December 2003. The median follow-up ranged between 17 months for myeloid leukaemia and 72 months for breast cancer. The availability of complete follow-up information at five years from the incidence date varied from 79% in

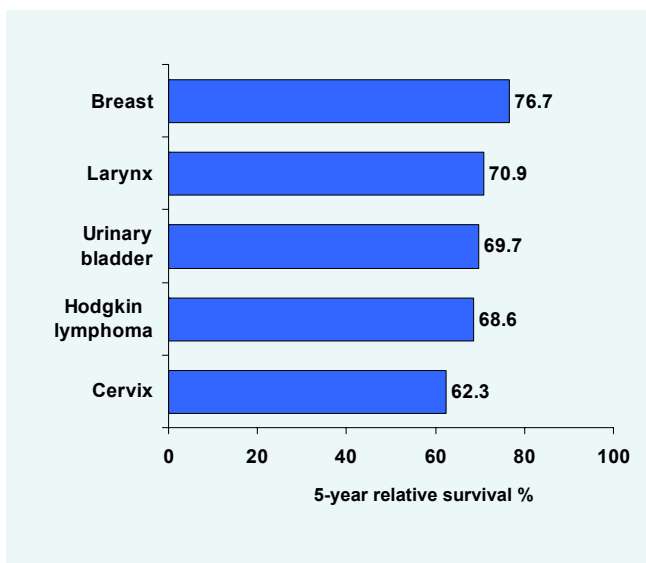
rectal cancer to 98% in lymphoid leukaemia. The proportion of losses to follow-up was generally the highest in the extremities of the classified follow-up intervals (within the first year and five or more years of follow-up) for all cancers. This minimizes the bias of estimation of 5-year survival probability, as a sizeable proportion of cases lost to follow-up after five years would have had a complete follow-up until 5 years from the incidence date.

### Survival statistics

#### All ages and both sexes together (Table 3)

The top-ranking cancers in terms of 5-year relative survival are breast (77%), larynx (71%), urinary bladder (70%), Hodgkin lymphoma (69%) and cervix (62%). Survival estimates for colon and rectum cancers were 53% and 50%, respectively. The survival figures for haematopoietic malignancies were 51% for lymphoid leukaemia, 32% for myeloid leukaemia and multiple myeloma.

**Figure 1a. Top five cancers (ranked by survival), Izmir, Turkey, 1995–1997**



The 5-year age-standardized relative survival (ASRS) estimate for all ages together is generally less than or similar to the corresponding unadjusted one with a few exceptions. Also, the 5-year ASRS (0–74 years of age) is generally higher than or similar to the corresponding ASRS (all ages) for most cancers.

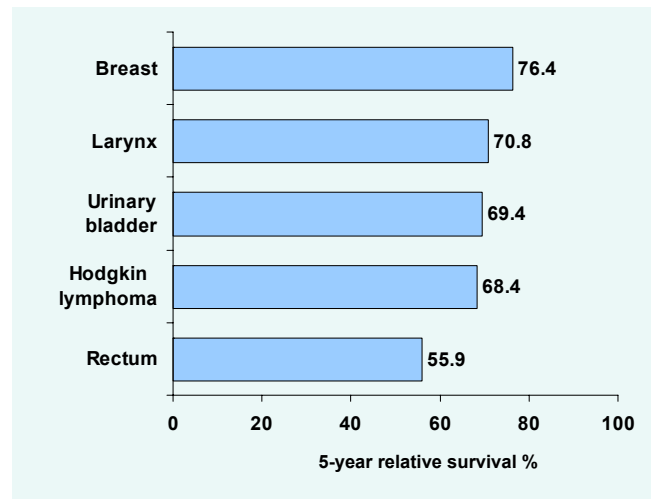
### Sex

#### Male (Table 4a)

The rank order on the 5-year relative survival reveals breast (76%) at the top, followed by larynx (71%), urinary bladder (69%), Hodgkin lymphoma (68%) and

rectum (56%). Survival from rectal cancer is noticeably higher among males than females.

