
Population Based Cancer Registries Consolidated Report – (1990-96)

This section provides a synopsis of the just published consolidated report of the Population Based Cancer Registries (PBCRs) covering the seven-year data of the years 1990-1996.

The registries covered in this data include all the Population Based Cancer Registries under the NCRP. These include the five urban registries at Bangalore, Bhopal, Chennai, Delhi and Mumbai and the rural registry at Barshi.

The main emphasis of this report is on cancer incidence and patterns of cancer. The overall aim and objective is to provide incidence data that are not only comparable among the cancer registries reported, but also with cancer registries in different parts of the world. It attempts to give clues to the burden and patterns of cancer in these areas where the registries are located so as to present a base for studies in cancer aetiology and control. Though the geographic area and the population covered by the registries is small, compared to the vastness of the country and its huge population, the data does give a fair idea of the cancer problem in the country. This study is the culmination of sustained efforts made by cancer registries under the NCRP.

Emphasis of Report:

Cancer Incidence and
Patterns of cancer

Cancer Incidence:

Expressed as Crude or Age
Adjusted Incidence Rate
per 100,000 population.

Incidence Rate

Cancer incidence rate is generally expressed as age adjusted or age standardized (according to world standard population) incidence rate per 100,000 persons. For all anatomical sites the rates vary from 97.8 (in Bangalore) to 121.9 (in Delhi) in urban males. In urban females the rates vary from 92.2 (in Bhopal) to 135.3 in Delhi. Incidence rates in the rural registry of Barshi are lower (46.2 and 57.7 per 100,000 in males and females respectively). The urban incident rates are similar to that seen in Indians in Singapore (105.5 and 122.7 per 100,000 in males and

females respectively), but lower than the rates observed in the registries of the developed countries in the west and Oceania or Japan. Cancer incidence can also be expressed as crude rates. Crude incidence rate is the total number of new cancer cases in a particular year per 100,000 population in the defined geographic area. Crude rates represent the actual burden of illness in the country and changes in it over time. In the urban registries this varies from 56.9 per 100,000 (in Bhopal) to 78.6 (in Chennai) among males, and 55.6 (in Bhopal) to 91.4 (in Chennai) among females.

Figure 1 gives the bar charts comparing the International Age Adjusted Incidence Rates of cancer for all anatomical sites.

Cumulative Rate

The PBCRs have provided age (five year age group) specific cancer incidence rates in the different registry areas. Through these rates it is possible to arrive or estimate the risk of the particular population in developing cancer during their lifetime. This could be estimated by sex and for any specific site of cancer. This is known as the cumulative incidence rate or risk. Based on the cumulative risk the probability of a person developing cancer in the absence of a competing cause of death can be calculated and this is expressed as "one in".

The cumulative rate can be estimated from the age specific rates either for the five-year age groups from 0-64 years or for the age group 0-74 years. Except for Indians in Singapore, the cumulative incidence rates of cancer in cancer registries worldwide, especially in the developed countries are substantially higher than that seen among the registries in India.

