CANCER IN PAKISTAN

Pages with reference to book, From 178 To 183

N.A. Jafarey (Department of Pathology, Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre, Karachi.)
S.H.M, Zaidi (Department of Radiotherapy, Jinnah Postgraduate Medical Centre, Karachi.)

The available data on Cancer in Pakistan is based on the records of cases registered in some of the Departments of Radiotherapy and Pathology in the country. The information is thus confined to relative frequency of different tumours. Mortality rates, incidence rates and prevalence rates are not available, except for a snnll population base study done for the prevalence of carcinoma of the oral cavity in some areas of Karachi[1]. This is not an unusual situation as population based data are not available in most of the countries of the region.

Despite the fact that relative frequency data are not as good as incidence rates, useful information can be extracted from them. In this article the different ways in which the relative frequency data has been used in Pakistan will be described. In the order of presentation these will be:

1. Relative frequency data collected from five centres in the country as a part of a multi-centre study.
2. Comparing of the data collected in the above five centres in 1973-74 with that in 1979-83.
3. Examining the changes in the disease pattern in Jinnah Postgraduate Medical Centre, Karachi over the last 25 years.

PMRC MULTI-CENTRE DATA 1981

Pakistan Medical Research Council supported a study on the frequency of malignant tumours in sewn centres around the country in 1973 which covered a period of 18 months. In 1977 this study was re.started in 5 centres. This study is still continuing. In these studies a uniform recording proforma was used. This reporting card is based on the format recommended by WHO[2]

TABLE – I
Number of Tumours in 1981 in Centres.

		M A L E					
CD CODE	ANATOMICAL SITE	JPMC	LMC	KEMC	AFIP	IRNUM	TOTAL
40	Lip	9	4	6	1	11	31
41	Tongue	70	24	16	6	11	127
42	Salivary Gland	9	7	12	5	9	42
43	Gum	12	15	8	0	10	45
44	Floor of mouth	8	2	0	0	0	10
45	Cheek	54	29	16	0	2	101
46	Oropharynx (Tonsil)	61	24	6	2	0	93
47	Nasopharynx	22	21	20	3	9	75
48	Hypopharynx	125	36	5	3	10	179
49	Pharynx and Oral cavity	23	5	0	7	1	36
50	Eosophagus	63	14	11	10	41	139
51	Stomach	22	12	8	14	5	61
52	Small Intestine	4	2	0	2	0	8
53	Colon	13	14	7	13	0	47
54	Rectum & anal canal	12	16	17	18	10	73
55	Liver	56	34	10	17	9	126
56	Gall bladder	2	3	7	13	0	25
57	Pancreas	5	3	3	3	0	14
58	Retropertonum	0	3	9	2	0	14
59	Other illdefined sites with-in G.I. Tract	0	0	0	0	0	0
60	Nasal cavities	10	13	22	17	4	66
61	Larynx	58	16	57	13	8	152
62	Bronchus	213	62	61	35	39	410
63	Pleura	1	2	0	1	0	4
64	Mediastinum	4	5	6	1	2	18
65	Other illdefined sites with-in resp. system	1	0	0	0	0	1
169	Hematopoietic system	107	18	26	0	9	160
170	Bones and Joints	26	28	25	31	28	138
171	Connective Tissue	15	24	42	15	1	97
173	Skin	42	34	55	45	7	183
174	Breast (Female)	0	0	0	0	0	0
175	Breast (Male)	5	7	0	1	8	21
179	Uterus	0	0	0	0	0	0
180	Cervix	0	0	0	0	0	0
181	Placenta	0	0	0	0	0	0
182	Uterus N.O.S.	0	0	0	0	0	0
183	Ovary	0	0	0	0	0	0
184	Female Genital tract Nos. (Vagina)	0	0	0	0	0	0
185	Prostate	12	9	7	37	4	69
186	Testis	32	23	22	22	16	115
187	Penis and Other Male Genital tract	3	1	0	0	0	4
188	Urinary Bladder	40	16	29	25	18	128
189	Kidney & Other Urinary organs	12	9	21	9	0	51
190	Eye	5	5	27	3	18	58
191	Nervous system	25	2	13	10	1	51
192	Other and Unspecified parts of Nervous system	2	0	1	2	0	5
193	Thyroid Glands	6	6	0	15	3	30
194	Other Endocrine Glands	4	0	8	0	0	12
195	Other illdefined	9	0	0	6	91	106
196	Lymph nodes	33	46	97	79	0	255
199	Unknown Primary site	7	11	7	7	0	32
	Total	1242	605	696	493	386	3422

Table 1 shows the frequency of different tumours in males and females for the year 1981 which is the year in which census was done. The five centres from which the data is being presented are:
1. Jinnah Postgraduate Medical Centre, Karachi (JPMC). The data from this centre E of a hospital based cancer registry.

