

example, between 1960 and 1964 the Chinese women (six percent of all women) incurred almost nine percent of all incident cancers and 20 percent of incident thyroid cancers; the Japanese women (36 percent of all women) incurred 35 percent of all cancers and 32 percent of thyroid cancers. The proportional incidence would suggest that the Chinese women in Hawaii may be at high risk for thyroid cancer. The age-standardized morbidity ratio indicated a 43 percent excess of thyroid cancer in the Chinese women, but the 95 percent confidence limits were not statistically significant for a Poisson distribution. Austin provided incidence data by race for the San Francisco-Oakland Standard Metropolitan Statistical Area (Figure 7).¹⁷ The age-adjusted rates were computed by the direct method using the 1950 population of the continental United States as the standard. The incidence in the Chinese women was similar to that registered in white United States women, and exceeded the rates seen in Japanese and black women.

The female:male ratio of age-adjusted incidence rates in the Hawaiian Chinese is 5.9 and, in the Hawaiian Chinese men, the age-adjusted incidence is seven times that noted in the Singapore Chinese men.¹⁸ Fraumeni and Mason¹⁹ reported that thyroid cancer mortality in the Chinese residing in the United States during 1950-1969 was increased, particularly in males, when compared with the United States white and black populations. The geographic and racial patterns for thyroid cancer incidence and mortality should be studied carefully for differences in histopathology and natural history, and particularly among different generations of Chinese immigrants to the United States. It is possible that the complex of host and environmental factors that promote clinical expression of disease are distinctive from those that initiate tumorigenesis.

Pathology

The majority of thyroid tumors arise from the epithelial elements of the gland. Most tumors originate from the follicular (acinar) cells, and at least one type, medullary

carcinoma, develops from the parafollicular cells. The biologic behavior of thyroid cancer is extremely variable, and any system of histologic classification should serve to identify important differences in epidemiology, natural history, prognosis and the rationale of therapy. At Memorial Hospital, we have classified the epithelial tumors into papillary, occult sclerosing, follicular, Hurthle cell, medullary, and spindle and giant cell.

The occult sclerosing carcinoma may be classified as a subtype of the papillary carcinoma; it is a small (commonly less than 1.5 cm. in diameter), unencapsulated low grade carcinoma, showing marked desmoplasia. The Hurthle cell carcinoma represents a variety of follicular carcinoma and is composed of large cells with small hyperchromatic nuclei and relatively large amounts of pink cytoplasm. The resulting simplified taxonomy of thyroid carcinoma—papillary, follicular, medullary and anaplastic—is currently in common use.

The percentage distribution by cell type will vary by age, sex, geographic area, and source of pathologic material. Surgical materials tend to select the differentiated carcinomas (i.e., papillary and follicular), whereas mortality studies tend to select the anaplastic carcinomas (i.e., spindle and giant cell).²⁰

In the Third National Cancer Survey, papillary carcinoma was the most common form, accounting for 64 percent of all primary malignant tumors (Table III). This type of tumor has a peak incidence in the third and fourth decades, and occurs three times more frequently in women than in men. The disease is distinctly less malignant in children and young adults. In our experience at Memorial Hospital, not more than 10 percent of these tumors may be classified as pure papillary carcinomas. The remainder of these tumors variously contain follicular, trabecular, Hurthle cell, epidermoid or spindle and giant cell features. The finding of foci of giant or spindle cell anaplastic carcinoma interspersed throughout the papillary and follicular structures is considered a poor prognostic sign.²¹

The percentage relative frequency of

	Females		Males	
United States				
Hawaii: Chinese	20.7*	14.1†	3.5*	4.5†
Hawaii: Filipino	14.3	18.7	5.0	4.7
Hawaii: Hawaiian	10.1	16.0	5.7	3.4
Hawaii: Japanese	6.5	7.8	1.7	3.2
Hawaii: Caucasian	5.4	9.2	4.4	3.1
Connecticut	3.0	3.7	0.8	1.6
California, Alameda: White	7.4	5.5	2.8	2.6
California, Alameda: Black	2.3	1.9	0.6	1.6
Israel				
All Jews	4.2	8.3	1.8	4.2
Jews born in Africa or Asia	4.6	6.7	1.6	2.4
Jews born in Europe or America	4.0	6.4	2.0	4.2
Jews born in Israel	2.0	6.1	0.3	4.8
Non-Jews	2.0	1.8	1.2	1.9
Japan				
Okayama Prefecture	3.3	2.4	1.1	0.4
Miyagi Prefecture	2.0	2.1	0.8	0.6
New Zealand				
Maori	5.5	2.3	0.4	0.9
European	2.5	2.0	0.9	1.0
South Africa				
Natal: African	3.3		0.2	
Natal: Indian	3.0		1.0	
Cape Province: White	3.0		1.2	
Cape Province: Bantu	2.7		0.0	
Cape Province: Non-white	1.1		0.6	
Norway				
All	2.4	3.7	1.1	1.5
Urban	2.5	3.1	1.0	1.7
Rural	2.4	4.3	1.1	1.4
Columbia, Cal	6.5	5.5	3.5	2.7
Canada, Quebec	2.5	2.7	0.9	1.0
Finland	2.4	2.9	1.0	1.1
India, Bombay	1.5	1.8	0.7	0.7
Denmark	1.4	1.8	0.8	0.8
U.K., England and Wales (Liverpool Region)	1.3	1.2	0.6	0.6
Sources: *See reference 13. †See reference 14.				