

CANCER REGISTRATION IN PAKISTAN

Yasmin Bhurgri

History of Cancer Registration in Pakistan

The 'Karachi Cancer Registry' (KCR) is the first population-based cancer registry in Pakistan. The Government of Sindh established it in January 1995, in collaboration with the Unit of Descriptive Epidemiology, International Agency for Research on Cancer (IARC) of the World Health Organisation (WHO). The registry has completed 5 years of data collection. Previous to this there has been no cancer incidence data available from anywhere in Pakistan over the last five decades. Sporadic relative frequency information from hospitals, including the Jinnah Postgraduate Medical Centre (JPMC) and a network of hospital registries coordinated by the Pakistan Medical and Research Council (PMRC).^{1,2,3} had been available, with associated selection biases.

The registry publishes annual reports and data were published earlier this year, with the help of IARC⁴.

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Present Status

Karachi is the largest city of Pakistan, an Islamic Republic in south central Asia and the capital of the Sindh province (Fig 1). Located at the coast of Arabian Sea (latitude: 24 -56' -00" and longitude: 67 -01' -00"), it is the nation's major commercial and industrial centre as well as the largest seaport. The city of Karachi is divided into 5 districts. The Karachi Cancer Registry registers incident cases of the population of the southern district of the city. Karachi South has a population of 1,724,915 (census 1998⁵) with 929,394 males and 795,521 females. The males were thus 54% and the females 46% of the total population.

Muslims form 97% of the population whereas Hindus, Christians and Parsis account for the remaining 3%. The population includes a mixture of all ethnicities in Pakistan, namely Sindhis, Punjabis, Pathans, Baluchs and Mohajirs. There is a slight predominance of Mohajirs, who are an ethnically mixed community, having migrated from various parts of India, at the time of partition of the sub-continent. It has the distinction of being the only district in the country with a representation of all ethnic and socio-economic groups of the country. It can thus be taken as a sample population of the country in the absence of a more extensive cancer registration system.



Figure 1. Pakistan

Incidence Data

The age-standardized incidence rates (ASR) of cancer, all sites were 147.5/100,000-(M) and 174.9/100,000-(F) (see Table). In males lung cancer (ASR 20.0) was the most frequently recorded malignancy, followed by oral cavity (ASR 17.9), urinary bladder (ASR 9.4) and larynx (ASR 9.3). In females breast was the most common site of cancer (ASR 56.6), followed by oral cavity (ASR 16.3), ovary (ASR 9.5) and cervix (ASR 7.3).

Epidemiology of Principal Cancers

The tobacco-associated cancers are responsible for 43.7% of the cancers in males and the two principal cancers – breast and oral cavity are responsible for 42.2% of the cancers in females. Altogether breast, oral cavity, ovary and cervix are responsible for 51.6% of the cancers in females (Figs 2-5).

1. Department of Pathology, Dow Medical College, Karachi 2. Karachi Cancer Registry, Sindh Government Services Hospital (premises), M. A. Jinnah Road, Karachi, Pakistan, Tel: 92 21 921 5672; 92 21 586 8421, Fax: 92 21 586 0913, E.mail bhurgri@cyber.net.pk