2. Uaquat Medical College, Jamshoro (LMC). The data from this centre is of cases registered with the Department of Radiotherapy.
3. King Edward Medical College, Lahore (KEMC). The data from this centre is of cases registered with the Department of Radiotherapy.
4. Armed Forces Institute of Pathology, Rawalpindi (AFIP). The data from this centre is of all histologically proven cases submitted to it from defence service establishments throughout Pakistan plus many of the civilian institutions in Rawalpindi/Islamabad area.
5. IRNUM, Peshawar is a Radiotherapy Institute and the data is of all cases registered with it.
The above five centres are located in different parts of the country giving a fair coverage of the different population clusters in Pakistan. The sources of cases covered by the different centres are however not the same. Three of the centres-LMC, KEMC & IRNUM are only reporting cases which are registered with the Department of Radiotherapy. JPMC is reporting all cases referred to the Department of Radiotherapy plus all histologically proven cases seen in the Department of Pathology which have not already been registered in the Department of Radiotherapy. The fifth centre in the study is AFIP which only reports histologically proven cases. Another difference in the different centres which should be taken note of is the geographical coverage of each centre. JPMC covers mostly Karachi and its surroundings; a population of about 10 million or so. LMC, KEMC and IRNUM receive a large number of cases from the adjoining districts which they serve. AFIP is a referal centre for defence service hospitals throughout Pakistan but gets the bulk of its cases from those living in Rawalpindi/Islamabad area. The degree of bias produced by these differences are difficult to assess, but one study carried out at JPMC comparing the data of the Departments of Radiotherapy and Pathology showed remarkable similarity[3].

TABLE – II

Number of Tumours in 1981 in Centres.

ÇD CODE	ANATOMICAL SITE	FEMALE					
		JPMC	LMC	KEMC	AFIP	IRNUM	TOTAL
40	Lip	3	5	5	0	2	15
41	Tongue	54	21	15	2	5	97
42	Salivary Gland	4	6	7	0	4	21
33	Gum	15	15	1	0	6	37
44	Floor of mouth	2	0	2	0	1	5
45	Cheek	58	23	23	3	4	111
	141, 143, 144 & 145	129	59	41	5	16	250
46	Oropharynx (Tonsil)	27	16	2	1	3	49
47	Nasopharynx	6	2	6	1	5	20
48	Hypopharynx	45	16	6	7	9	83
49	Pharynx, and Oral cavity	3	2	0	3	0	8
50	Eosophagus	80	16	12	10	17	135
51	Stomach	13	1	3	5	2	24
52	Small Intestine	0	2	0	0	0	2
53	Colon	8	4	0	2	2	16
54	Rectum & anal canal	3	3	3	8	6	23
55	Liver	27	8	5	8	10	58
56	Gall bladder	13	16	19	12	10	70
57	Pancrease	1	2	2	1	2	8
58	Retropertonum	1	0	2	0	0	3
59	Other illdefined sites with-in G.I. Tract	0	0	0	0	0	0
60	Nasal cavities	11	4	11	3	4	33
61	Larynx	15	2	8	1	2	28
62	Bronchus	22	9	10	2	4	47
63	Pleura	1	0	0	2	0	3
64	Mediastinum	1	0	1	0	1	3
65.	Other Illdefined sites with in Resp. System.	0	0	0	1	0	1
169	Hematopoietic system	55	9	8	1	5	78
170	Bones and Joints	17	9	12	11	19	68
171	Connective Tissue	6	14	20	8	1	49
173	Skin	36	13	31	20	10	110
174	Breast (Female)	191	100	255	110	66	722
175	Breast (Male)	0	0	0	0	0	0
179	Uterus	17	1	12	11	6	47
180	Cervix	67	41	93	20	24	245
181	Placenta	1	3	0	0	0	4
182	Uterus N.O.S.	4	8	2	4	1	19
183	Ovary	51	26	55	27	15	174
184	Female Genital tract Nos. (Vagina)	8	3	6	3	3	23
185	Prostate	0	0	0	1	0	1
186	Testis	0	0	0	0	0	0
187	Penis & Other Male Genital tract	0	0	0	0	0	0
188	Urinary Bladder	9	2	3	0	2	16
189	Kidney & Other Urinary organs	4	4	12	6	2	28
190	Eye	8	4	14	2	12	40
191	Nervous system	8	1	2	1	0	12
192	Other and Unspecified parts of Nervous system	1	0	1	2	0	4
193	Thyroid Glands	9	5	0	16	3	33
194	Other Endocrine Glands	6	0	9	0	0	15
195	Other ill defined sites	3	0	0	6	57	66
196	Lymph nodes	14	12	43	22	0	91
199	Unknown Primary site	9	6	2	8	0	25
Total		937	434	723	351	325	2770

