

CANCER SKIN, CANCER BLADDER AND CANCER LUNG
AMONG INDUSTRIAL WORKERS IN U.A.R.
AN EPIDEMIOLOGICAL STUDY

By

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Thesis

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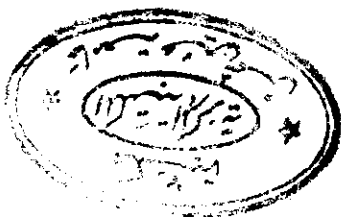
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INTRODUCTION

Cancer is an old disease. Raven (1958)⁽⁹⁷⁾, said "Its evil signature has been found on the palaeopathological remains in distant parts of the globe". He doubts whether ancient Egyptians recognised cancer, though he believes that Celsus (53 B.C.-7 A.D.) was able to differentiate malignant tumours from benign neoplasms and inflammatory swellings.

It seems however, that cancer had not constituted a major problem up to recent days. People in the past times used to die at an early age through wars, accidents and infections. Advances in science and the discovery of the causes of infectious diseases, together with the application of preventive and public health measures on a large scale, had led to control of formerly fatal diseases. Therefore, infections became no more important public health problems, and other diseases came to the front as causes of morbidity and mortality, namely malignant disease, occlusive arterial disease, diabetic disorders ...etc.

Cancer therefore, has come to be one of the major public health problems of our days. This fact is specially manifested in those developed countries that

have reached a high standard of civilisation and in which good health standards have been attained. These facts can be demonstrated by studying vital statistics in various countries and studying the changes in the trends of mortality over the years. Table I shows the death rates from malignant neoplasms in different countries in 1950 and 1963.

Table I

Mortality Rates Per 100000 from Malignant Neoplasms in
Different Countries in 1950 and 1963

Country	Mortality Rate Per 100000	
	1950	1963
England and Wales	193.7	220.9
France	172.6	203.7
U.S.A.	139.3	151.4
Colombia	32.1	53.4
U.A.R.	19.9	25.2

It is evident from table I that the mortality rates show a rise in the period between 1950 and 1963. At the same time, it is evident that the mortality caused by malignant disease in developed countries like England

and Wales, France and U.S.A. is much higher than in developing countries like Colombia and U.A.R.

Several factors interplay in the production of this picture. First of all the demographic structure of the community may play a role. Developing countries, as a result of low death rates and low birth rates, have come to contain a high percentage of old persons i.e. persons in the "Cancer age". This is clearly shown in Table II.

Table II

Percentage of Persons over the Age of Forty in Different Countries in 1950 and 1965

Country	Percentage of Persons over 40 Years	
	1950	1965
United Kingdom	22.2%	42.7%
U.S.A.	32.4%	35.7%
U.A.R.	16.8%	21.7%
India	---	18.8%

It is clear from table II that the percentage of persons over forty years of age had increased in the

period from 1950 to 1965. Again, in developed countries this percentage is higher than in developing ones. As malignant disease tends to occur in the older age groups, it is expected that there will be an apparent increase in the death rates from malignant disease in countries with older populations. To be able to explain this apparent rise in mortality rates we should not rely on crude death rates but we have to resort to standardised mortality rates (Shawky, 1965)⁽¹¹²⁾. When the mortality rate from malignant disease per 100000 in U.A.R. was calculated as standardised to U.S. population it was found to be 41.2, whereas the crude rate was only 25.2 in 1963. Therefore, one may conclude that the age composition of a society is a factor in determining the occurrence of malignant disease.

Another factor is the standard of medical care. In developed countries with better medical services the efficiency of cancer detection is higher than it is in developing countries and this is reflected on vital statistics. This is clearly shown in Table III.