Table. Age-specific Annual Cancer Incidences, Karachi (South) 1995-99

MALE

SITE	ALL AGES	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	CRUDE RATE	ASR % WORLD	ICD (10th)	
Oral Cavity	473:0	0.2	-	0.4	0.4	0.9	4.6	10.6	17.4	25.3	26.0	38.3	27.0	81.1	127	81.6	44.4	10.3	12.2	17.9	C00-C08
Oropharynx	47:0	-	-	-	-	-	-	-	0.8	2.2	-	6.2	5.6	11.4	14.1	14.0	4.7	1.0	-	1.2	2.0
Nasopharynx	35:0	0.3	-	0.5	0.2	-	-	0.5	0.6	1.1	0.4	1.8	-	1.7	2.5	2.8	-	1.1	2.4	7.0	4.7
Hypopharynx	115:0	-	0.2	-	-	-	-	1.1	0.4	3.6	2.8	8.6	24.3	25.1	33.0	25.6	-	23.3	2.5	-	2.9
Oesophagus	157:0	-	-	-	-	0.5	1.4	2.8	4.0	6.7	5.5	10.5	27.1	25.1	42.4	23.3	-	25.7	3.4	-	4.1
Stomach	117:0	-	0.2	-	-	0.9	0.3	2.5	1.6	6.2	5.5	9.3	14.0	14.8	35.3	21.0	-	21.0	2.6	3.0	4.6
Colon & Rectum	159:0	-	-	-	0.8	2.7	3.1	2.5	4.0	7.1	8.9	-	9.3	9.3	25.1	-	49.5	18.6	16.4	-	3.5
Liver	113:0	0.3	0.2	-	-	-	0.3	0.4	-	1.8	4.4	9.3	14.0	28.5	47.1	28.0	21.0	2.5	2.9	-	5.0
Bronchus & Lung	437:0	-	-	0.2	-	-	0.2	-	-	2.4	8.0	19.3	29.0	51.3	106	191	121	112	-	9.6	11.3
Skin Melanoma	12:0	-	-	-	-	-	-	0.4	0.4	1.3	-	-	2.5	-	-	4.7	2.3	-	-	-	0.3
Breast	22:0	-	-	-	-	-	-	-	0.8	1.3	2.8	-	1.2	4.7	2.3	-	4.7	2.3	-	-	0.5
Prostate	155:0	-	-	-	-	-	-	-	-	-	-	0.6	4.9	10.3	30.8	58.9	90.9	103	3.4	-	4.0
Testis	36:0	0.2	-	-	0.6	-	0.7	-	3.1	1.1	2.8	0.4	1.7	1.2	-	-	-	-	-	4.7	-
Bladder	211:0	-	-	-	-	0.2	0.6	1.4	2.8	4.4	7.7	10.5	28.9	43.4	82.4	58.3	63.0	4.6	5.4	9.4	-
Thyroid	35:0	-	-	0.2	0.8	-	0.5	0.3	-	0.8	1.8	-	4.4	4.3	0.9	3.4	-	2.4	2.3	-	0.8
Hodgkin's disease	95:0	0.2	3.8	1.9	1.6	1.4	1.7	1.8	1.6	2.7	4.4	2.5	-	3.7	-	6.9	-	4.7	-	-	2.1
Non-Hodgkin Lymphoma	183:0	0.9	1.7	1.4	3.5	3.0	3.5	1.8	3.2	9.3	7.7	8.0	14.0	21.7	16.5	21.0	11.7	4.0	4.7	-	5.5
Leukemia	151:0	1.6	2.7	3.3	1.8	2.3	2.6	3.9	2.4	8.0	4.5	3.7	-	7.5	9.1	16.6	4.6	7.0	3.3	-	3.9
Others	1319:0	2.9	2.4	5.8	8.7	8.3	10.9	17.7	20.7	62.0	57.7	104	124	208	290	233	163	29.1	33.9	47.9	-
All sites	3872:0	7	13	14	19	22	33	48	66	154	165	266	369	644	1022	760	620	84.9	-	100	148

FEMALE

SITE	ALL AGES	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	CRUDE RATE	ASR % WORLD	ICD (10th)	
Oral Cavity	316:0	-	-	0.2	0.4	1.5	4.0	6.4	9.9	23.2	17.5	65.1	25.9	75.6	89.9	65.0	55.0	8.1	8.7	16.3	C01-C08
Oropharynx	11:0	-	-	-	0.3	-	0.5	-	-	-	1.5	-	2.7	3.4	-	5.2	2.5	0.3	0.3	0.5	C09-C10
Nasopharynx	17:0	-	-	-	0.5	0.6	1.0	0.5	-	0.5	0.7	1.2	1.4	3.4	-	5.2	2.5	0.4	0.5	-	0.7
Hypopharynx	37:0	-	-	-	0.3	0.7	2.3	1.4	0.5	2.9	4.8	5.5	6.7	12.8	7.8	5.0	0.9	1.0	-	1.9	C12-C13
Oesophagus	123:0	-	-	-	0.3	1.3	2.3	2.8	5.8	10.9	18.1	17.8	26.9	61.0	23.4	22.5	3.2	3.4	-	6.9	C15
Stomach	65:0	-	-	-	1.0	0.3	0.7	0.5	3.3	2.1	9.5	9.6	2.7	11.8	19.3	7.8	-	17.5	1.7	1.8	3.2

Breast Cancer

Incidence: Breast cancer is the most frequent cancer of women in Karachi, accounting for one-third of the cancers in females. The ASR is the highest in Asia, except the Jews in Israel. The age-specific curves show a gradual increase

in risk upto the 7th decade, followed by a flattening or an actual apparent decrease in risk. Reproductive factors cannot be considered as a major risk factor as early marriages, multiple births and prolonged breast-feeding are the norm.