Male	3422
Female	2770
Total	6192

Table II shows the ten commonest tumours among the males and females in each of the five centres and when all the centres are combined. The differences between different centres and the national or combined figures are better noted when the ranking position of the ten commonest tumours in the combined list are seen for individual centres. This is shown in Table III.

TABLE – III
Rank Order of the Ten Commonest Tumours.

	All Centres – JPMC	–LMC	–KEMC	–AFIP	–IRNUM
Males					
1.	Bronchus	1	2	2	4	3
2.	Oral	2	1	6	16	6
3.	Lymph node	11	3	1	1	–
4.	Skin	9	5	4	2	13
5.	Hypopharynx	3	4	21	17	10
6.	Haemato-poietic	4	12	9	–	11
7.	Larynx	7	13	3	13	12
8.	Esophagus	5	14	15	14	2
9.	Bone	13	8	10	5	4
10.	Bladder	10	13	7	6	6
Females						
1.	Breast	1	1	1	1	1
2.	Oral	2	2	5	14	7
3.	Cervix	4	3	2	4	3
4.	Ovary	6	4	3	2	6
5	Esophagus	3	6	10	10	5
6.	Skin	8	9	6	5	9
7.	Lymph node	14	11	4	3	–
8.	Hypopharynx	7	5	16	12	11
9.	Haemato-poeitic	5	12	14	–	13
10.	Gall Bladder	15	5	8	7	9

Data collected from 1977 to 1983 was also sent to International Agency for Research in Cancer and is included in the book on "Cancer Occurrence in Developing Countries"[4]. In the analysis done at IARC the Age Standardized Cancer Ratio (ASCAR) has also been calculated[5]. This provides a more reliable

comparison of the relative frequencies of different tumours in different centres. The ASCAR score for some of the tumour sites in different centres is given in Table IV.

TABLE – IV
Ascar or Some Selected Tumour Sites:

All Centres – JPMC–	LMC–	KEMC–	AFIP–	IRNUM	
Males					
Oral	9.9	11.6	11.1	7.3	1.7	1.9
Hypopharynx	6.7	11.0	5.4	1.6	0.6	1.1
Larynx	5.4	5.2	5.3	11.3	3.4	2.8
Bronchus	13.7	16.8	12.8	11.5	7.9	11.6
Esophagus	5.0	7.1	2.2	2.6	2.1	2.8
Bladder	4.5	3.1	2.9	6.1	4.1	5.3
Lymph node	7.9	6.3	8.3	13.0	11.7	7.1
Liver	3.6	3.9	4.0	1.7	2.9	1.6
Female						
Oral	10.8	15.9	14.8	6.4	3.0	6.9
Hypopharynx	3.5	5.2	3.8	1.6	1.2	2.5
Esophagus	5.4	8.1	4.7	2.0	2.0	3.6
Breast	23.9	19.0	22.0	30.6	27.9	20.2
Cervix	9.6	8.3	10.2	11.9	4.7	7.3
Ovary	5.4	4.2	5.6	6.3	6.0	4.0
Liver	2.0	3.7	0.7	1.4	1.3	1.3
Lymphnode	3.3	2.8	3.2	5.5	3.9	3.0

Using the 1981 census figures the crude and Standardized incidence rates have also been calculated at IARC. The incidence rates for some of the common tumours are shown in Table V.