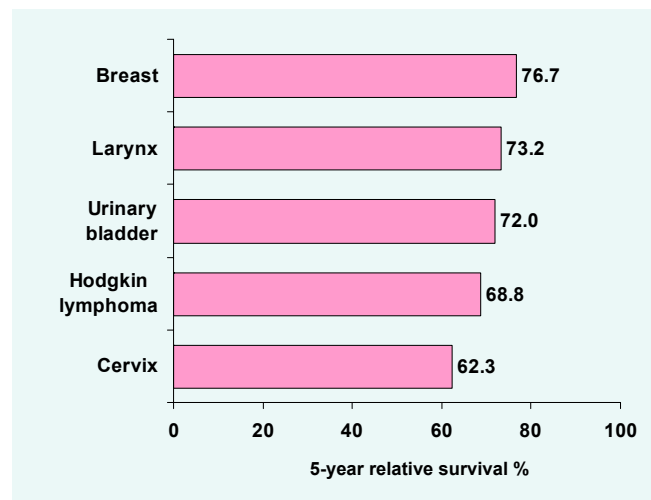
**Figure 1b. Top five cancers (ranked by survival), Male, Izmir, Turkey, 1995–1997**



#### Female (Table 4a)

The highest 5-year relative survival was observed in cancer of the breast (77%) followed by larynx (73%), urinary bladder (72%), Hodgkin lymphoma (69%) and cervix (62%). Survival from ovarian cancer is 59%. The survival is markedly higher among females than males in non-Hodgkin lymphoma and myeloid leukaemia.

**Figure 1c. Top five cancers (ranked by survival), Female, Izmir, Turkey, 1995–1997**



#### Age group (Table 4b)

The 5-year relative survival by age group portrays an inverse relationship: decreasing survival with

increasing age at diagnosis for cancer of the cervix. In the rest, it is observed to be fluctuating.