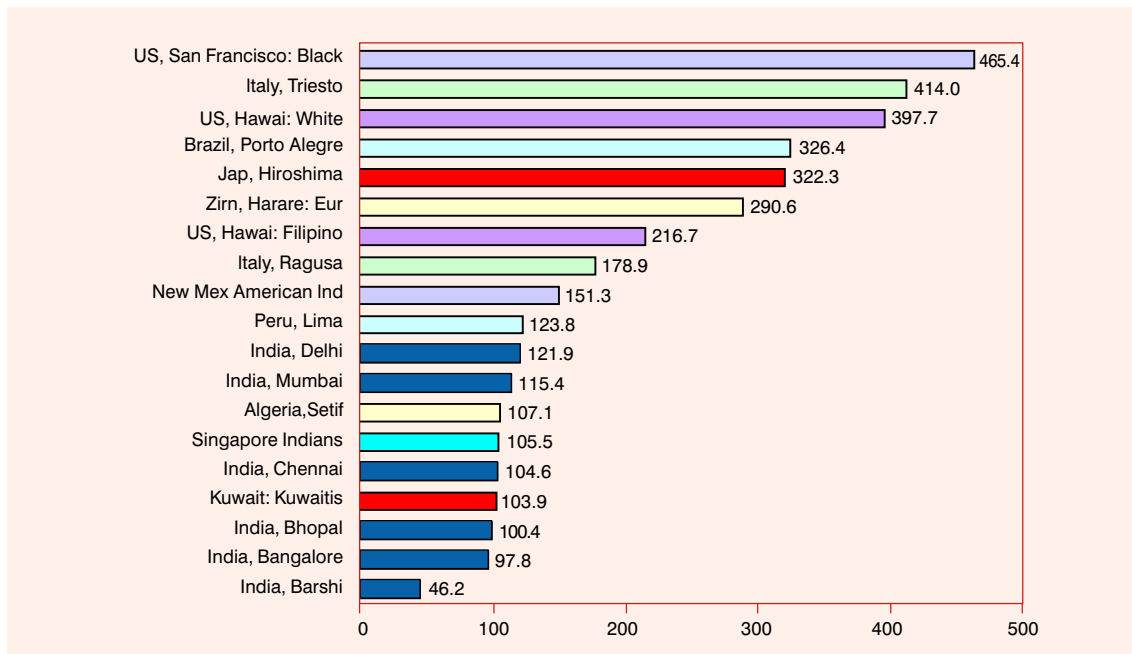
Based on the above, and assuming that the age specific rates (from 0-64 years) of the years 1990 to 1996 are sustained, and there is no other competing cause of death, one could estimate, that, on an average about one in about fifteen men and one in about twelve women in the urban centres could develop cancer in their lifetime. Specifically for Delhi, one in thirteen men and one in ten women, can be expected to develop cancer in their lifetime.

- Coding of Malignant Neoplasms done according to the International Classification of Diseases for Oncology.

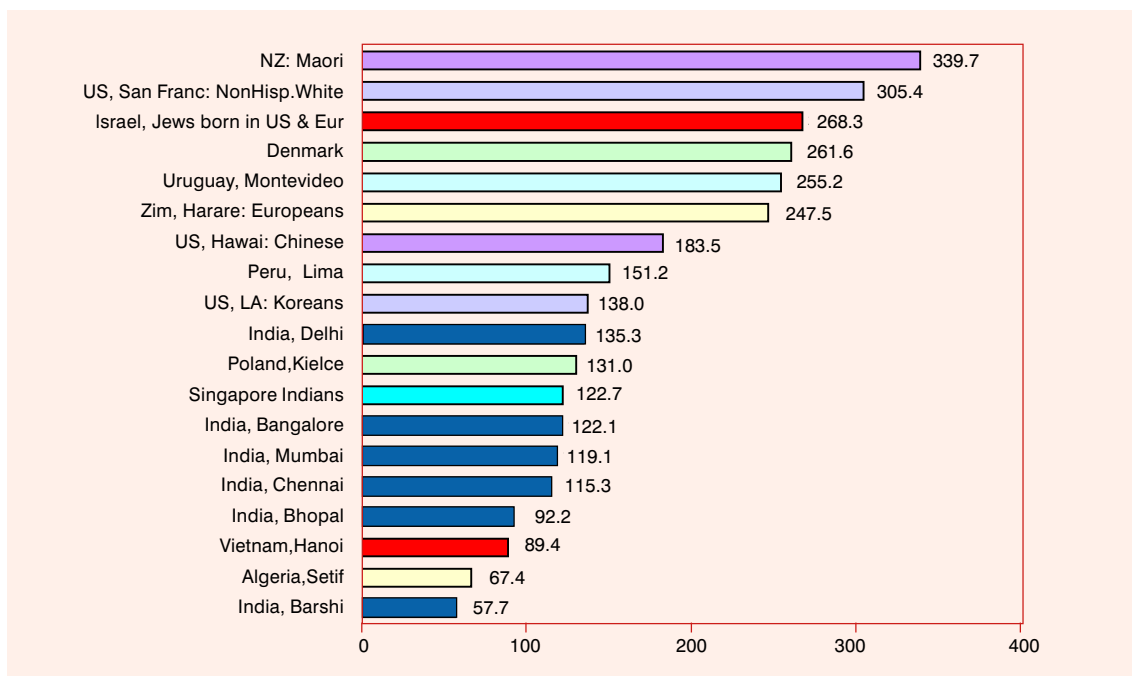
- On an average about **one in about 15 men and one in about 12 women** in the urban centres could develop cancer in their lifetime.