TABLE – V
Standardized Incidence Rates of Some Selected Tumour sites.

All Centres –	JPMC	LMC	KEMC	AFIP	IRNUM
Males					
Oral	6.1	8.4	8.5	3.1	2.8
Hypopharynx	4.0	8.0	4.3	0.7	1.5
Larynx	3.3	3.9	4.2	4.7	1.4
Bronchus	8.4	12.7	10.2	4.9	5.3
Esophagus	2.9	5.1	1.9	1.2	4.1
Bladder	2.4	2.3	2.3	2.3	2.3
Lymph node	4.0	3.0	5.8	6.3	3.9
Liver	2.1	2.8	3.0	0.8	0.7
Female					
Oral	6.7	10.2	8.8	2.9	2.4
Hypopharyx	2.2	3.6	2.6	1.2	1.2
Esophagus	3.6	5.7	2.7	1.4	2.1
Breast	15.1	12.9	14.9	23.5	10.1
Cervix	6.3	5.6	6.4	8.6	3.4
Ovary	3.4	2.4	3.2	4.8	2.7
Liver	1.2	2.4	0.5	1.0	0.8
Lymph node	1.6	1.3	1.9	3.0	1.0

COMPARISON OF 1973-74 & 1981 DATA

As stated above PMRC did a short study on the frequency of malignant tumours in seven centres of the country[6]. Most of the data in that study was from five of the participating centres so that when the

study was restarted in 1977 it included only the five centres reporting large number of cases. The data collected from 1977 to 1980 has been published as a monograph[7]. Comparing the figures of the two studies some interesting differences have been noted. The most important difference seen was in males where tumours of the Bronchus moved up from the 4th position in 1973-74 to the 1st position in 1977-80 (Table VI).

TABLE – VI
The Ten Commonest Tumours in 1973–74 and 1977-80 Study in Males.

Ranking Order	1973–74	Ranking Order	1977–80
1.	Oral (12.6)		Bronchus andLung (10.6)
2.	Metastatic Tumours (8.5)		Oral cavity (8.6)
3.	Skin (8.1)		Lymph nodes (6.6)
4.	Bronchus and Lungs (7.4)		Hypopharynx (6.1)
5.	Pharynx (6.1)		Skin (5.6)
6.	Intestine & Rectum (5.7)		Larynx (5.6)
7.	Larynx (5.2)		Haematopoietic (5.0)
8.	Bones (5.1)		Oesophagus (4.8)
9.	Oesophagus (4.6)		G.I. Tract (4.7)
10.	Hodgkins (3.3)		Bones (4.1)

The relative proportion of the tumours of the Bronchus increased from 7.4% to 9.7%. This increase was not uniform in all centres. There is a South to North gradient which is difficult to explain. In JPMC which is the southern most centre tumours of the Bronchus accounted for 13.6% of all male cases in 1977-80 when at IRNUM and AFIP the two northern most centres it was recorded in only 5.7% of all male cases. A somewhat similar change has been seen in cases of tumours of the Hypopharynx. This site was not in the list of the ten commonest tumours of the males in 1973-74 but occupies the third

position in the 1977-80 figures. The cause for the increase in both the tumours of the Bronchus and Hypopharynx are probably the same that is increasing use of cigarettes. While tumours of Bronchus and Hypopharynx have increased those of the Oral cavity have steadily declined. The probable cause of it is the decline in the habit of chewing tobacco. Unlike the males there is no significant difference in the frequency figures of 1973-74 and 1977-80 among the females.

C HANGING TRENDS AT JPMC

At JPMC data on the cases seen since 1959 are available and have been analyzed to note the c hange trends. The relative frequency of various tumours seen over the years were plotted and then the expected values were calculated using the formula for moving averages. The graphs for some selected sites are shown as figures 1-3.