**Extent of disease (Table 5; Figure 2)**

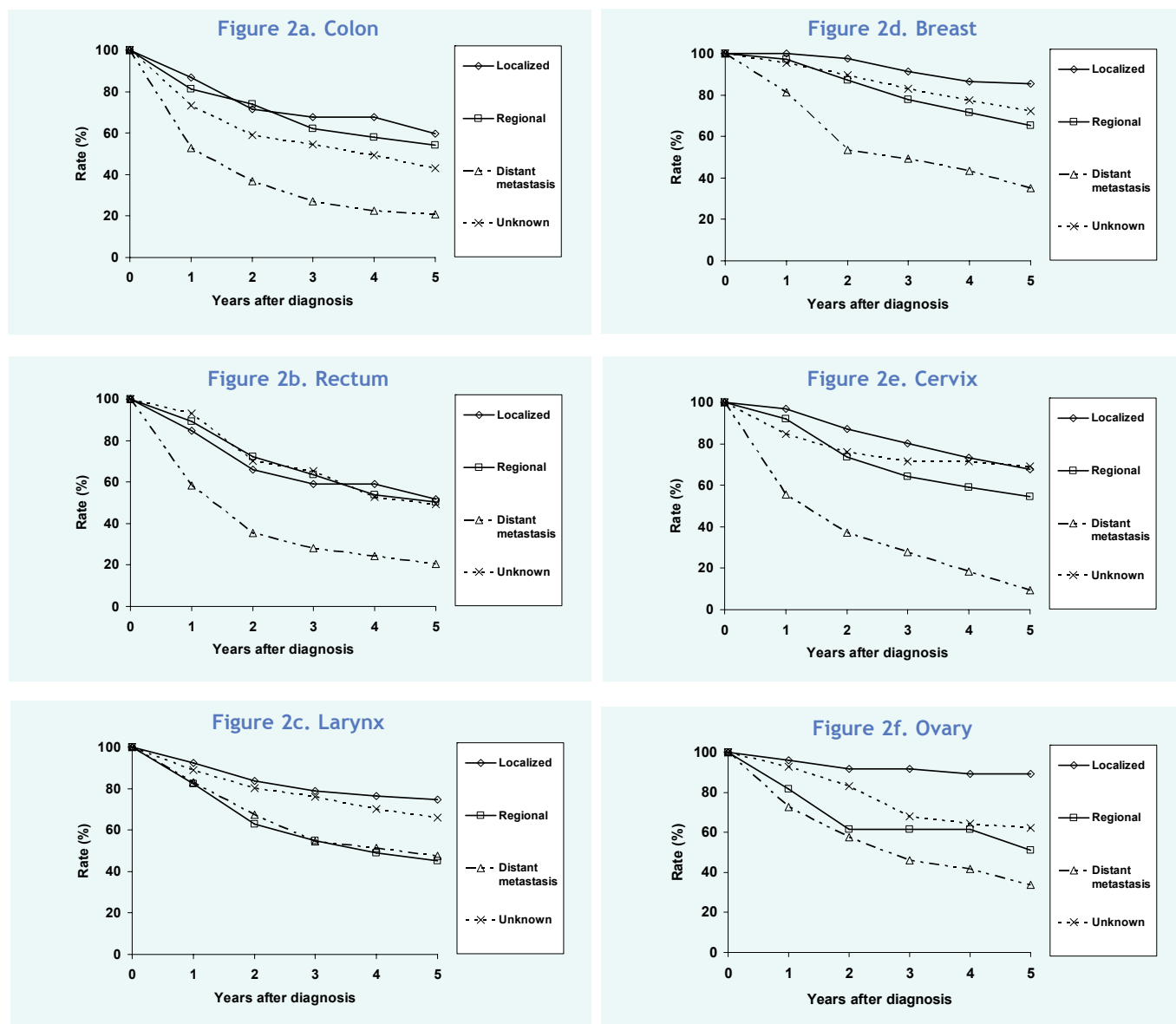
A majority of cases among cancer of the larynx (32%) have been diagnosed with localized disease. In ovarian cancer, the proportion of cases with distant metastasis (47%) is higher than other categories. Regional spread of disease is the most common among cancers of the colon (44%), rectum (41%), breast (34%) and cervix (42%). The extent of disease was unknown in 23–40%. The 5-year absolute survival by

extent of disease reveals no differences in localized, regional and unknown categories for cancer of the rectum; distant metastasis cases among cancer of the larynx fare as well as cases with regional spread of disease. Cases with localized cervix cancer have survival similar to those classified as unknown.

**References**

1. Fidaner C, Eser SY, Parkin DM. Incidence in Izmir in 1993–1994: first results from Izmir Cancer Registry. *Eur J Cancer* 2001; 37: 83–92.

**Figure 2. Absolute survival (%) from selected cancers by extent of disease, Izmir, Turkey**



**Table 1. Data quality indices - Proportion of histologically verified and death certificate only cases, number and proportion of included and excluded cases by site: Izmir, Turkey, 1995–1997 cases followed-up until 2003**

Site	ICD-10	Total registered	%		Excluded cases					Included cases	
			HV	DCO	DCO	Follow-up	Others	Total	%	No.	%
Colon	C18	380	84.2	0.0	0	3	6	9	2.4	371	97.6
Rectum	C19-20	349	92.8	0.0	0	3	2	5	1.4	344	98.6
Larynx	C32	481	95.6	0.0	0	1	2	3	0.6	478	99.4
Breast	C50	1 346	95.6	0.0	0	6	11	17	1.3	1 329	98.7
Cervix	C53	248	98.0	0.0	0	0	2	2	0.8	246	99.2
Ovary	C56	232	98.3	0.0	0	0	2	2	0.9	230	99.1
Urinary bladder	C67	571	91.2	0.0	0	3	2	5	0.9	566	99.1
Hodgkin lymphoma	C81	85	100.0	0.0	0	0	0	0	0.0	85	100.0
Non-Hodgkin lymphoma	C82-85+C96	350	100.0	0.0	0	1	5	6	1.7	344	98.3
Multiple myeloma	C90	79	100.0	0.0	0	0	0	0	0.0	79	100.0
Lymphoid leukaemia	C91	161	100.0	0.0	0	0	0	0	0.0	161	100.0
Myeloid leukaemia	C92-94	149	100.0	0.0	0	1	0	1	0.7	148	99.3