Figure 1: International Comparisons of Age Adjusted Cancer Incidence Rates (ALL-SITES)

MALES



FEMALES



Cancers of Sites associated with use of Tobacco

Sites of cancer that have been associated with use of tobacco (Tobacco Related Cancers - TRCs) include oral cavity, pharynx (including oropharynx & hypopharynx) oesophagus, larynx, lung and urinary bladder.

Overall, among males, cancers of sites associated with use of tobacco are the most frequent. Cancer of the lung is numerically the number one cancer. It is the leading site in Delhi, Mumbai and Bhopal, wherein it constituted around 10% of cancers of all sites. It is the second and third leading site among males in Bangalore and Chennai respectively. In females also, cancer of the lung is one of ten leading sites in four of the six registries at Bhopal, Chennai, Delhi and Mumbai. Another site of cancer associated with the use of tobacco, namely, cancer of the oesophagus is an important leading site in both males and females. The age adjusted incidence rate of oesophageal cancer in women in Bangalore is again one of the highest (8.3 per 100,000) in the world. Cancer of the oesophagus is the second leading site of cancer in Bangalore, Barshi and Mumbai and the third leading site in Chennai and fourth in Bhopal.

Based on currently available data, in registries in all continents, males in Bhopal have the highest age adjusted incidence rate (8.8 per 100,000) of cancer of the tongue. Similarly the rates of cancer of the oral cavity in both males and females in all the urban registries are among the highest in the world.

The total proportion of TRCs relative to all sites in males varies from 35.6% in Bangalore to 50% in Bhopal, whereas in females Bangalore has the highest proportion of TRCs (17.3%). In males, among the TRC sites, pharynx and lung are the common sites and among females oesophagus and oral cavity are the commoner sites. These two sites together account for 80% of all TRCs in females.

The above data underscore the role of tobacco in cancer causation.

Figure 2 illustrates the relative proportion of TRCs, relative to all sites, in each of the six PBCRs.

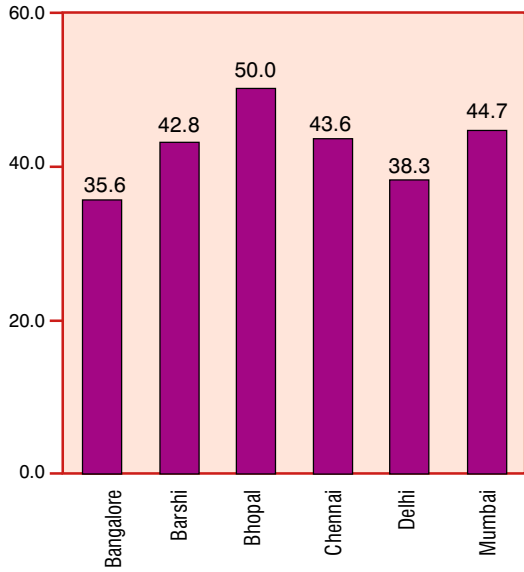
- **Among males**, cancers of sites associated with use of tobacco are the most frequent. **Cancer of the lung** is numerically the **number one cancer**.

- The age adjusted incidence rate of **oesophageal cancer** in women in **Bangalore** is one of the highest (8.3 per 100,000) in the world.