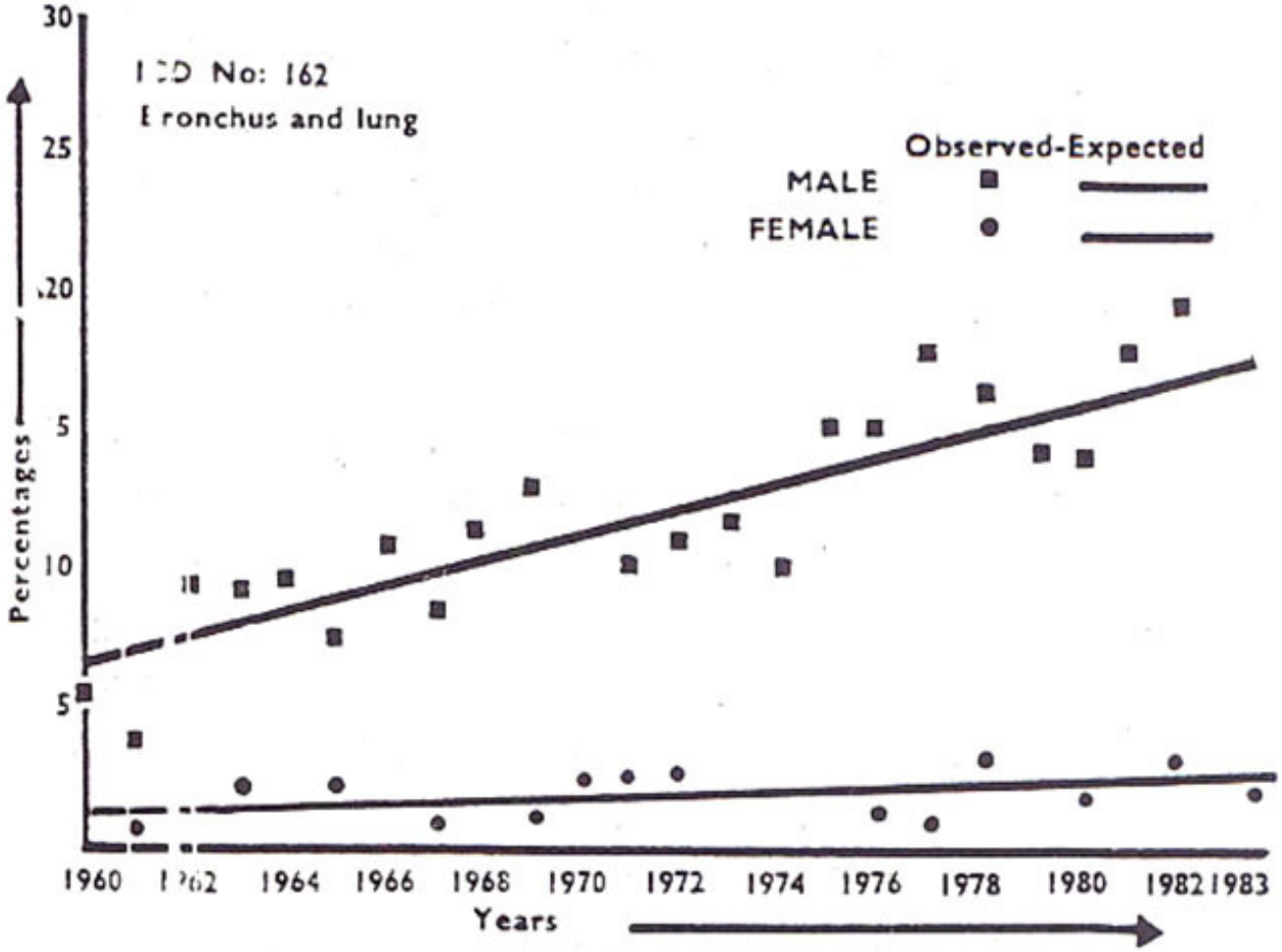

Figure 1. Relative frequency of Carcinoma of oral cavity in both sexes.

