

An epidemiologic approach to occupational health problems in Egypt

by Aly Massoud, MD, PhD,¹ Rifky Faris, MD,¹ Mohammed Hussein, PhD,¹
Abdel Moniem Abdel Kawy, DIH²

MASSOUD A, FARIS R, HUSSEIN M, ABDEL KAWY AM. An epidemiologic approach to occupational health problems in Egypt. *Scand j work environ health* 8 (1982): suppl 1, 40-43. Industrialization started in Egypt on a large scale only 20 a ago. This process resulted in a shift of a large proportion of the agricultural workers to industrial work. The health insurance for industrial workers is enforced by law for certain industrial groups. Although preplacement and periodic medical examinations should be provided for the insured groups, they are not yet properly carried out and are deficient both qualitatively and quantitatively. For a reliable view of the occupational health situation an epidemiologic approach is a must. As a start, a computer-assisted pilot plan has been developed using data of one of the periodic medical examinations for a group of miners in Egypt.

Key terms: epidemiology, occupational diseases, computer in occupational health, data handling and processing.

Egypt is situated in the northeast of Africa, to the north is the Mediterranean Sea, and the Red Sea lies to the east. The country shares its borders with Libya and Sudan, which lie to the west and south, respectively. It is almost rectangular in shape, and its area is nearly one million square kilometers. The river Nile runs across the country from south to north, and its cultivated valley is a narrow strip of land as far as Cairo. North of Cairo the cultivated land widens in the Nile delta region. This cultivated Nile valley forms only 5 % of the area of Egypt, and in this area lives about 95 % of the Egyptian population.

¹ The Department of Community, Environmental and Occupational Medicine, Faculty of Medicine, Ain Shams University, Cairo, Egypt.

² The Health Insurance Organization, Cairo, Egypt.

Reprint requests to: Prof A Massoud, Faculty of Medicine, Ain Shams University, PO Box 38 Abbassia, Cairo, Egypt.

Population

The population of Egypt is young, as 42.2 % are below 15 a of age and life expectancy at birth is 52.3 a for males and 55.2 a for females (1). It is also a fast growing population with an annual rate of increase of 2.5 %. Before 1952 the society was an agricultural one, but industrialization started on a large scale 20 a ago. The industrialization resulted in an increase in

Table 1. Distribution of Egyptians according to age and residence in the 1976 census.

Age group (a)	Number in millions	%
0-14	16.1	42.4
15-44	16.3	42.8
≥45	5.6	14.8
Total	38.0	100.0
Urban (138 cities)	16.9	44.5
Rural (4,100 villages)	21.1	55.5

Table 2. Medical examination schedule of workers exposed to occupational hazards.

Examination interval	Exposure
Six months	Lead (fumes); carbon disulfide; radium; X rays and ionizing radiation; chromium in the tanning of leather; benzol and derivatives
One year	Lead (other than fumes); chromium (other than tanning); mercury; antimony; phosphorus; manganese; sulfur; arsenic; skin carcinogens such as tar, pitch, bitumin and mineral oil; exposure of the eyes to excessive heat and light; nickel; petroleum and its derivatives or gases; chloroform and carbon tetrachloride; tetrachloroethylene and trichloroethylene
Two years	Carbon monoxide; hydrocyanic acid and its derivatives; chlorine, fluorine, bromine and their derivatives; silica dust, asbestos dust and cotton dust; beryllium and selenium; abnormalities of atmospheric pressure; hormones; noise; anthrax and glanders; tuberculosis (hospital personnel); infectious fevers (hospital personnel)

Table 3. Summary of the General Health Insurance Organization's activities in 1980.

	Number	Percentage insured	Percentage exposed
Insured workers	816,686	100.0	—
Exposed workers	233,950	28.6	100.0
Workers clinically examined	201,554	24.7	86.2
Workers given special tests	58,096	7.1	24.8

the number of urban inhabitants. For example, in 1950, 34 % of the population lived in urban areas, while in 1976 the corresponding percentage was 44.5 % (table 1).