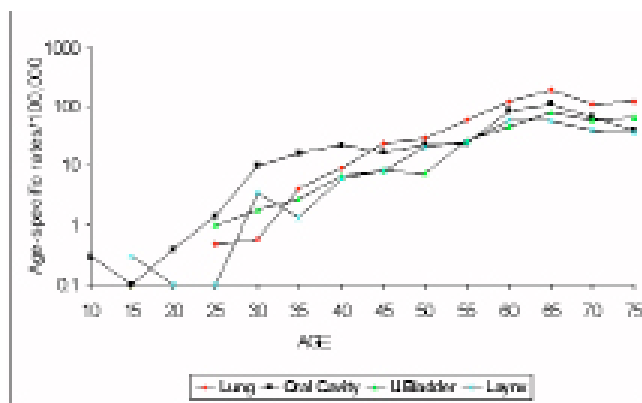


Figure 2. Age-specific Incidence Rates-Males

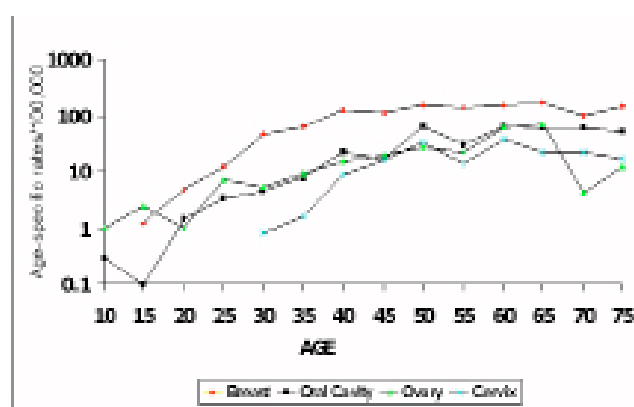


Figure 4. Age-specific Incidence Rates-Females

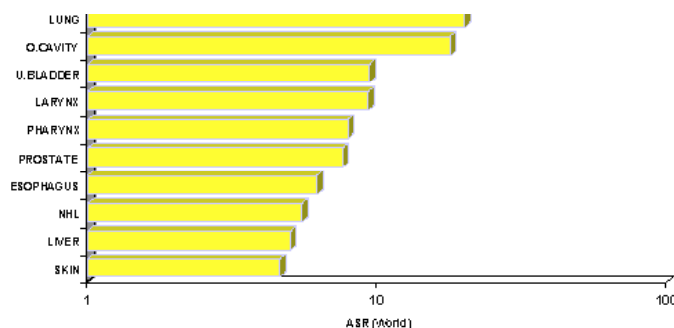


Figure 3. Ten Major Cancers -Males

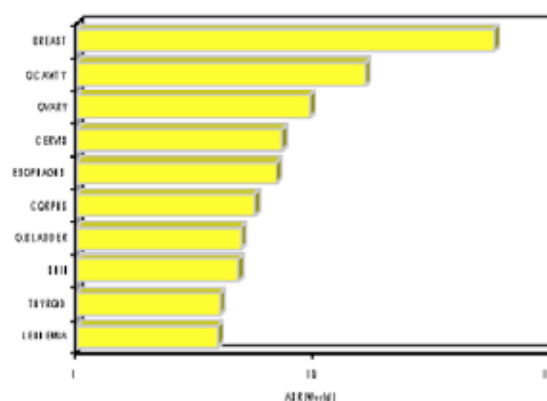


Figure 5. Ten Major Cancers -Females

Early menarche, late menopause and thus the prolonged effect of reproductive hormones could be the other possible risk factor along with dietary factors. The role of BRCA1, BRCA2 and other genetic factors has not been studied in this population. A family history of breast cancer was noted in 2% of the cases registered. The predominant histological type is duct cell carcinoma.

Survival The prognosis is fair. The 5-year survival for breast cancer (1995 cases) was 53% (Fig.3).

Oral Cavity

Incidence.. Cancer of the oral cavity (ICD C00-06) is the second most common cancer, with similar rates in both sexes. The major risk factors identified are betel-quid chewing and/or tobacco chewing and smoking. Alcohol consumption is not a prevalent habit in Karachi, therefore not a major risk factor. Although smoking is not a common factor among females, they practice chewing. A recent survey indicates that 36% of males and 44% females in Karachi chew pan or pan with tobacco. The age specific rates show a gradual rise to a maximum in the 7th decade, in both sexes.

Survival Has not been calculated for oral cancers.

Lung Cancer

Incidence. The ASR for lung cancer is moderately high for males. The major risk factor for lung cancer i.e. tobacco

smoking is practised by 36% of males and 9% of females in Karachi. The age specific rates show a gradual rise from the 4th to 6th decade with a sharp accent in the 7th decade. The predominant histological type is squamous cell carcinoma of a high grade. The vast majority of cases are diagnosed with a stage 4 disease.