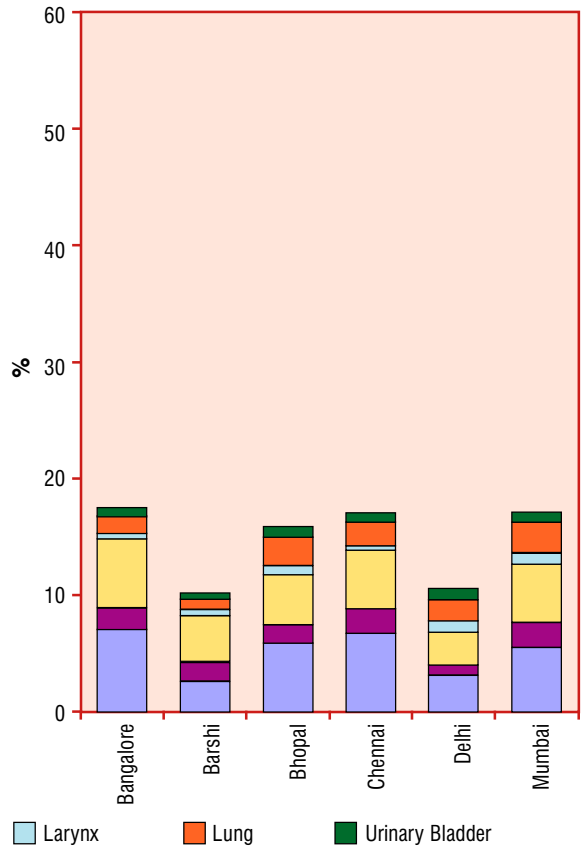
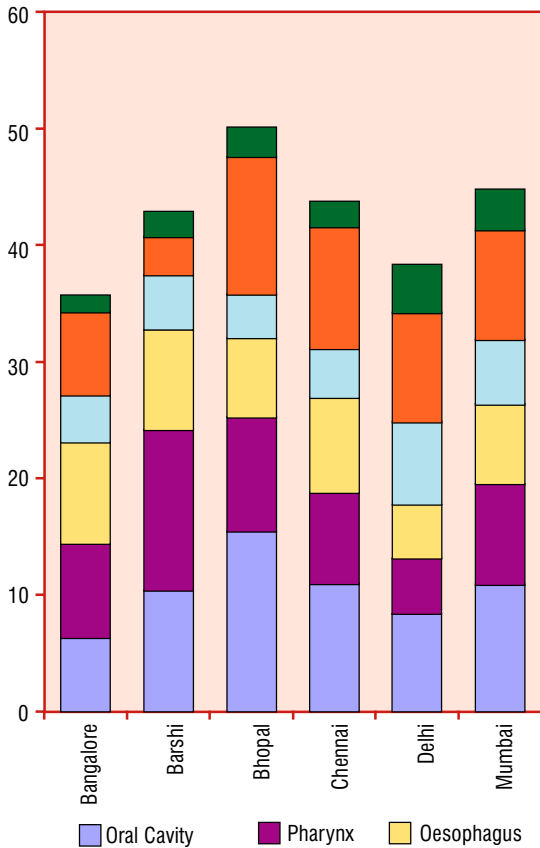
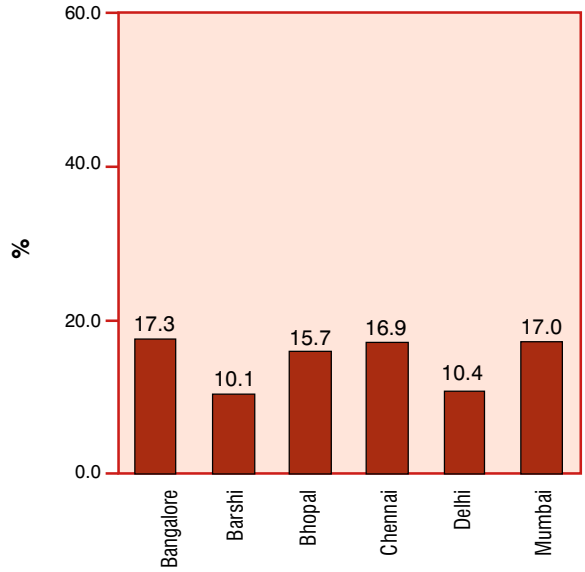
- Based on currently available data, in registries in all continents, males in **Bhopal** have the highest age adjusted incidence rate (8.8 per 100,000) of **cancer of the tongue**.

Figure 2: Proportion (%) of Tobacco Related Cancers relative to all sites

MALES



FEMALES



Other Leading Sites of Cancer and Regional Variations

Cancer patterns vary not only throughout the world but also between different population groups within the same country. The bar charts in Figure 3 give the ten leading sites (according to relative proportion) of cancer in the different PBCRs among males (Fig. 3.1) and females (Fig. 3.2).

The preliminary and subsequent reports of the NCRP have shown, cancer of the stomach as a consistent leading site of cancer among males in Bangalore and Chennai, whereas it is lower down among the leading sites of cancer in Bhopal, Delhi or Mumbai.