*HV: histologically verified; DCO: death certificate only*

**Table 2. Number and proportion of cases with complete/incomplete follow-up (in years) and median follow-up (in months) by site: Izmir, Turkey, 1995–1997 cases followed-up until 2003**

Site	ICD-10	Cases included	Complete FU		Incomplete FU: lost to FU						% with complete FU at 5 years	Median FU (in months)
			Alive/dead at end of FU		% lost to FU: years from diagnosis							
			No.	%	No.	%	< 1	1-3	3-5	> 5		
Colon	C18	371	266	71.7	105	28.3	11.1	3.0	1.3	12.9	84.6	28.2
Rectum	C19-20	344	232	67.5	112	32.5	16.0	2.9	2.0	11.6	79.1	24.6
Larynx	C32	478	308	64.4	170	35.6	9.8	1.7	1.5	22.6	87.0	64.0
Breast	C50	1 329	806	60.7	523	39.3	10.9	2.3	1.8	24.3	85.0	72.0
Cervix	C53	246	127	51.6	119	48.4	10.6	3.7	2.4	31.7	83.3	51.9
Ovary	C56	230	141	61.3	89	38.7	10.9	1.3	2.6	23.9	85.2	49.6
Urinary bladder	C67	566	350	61.8	216	38.2	13.3	2.7	1.2	21.0	82.9	49.3
Hodgkin lymphoma	C81	85	56	65.8	29	34.2	11.8	5.9	1.2	15.3	81.1	65.0
Non-Hodgkin lymphoma	C82-85+C96	344	256	74.5	88	25.5	11.6	3.2	2.0	8.7	83.2	22.4
Multiple myeloma	C90	79	68	86.0	11	14.0	7.6	1.3	1.3	3.8	89.8	19.4
Lymphoid leukaemia	C91	161	99	61.4	62	38.6	7.5	2.5	1.9	26.7	97.8	31.9
Myeloid leukaemia	C92-94	148	119	80.3	29	19.7	6.8	4.1	2.0	6.8	87.1	16.9

*FU: follow-up*

**Table 3. Comparison of 1-, 3- and 5-year absolute and relative survival and 5-year age-standardized relative survival by site: Izmir, Turkey, 1995–1997 cases followed-up until 2003**

Site	ICD-10	Cases included	% Absolute survival			% Relative survival			% ASRS at 5-years	
			1-year	3-year	5-year	1-year	3-year	5-year	all ages	0-74 years
Colon	C18	371	73.8	53.6	44.9	76.0	58.7	52.5	53.2	52.2
Rectum	C19-20	344	82.9	55.9	44.1	85.0	60.1	50.4	51.6	52.0
Larynx	C32	478	87.9	70.2	62.2	90.0	75.6	70.9	68.9	71.4
Breast	C50	1 329	96.3	81.3	71.1	97.6	84.9	76.7	76.6	77.2
Cervix	C53	246	89.7	68.2	58.8	90.7	70.5	62.3	57.6	63.5
Ovary	C56	230	83.4	62.9	54.7	84.7	65.7	59.0	60.2	59.7
Urinary bladder	C67	566	84.7	67.3	57.7	87.7	75.1	69.7	69.9	70.7
Hodgkin lymphoma	C81	85	92.5	77.4	65.6	93.3	79.3	68.6	67.9	65.8
Non-Hodgkin lymphoma	C82-85+C96	344	72.6	51.0	45.1	73.9	53.8	49.5	49.8	50.6
Multiple myeloma	C90	79	65.8	43.0	28.5	67.3	46.2	32.3	31.6	31.1
Lymphoid leukaemia	C91	161	78.1	55.5	48.2	79.2	57.6	51.4	52.6	50.1
Myeloid leukaemia	C92-94	148	65.7	41.2	29.5	67.0	43.4	32.2	33.0	34.2