Survival

Late presentation and lack of facilities for thoracic surgery make the prognosis very poor. The 5-year survival for lung cancer (1995 cases) was 1%.

Research Studies

1. Studies of environmental risk factors and polymorphism of metabolic enzymes in case of tobacco-related cancers vs. lung, oral, laryngeal and urinary bladder cancers. The study is in collaboration with the Department of Environmental Epidemiology, International Agency for Research on Cancer, Lyon, France
2. Cancer Survival, Breast Cancer in Karachi- grading, staging, survival of registered cancer patients (1995-99).
3. Lymphomas and leukemias in Karachi South- classification, survival of registered cancer patients (1995-99).

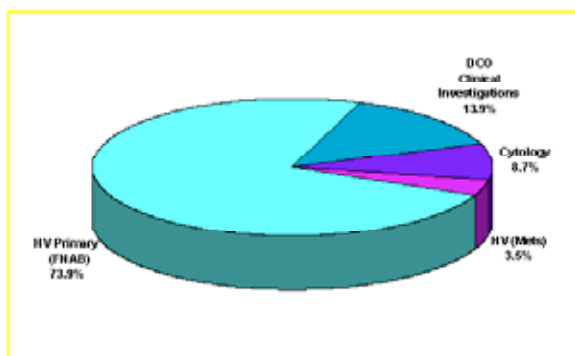


Figure 6. Basis of Diagnosis - Lung Cancer

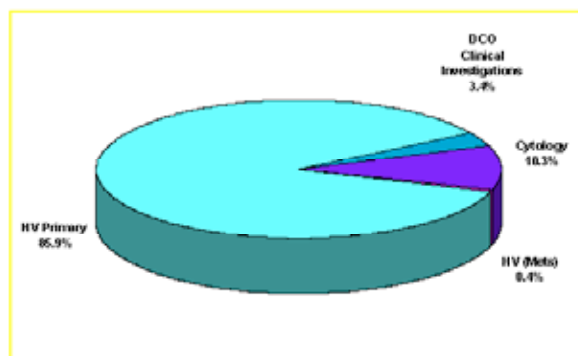


Figure 7. Basis of Diagnosis - Breast Cancer

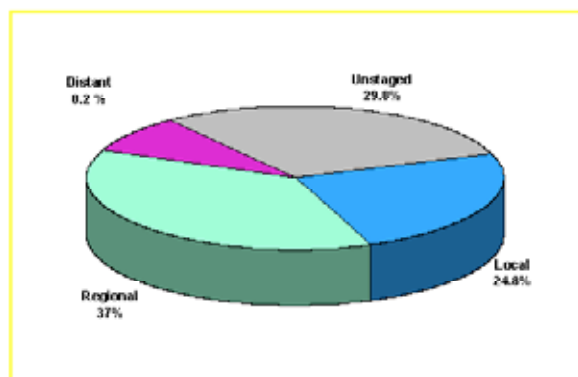


Figure 8. Stage at Diagnosis - Breast Cancer

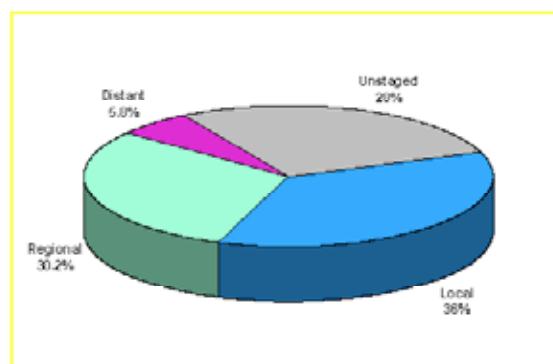


Figure 9. Stage at Diagnosis - Cervix Cancer

National Policy

The national cancer control program has been in existence prior to the initiation of the registry, but with little achievement. As one of their major sponsors are the tobacco companies, the cancer control program is unable to offend them (statement at the cancer control meeting in Islamabad 1999). Nor do they feel it is practical to launch an offensive against breast cancer. A more scientific group is required to handle the cancer control in this region.

The Pakistan Association of Cancer Registries was started in November 1999. This along with the Cancer Society of Pakistan and the Karachi Cancer Registry have however worked in the urban regions of Sindh to promote cancer registration and awareness in cancer control.

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Contact

Dr. Yasmin Bhurgri

1. Department of Pathology
Dow Medical College
Karachi

2. Karachi Cancer Registry
Sindh Government Services Hospital (premises),
M. A. Jinnah Road,
Karachi, Pakistan

Tel: 92 21 921 5672; 92 21 586 8421

Fax: 92 21 586 0913

E.mail bhurgri@cyber.net.pk