In women, cancers of the cervix and breast together account for over 40% of cancers in urban women and over 65% of cancers in the rural registry in Barshi. There is a decline in the rates of cervical cancer especially in Chennai (which has the highest age adjusted incidence rate among the six registries). This trend requires careful evaluation, as cytology screening as such is not widely practiced. One school of thought is that one is perhaps dealing with cohorts of women who have an increasing age at marriage. The same analogy applies to the rather increasing trend in breast cancer rates.

One of the sites of cancer that has been brought to sharp focus is that of cancer of the gall bladder, especially in females in Delhi and Bhopal. This is important because the age adjusted incidence rate (8.9 per 100,000) of cancer of the gall bladder in Delhi women is one of the highest in the world. The NCRP has undertaken a case control investigation on this site of cancer, in Delhi, to determine possible reasons for its high incidence. This study is presently in progress.

Lymphoreticular malignancies as a group are a very important set of neoplasms. They comprise over 10% of malignant neoplasms, have a potential for cure and are of interest in terms of aetiology and epidemiology.

Apart from the above, cancer of the prostate is a leading site in all urban registries, while cancer of the penis that is not seen in the urban registries is the third leading site in Barshi. Similarly cancer of the brain and nervous system is the third and sixth leading site in males and females respectively in the capital and one of ten leading sites in males in all other urban registries.

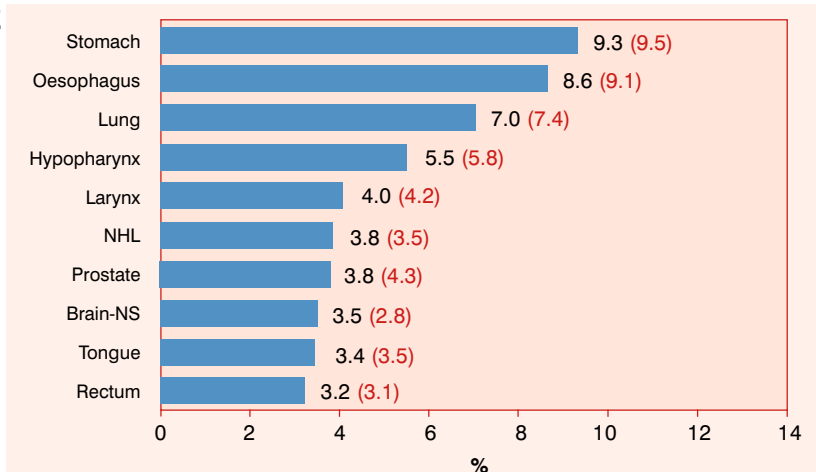
- **Cancer of the Stomach** in **males** continues to be the leading site of cancer in the southern registries of **Chennai and Bangalore**.

- In **women**, cancers of the **cervix and breast**, together account for over **40%** of cancers in **urban women** and over **65%** of cancers in the **rural registry in Barshi**.

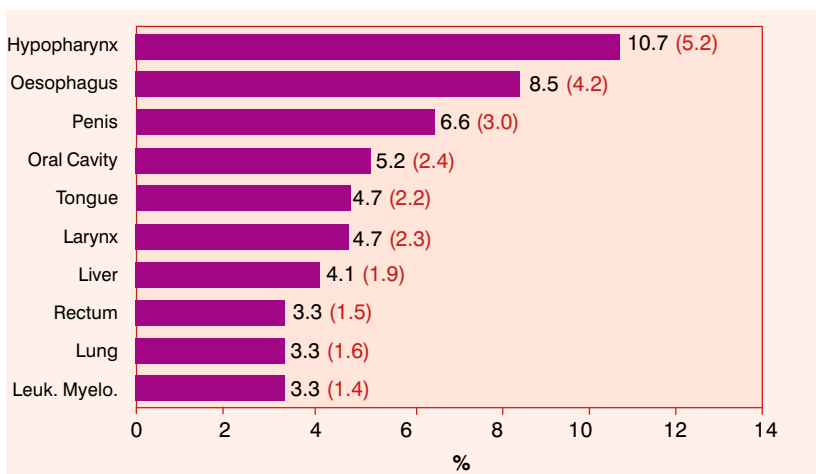
- The age adjusted incidence rate (8.9 per 100,000) of **cancer of the gall bladder in Delhi women** is one of the **highest in the world**.