Table III

Death rates per 100000 from malignant neoplasms compared with the number of inhabitants per physician and the percentage of deaths attributed to senility and unknown cause in different countries in 1963

Country	Mortality rate per 100000	No. of inhabitants per physician	% of deaths due to senility
U.S.A.	151.4	690	1.7%
• Sweeden	191.0	950	1.2%
U.A.R.	25.2	2450	14.8%

It is clear from table III that in U.S.A. where every 690 inhabitants are cared of by one physician, the mortality from malignant disease is much higher than in U.A.R. where every 2450 inhabitants are cared of by one physician. Of course physicians in U.A.R. are overburdened and many cases of malignant disease may escape diagnosis, particularly when we remember that most types of malignant disease require multiple elaborate techniques for their diagnosis. This fact becomes more clear when we notice that in U.A.R. 14.8% of the deaths are attributed to "senelity and unknown causes". In U.S.A. and in Sweeden this percentage is markedly lower. Of course there is a possibility that a percentage of the deaths

attributed to senility were caused by malignant disease. Therefore, one may conclude that in developing countries under-registration of malignant disease may play a role in inducing an apparent drop in the mortality from malignant neoplasms.

A third factor is the occurrence of occupational tumours. It is now well known that certain tumours may result from exposure to industrial carcinogens. This may be a factor in raising the incidence of cancer in developed countries.

Hueper (1954)⁽⁵⁵⁾, compared the cancer death rates in various states in U.S.A. He noticed that the majority of states with high cancer death rates are located in the north eastern part where they form "a belt of highly industrialised regions".

To sum up, one may say that cancer is becoming a public health problem particularly in developed countries. Developing countries are likely to meet this problem as development proceeds.

Cancer is almost an incurable disease. Once cancer causes symptoms the condition is, in most types, considered too advanced and the prognosis becomes

unfavourable. Therefore, it is important to detect cancer before it gives rise to symptoms i.e. in the asymptomatic stage. In this respect precancerous lesions are of great importance, since they offer an opportunity to detect malignant disease in the earliest possible stage, and they offer a chance of actual prevention of the disease. Therefore, from the public health point of view, **precancerous** lesions are of much interest than cancer. Screening tests to detect precancerous and cancerous lesions in asymptomatic individuals are of great importance.

The aetiology of most types of malignant tumours is unknown. Occupational tumours, however, are the only tumours whose approximate cause is known. That is why study of occupational tumours is of great help in following the natural history of malignant disease and in observing premalignant lesions and their gradual transformation into carcinomata.

With these facts in mind, it was decided to carry out the present study, the central aim of which is to detect cancer and precancerous lesions among industrial workers in the earliest possible stage, and to study the various factors that determine the occurrence of

that disease, in a trial to institute methods of prevention. Furthermore, this study offers an opportunity to study the incidence of occupational tumours in our country and to compare it with that of other countries.

To study various types of occupational tumours in different industries would be far too extensive and far beyond the capacity of this work. It was decided therefore, to limit this study to the commonest occupational tumours that are likely to be met with in U.A.R., namely occupational carcinoma of the skin among tar workers, occupational carcinoma of the bladder among synthetic dye workers, and occupational carcinoma of the lung among asbestos workers.

PART I

OCCUPATIONAL CARCINOMA OF THE SKIN
ATTRIBUTED TO THE EFFECT OF TAR

HISTORICAL REVIEW

Percival Pott (1775)⁽⁹⁶⁾, was the first to report the possible relation between cancer and occupation. He made an accurate and detailed study of scrotal cancer among chimney sweepers. In fact it is believed that this study was the starting point of scientific cancer research. He realised the importance of an extrinsic specific carcinogen "soot" and the existence of local factors including dirt and retained secretions in determining the susceptible site. It is now known that soot owes its carcinogenic action to its content of tar.

One hundred years later Volkman (1876)⁽¹²²⁾, described the first occupational tar carcinoma of the skin in a worker in a tar distillery in Saxony. Similar reports gradually followed, so that in a matter of few years several authors from nearly every part of the globe reported tar and pitch carcinomas of the skin. In continental Europe these tumours were reported from Germany, Austria, France, Switzerland, Holland, Germany, Belgium, Hungary, Spain, Russia and Italy. Hueper (1942)⁽⁵³⁾, estimated that about 130 cases were recorded from these countries in the period from 1876 to 1940.