ASRS: age-standardized relative survival

**Table 4a. Site-wise number of cases, 5-year absolute and relative survival by sex: Izmir, Turkey, 1995–1997 cases followed-up until 2003**

Site	ICD-10	Cases included	Male			Female		
			% 5-year survival			% 5-year survival		
			No.	Abs	Rel	No.	Abs	Rel
Colon	C18	371	217	42.8	50.1	154	48.0	56.1
Rectum	C19-20	344	192	47.8	55.9	152	39.6	43.8
Larynx	C32	478	450	61.9	70.8	28	66.2	73.2
Breast	C50	1 329	36	66.5	76.4	1 293	71.2	76.7
Cervix	C53	246				246	58.8	62.3
Ovary	C56	230				230	54.7	59.0
Urinary bladder	C67	566	508	57.5	69.4	58	59.2	72.0
Hodgkin lymphoma	C81	85	56	65.1	68.4	29	66.4	68.8
Non-Hodgkin lymphoma	C82-85+C96	344	194	40.3	43.9	150	51.4	56.7
Multiple myeloma	C90	79	41	26.0	30.4	38	31.5	34.6
Lymphoid leukaemia	C91	161	93	45.8	49.6	68	51.3	53.8
Myeloid leukaemia	C92-94	148	78	23.4	26.2	70	38.0	40.4

Abs: absolute survival; Rel: relative survival

**Table 4b. Site-wise number of cases and relative survival by age group: Izmir, Turkey, 1995–1997 cases followed-up until 2003**

Site	ICD-10	Cases included	Number of cases by age group					Relative survival by age group % 5-year survival				
			< 45	45-54	55-64	65-74	> 75	< 45	45-54	55-64	65-74	> 75
			Colon	C18	371	49	60	97	120	45	48.0	57.8
Rectum	C19-20	344	64	66	85	99	30	39.4	48.3	47.7	64.5	53.0
Larynx	C32	478	55	118	164	121	20	72.7	68.9	72.9	71.3	58.4
Breast	C50	1 329	387	360	310	211	61	73.1	75.2	80.4	82.5	72.2
Cervix	C53	246	66	71	66	39	4	70.9	63.3	60.0	54.4	0.0
Ovary	C56	230	58	47	66	48	11	66.9	64.2	49.5	57.1	64.6
Urinary bladder	C67	566	35	85	168	197	81	84.7	73.3	66.6	68.1	67.0
Hodgkin lymphoma	C81	85	58	11	9	5	2	72.5	53.7	62.8	32.7	138.2
Non-Hodgkin lymphoma	C82-85+C96	344	117	55	82	72	18	54.1	50.5	49.4	41.0	42.2
Multiple myeloma	C90	79	9	22	25	20	3	14.0	39.7	34.4	27.3	54.3
Lymphoid leukaemia	C91	161	96	20	16	19	10	53.4	47.1	49.8	37.7	73.7
Myeloid leukaemia	C92-94	148	60	20	22	32	14	38.7	37.4	22.3	23.2	25.3

**Table 5. Proportion of cases and 5-year absolute survival by extent of disease and site: Izmir, Turkey, 1995–1997**

Site	ICD-10	Cases included	% of cases by extent of disease				% 5-year absolute survival			
			Localized	Regional	Dist. met.	Unknown	Localized	Regional	Dist. met.	Unknown
			Colon	C18	371	8.9	43.7	19.9	27.5	59.8
Rectum	C19-20	344	14.2	40.8	21.2	23.8	51.8	50.3	20.4	49.2
Larynx	C32	478	32.1	23.0	7.5	37.4	74.8	45.1	47.6	65.8
Breast	C50	1 329	20.5	34.3	4.7	40.5	85.5	65.4	35.1	72.3
Cervix	C53	246	28.9	41.8	6.1	23.2	67.7	54.6	9.3	69.1
Ovary	C56	230	22.6	5.2	47.4	24.8	89.4	51.1	33.6	62.3

*Dis. met.:* distant metastasis