Figure 3.1: Ten Leading Sites of Cancer - Males
Age Adjusted Rates given in parentheses

BANGALORE



BARSHI



BHOPAL

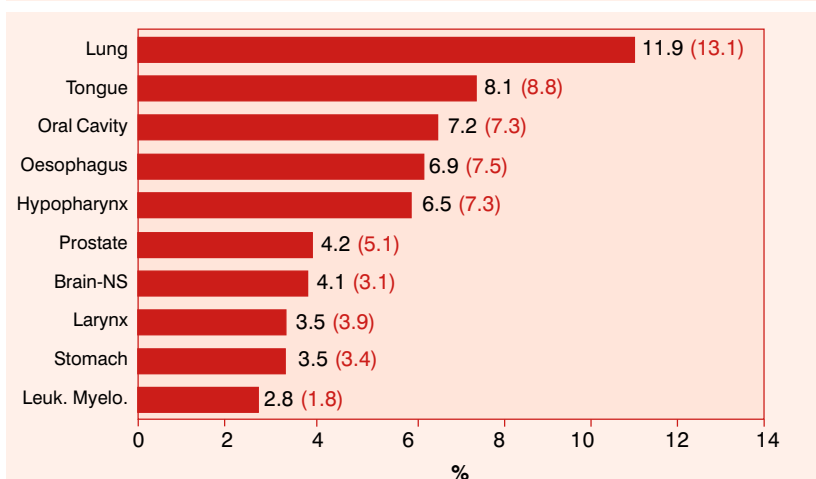
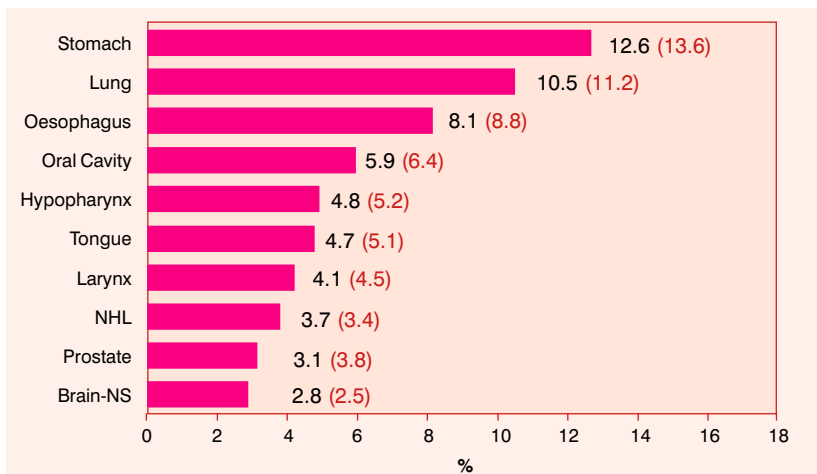


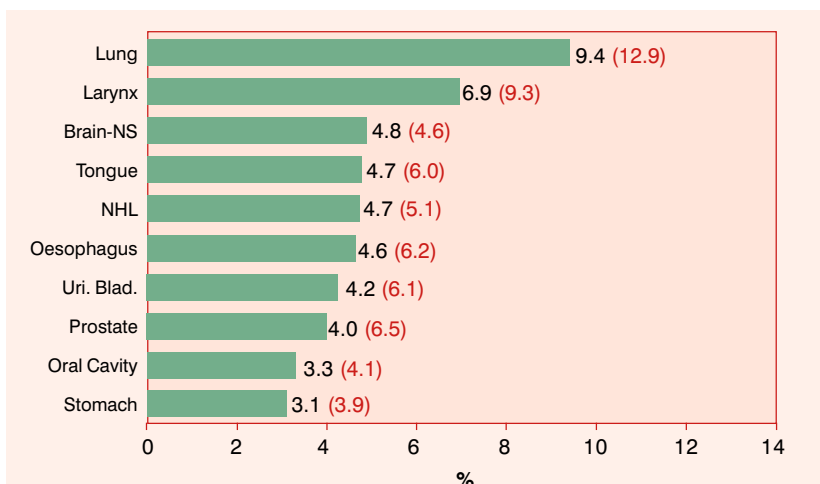
Figure 3.1: Ten Leading Sites of Cancer - Males (Contd...)