Industry and health

As the industrial workers are exposed to many forms of health hazards, health insurance for some of these workers was introduced in Egypt. The body responsible for the delivery of health care to workers is the General Organization of Health Insurance. This organization is responsible for many duties, eg, preplacement examinations and periodic medical examinations of exposed workers. Rehabilitation, treatment, and disability evaluation of occupationally handicapped workers are also the responsibilities of this organization. Periodic medical examinations are performed either semiannually, annually, or biennially, depending on the type of exposure as defined by law under 29 main statutes (2) (table 2).

Table 3 illustrates the coverage and activity of the organization in 1980. The

Table 4. Distribution of positive cases diagnosed in periodic medical examinations in 1980.

	Number	Percent
Silicosis	756	46.5
Phosphorus	279	17.2
Contact dermatitis	168	10.3
Noise-induced hearing loss	148	9.1
Lead poisoning	103	6.3
Cataract	51	3.1
Petrochemicals	50	3.1
Dichlorofluoromethane	34	2.1
Asbestosis	13	0.8
Byssinosis	11	0.7
Mercury	9	0.6
Chrome	2	0.1
Radiation	1	0.1
Trichlorofluoromethane	1	0.1
Total	1,626	100.0

number of examined insured workers is expected to increase since not all existing industries have been recorded for periodic medical examinations to date. Industry is also expanding in Egypt at a great pace. Table 4 presents the distribution of the cases of occupational diseases diagnosed in 1980. The distribution of these cases may

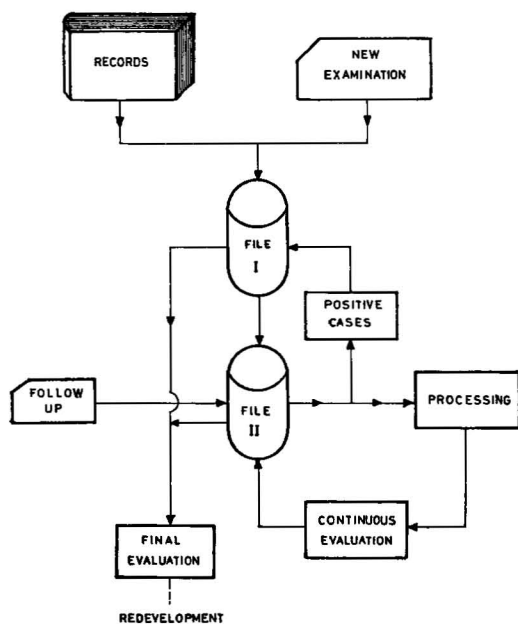


Fig 1. Flow chart of the proposed computer system.

stay the same, or the whole pattern may change in the coming years.

In our opinion the industrial population of Egypt is a unique group of people from whom sound clinical and other health information could be collected for epidemiologic studies. To obtain an epidemiologic view of occupational health in Egypt, we need to study both the diseased and healthy workers. With the right statistical procedures we should be able to determine the epidemiology of occupational diseases, as well as the effect of rapid industrialization on the health of Egyptian workers. The vast amount of information, with the elaborate statistical analysis required, must be handled accurately, rapidly, continuously, and cautiously. The use of the computer in record keeping and data processing is indispensable.

The proposed computer system

In a pilot study to test our proposal, our department, in collaboration with the Insurance Organization, carried out a medical survey of 6,701 phosphate miners in the Red Sea area in 1977. The results obtained were used as a model to develop and test the following computer system.

Generally, the activity of the Insurance Organization is divided into six main geographic zones. A file is being developed that will contain basic information for all exposed workers. The main items to be included are (i) personal data and identification; (ii) history, extent, type, and duration of exposure, including possible exposures; (iii) basic or preplacement examinations and investigations. This is going to be the *basic file*. Another file will be developed to include follow-up information. This second or *follow-up file* will contain current and concise information for ten equal time periods, one for the results of each consecutive periodic medical examination. The section of each time period will include only the data and the most important items of relative examination results. These ten follow-up sections allow for a minimum of 5 a of follow-up, for those who are to be examined semiannually, and a maximum of 20 a for those who are examined every 2 a. This procedure minimizes the files of follow-up, and it is thought that the allotted time periods are suitable for the start of evaluation, and the system can then be developed accordingly. Fig 1 is a diagram to show the flow of information within the system.

References

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