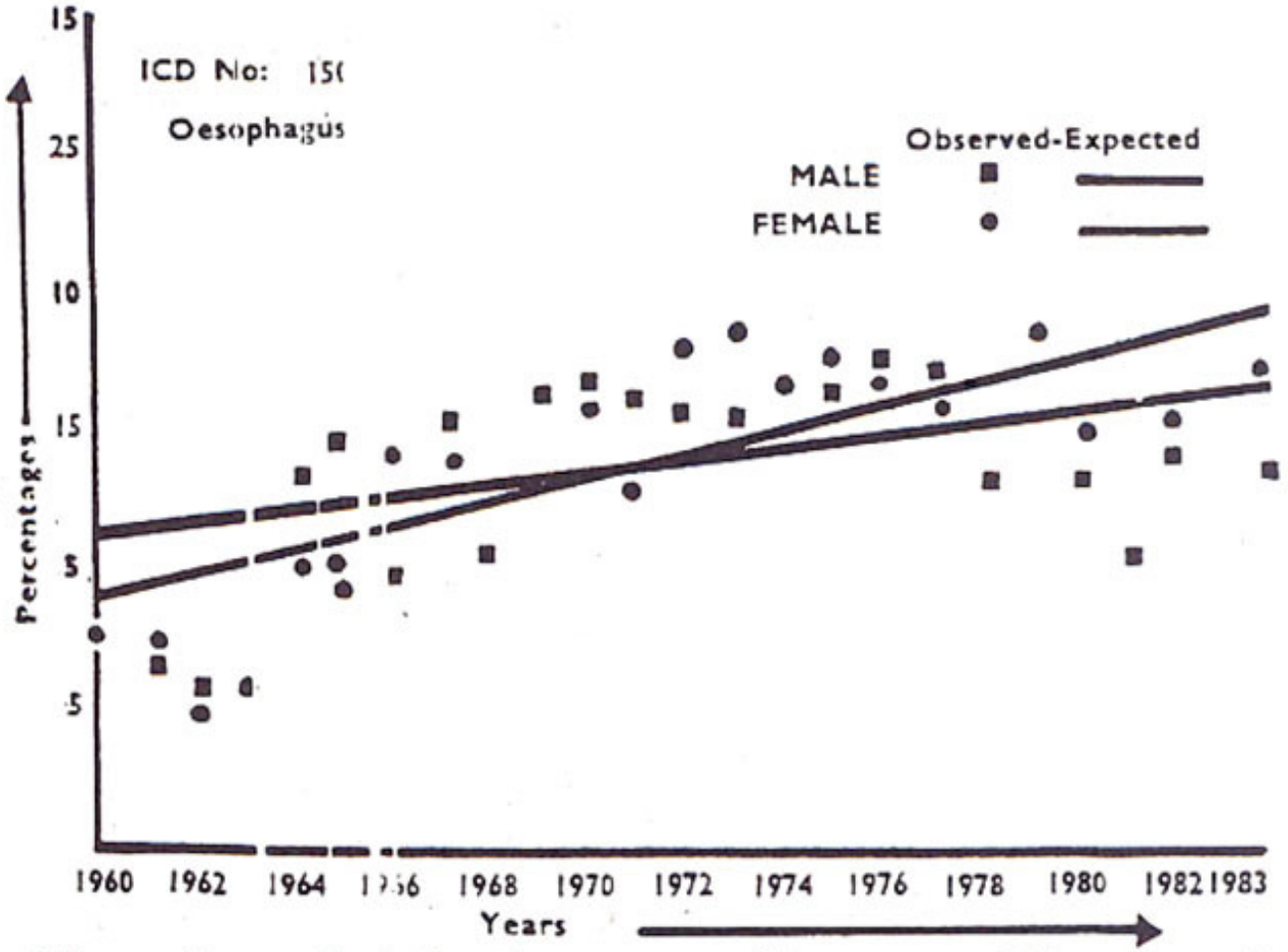

Figure 2. Relative frequency of tumours of Esophgno in both sexes.