Age Adjusted Rates given in parentheses

CHENNAI



DELHI



MUMBAI

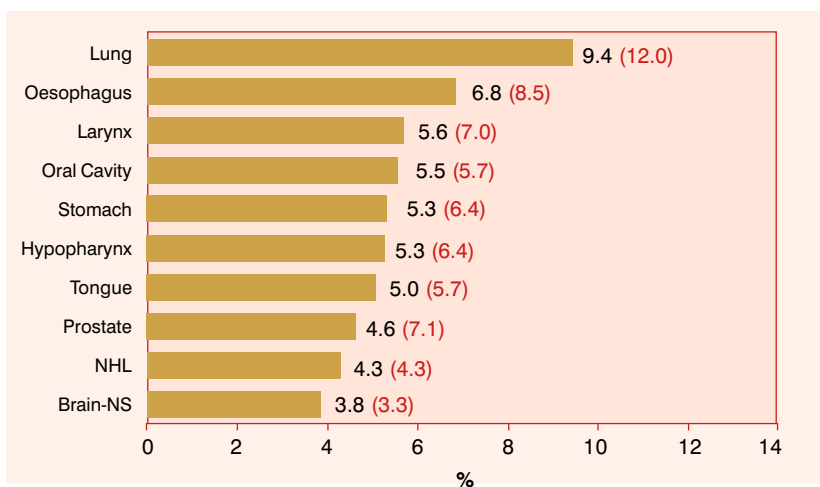
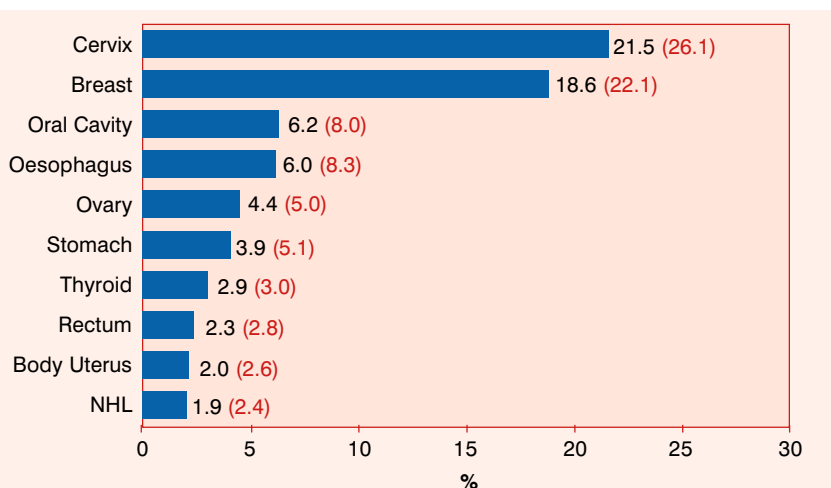


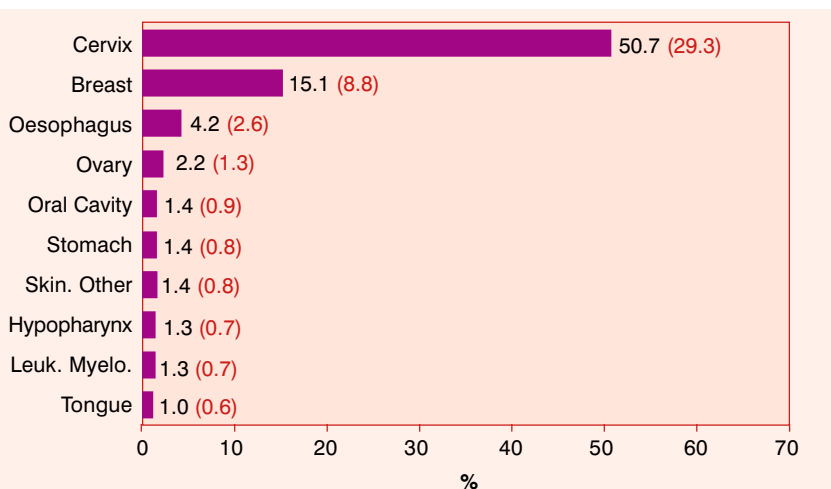
Figure 3.2: Ten Leading Sites of Cancer - Females