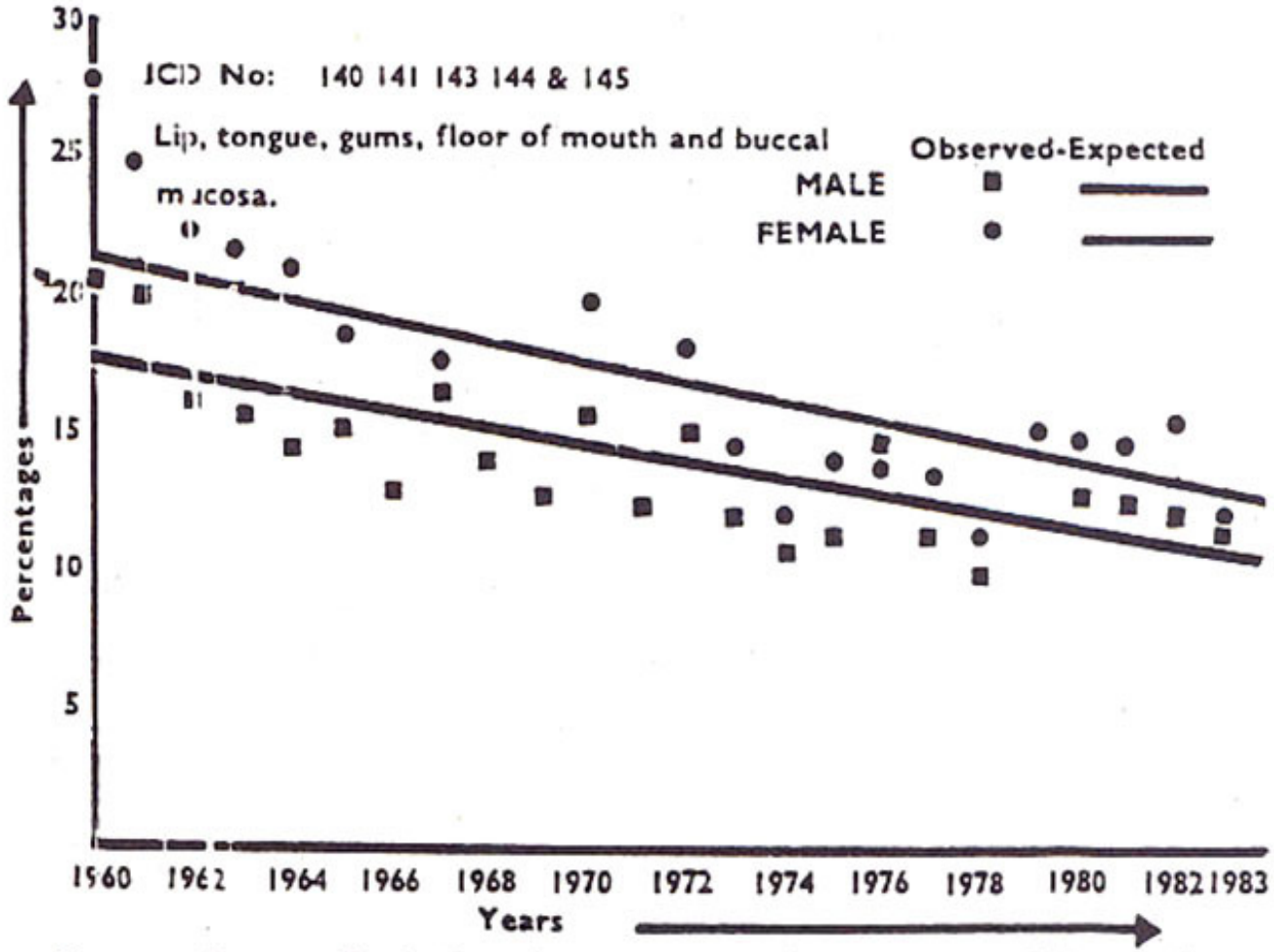

Figure 3. Relative frequency of tumours of Bronchus.

This type of analysis gives some idea of how the relative frequency of any given tumour site varies from year to year. This change does not necessarily reflect changes in the incidence rate of a tumour , but merely how it compares with other cases seen in the same year. Thus, if the incidence of cases from site A increases then the relative frequency of all other tumours will decrease as they are only a proportion of the whole and not rates. Keeping these limitations in mind this type of analysis gives some useful information.

Over the last 25 years there has been consistent fall in the relative frequency of the carcinoma of the Oral Cavity in both the sexes (Figure 1). There has been a lesser degree of reduction in the relative frequency of tumours of the Pharynx and Larynx. On the other hand there has been a steep increase in the relative frequency of tumours of the Bronchus particularly in males (Figure 3) and Esophagus in both sexes (Figure 2).

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