Age Adjusted Rates given in parentheses

BANGALORE



BARSHI



BHOPAL

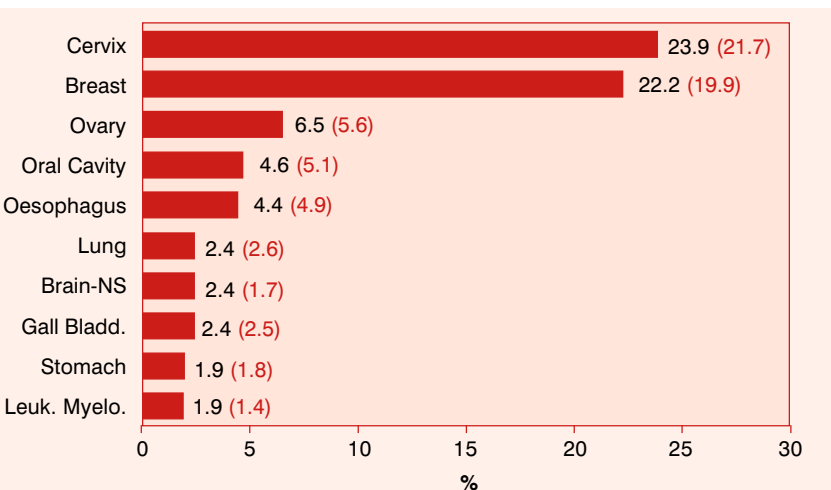
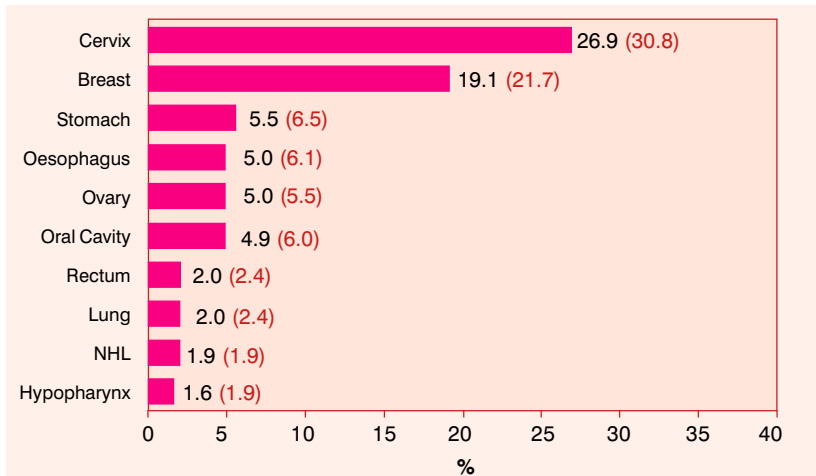


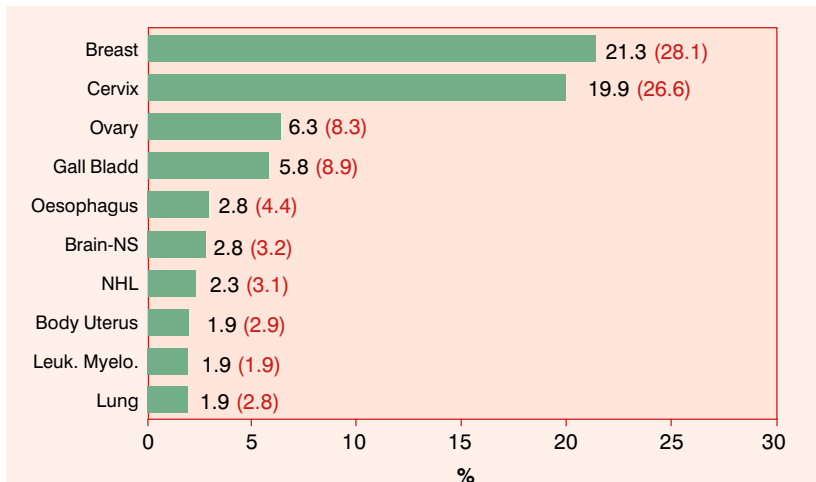
Figure 3.2: Ten Leading Sites of Cancer - Females (Contd...)

Age Adjusted Rates given in parentheses

CHENNAI



DELHI



MUMBAI

