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Problems of Occupational Health in the Americas

In the Region of the Americas knowledge of the problems of occupational health is limited by significant restrictions in available information. There is no ordered or complete information system on occupational morbidity¹ and mortality. Few countries have up-to-date information on occupational accidents and diseases, and in most the data refer to events that are no longer current. This situation is partly due to the fact that most of the working population is not protected by social security systems; broad labor sectors resort to other health services (official services of the ministries of health, private offices, healers, and others) where work-related diseases and accidents are not recorded. When information is available, accidents constitute most of the health problems recorded by workers and this seriously hinders the diagnosis of other work-related diseases.

The lack of information on occupational diseases can be explained in terms of the following factors:

- Many physicians who work in the health services

¹For the purposes of this article, occupational morbidity is understood to mean the range of acute and chronic illnesses that take place in the worker population during work performance, deriving from work, or owing to factors present in the workplace. This concept includes accidents at work, chronic diseases that occur in workers exposed to harmful factors, and accidents while commuting.

of specialized labor centers and as general practitioners are not acquainted with specific work pathology and interpret it as common pathology. Consequently, occupational diseases may not be diagnosed as such. This fact is related to a deficiency in occupational health teaching in medical schools.

- For the same reasons indicated, broad sectors of the worker population do not have access to occupational health services, and when they are served by general services, labor pathology is registered as common disease.

- Occupational diseases, unlike accidents, do not always violently interrupt the labor process; the worker who suffers from a morbid process caused by work usually continues his functions, although his capabilities are diminished. The onset of occupational diseases is usually slow and progressive and, since functional reserves are potentially high, manifestations likely to be detected by the worker or health personnel appear only in the later stages, sometimes even after the worker has retired from his work place.

The situation described is aggravated because most countries do not have classification lists for occupational diseases or, if they have them, they are very heterogeneous; moreover, compulsory mechanisms for

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reporting of occupational diseases generally do not exist, and the information collected is rarely analyzed.

Another element that restricts knowledge of the problem is the limited amount of research carried out in this field. There is a notable contrast between research on occupational health and that developed in other health fields. In general, research in the clinical area predominates to the detriment of epidemiological and social studies. Execution of this type of research, framed in the general and specific conditions of each country, should be the basic principle supporting occupational health actions.

In spite of the above, there are some demographic data that make it possible to examine the relative magnitude of the labor population in recent years, and its variations in accordance with the level of development of the countries of the Region. In the period between 1960 and 1981 the countries with high industrial and agricultural development showed the highest percentages of economically active population, as was the case of Argentina, Canada, the United States, Trinidad and Tobago, and Uruguay. On the other hand, in 1981 coun-

tries with single-crop agricultural export economies, such as Haiti, Honduras, and Nicaragua, showed the lowest percentages of active population: 53% for the first and 50% for the last two. It is interesting to note the changes in the trends of these percentages between the years 1960 and 1981 (Table 1). While there were countries such as Colombia, Costa Rica, and Trinidad and Tobago where the working population increased by 10%, there were others, such as Cuba, Ecuador, El Salvador, and Nicaragua where it remained stable, and still others, such as Argentina and Haiti, where the work force suffered a significant relative reduction.

The population occupied in agricultural activities in 1980 ranged between 2 and 5% in the United States and Canada, respectively, and 74, 63, and 55% in Haiti, Honduras, and Guatemala, although all countries with high percentages of agricultural work force in 1960 showed an appreciable decline in 1980. This situation appears to be related to the mechanization of agriculture and the trend of rural population migration to the cities. Technological changes in agriculture, such as the use of agricultural machinery and pesticides, have

Table 1. Percentage of the work force by economic activity in 24 countries of Latin America and the Caribbean.

Country	Population (in thousands)	Economically active population (%) (15-64 years old)		Work force (%)					
		1960	1981	Agriculture		Industry		Trade	
				1960	1980	1960	1980	1960	1980
Argentina	27,064	64	63	20	13	36	28	44	59
Bolivia	5,600	55	53	61	50	18	24	21	26
Brazil	123,032	54	55	52	30	15	24	33	46
Canada	23,940	59	67	13	5	34	29	52	66
Chile	11,104	57	62	31	19	20	19	50	61
Colombia	27,090	50	60	51	26	19	21	29	53
Costa Rica	2,245	50	59	51	29	19	23	30	48
Cuba	9,833	61	61	39	23	22	31	39	46
Dominican Republic	5,431	49	53	67	49	12	18	21	33
Ecuador	8,354	52	52	57	52	19	17	23	31
El Salvador	4,813	52	52	62	50	17	22	21	27
Guatemala	7,260	51	54	67	55	14	21	19	25
Haiti	5,010	55	53	80	74	6	7	14	19
Honduras	3,691	52	50	70	63	11	15	19	23
Jamaica	2,192	54	54	39	21	25	25	36	53
Mexico	71,910	51	52	55	36	20	26	25	39
Nicaragua	2,703	50	50	62	43	16	20	22	37
Panama	1,840	52	56	51	27	14	18	35	55
Paraguay	3,070	51	53	56	44	19	20	25	36
Peru	17,780	52	54	52	39	20	18	28	43
Trinidad and Tobago	1,140	53	63	22	10	34	39	44	51
United States of America	227,158	60	66	7	2	36	32	57	66
Uruguay	2,899	64	63	21	11	30	32	50	57
Venezuela	13,913	51	55	35	18	22	27	43	55

Sources: Pan American Health Organization. *Health Conditions in the Americas 1977-1980*. Scientific Publication 427. Washington, D.C., 1982, Annex I-2, p. 169; World Bank. *World Development Report 1983*. Washington, D.C., 1983, Table 21, p. 188.

had a significant impact on workers' health. Several studies carried out in Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua recorded 19,330 cases of intoxication related to agricultural use of insecticides between 1971 and 1976. Considering that these results represent only the most seriously ill patients who sought hospital care, it can be assumed that the total figures are considerably greater (1).

The steady increase of the population occupied in trade is significantly related to the increase in unemployment and underemployment, which are the results of the current economic crisis and of the search for informal work opportunities in this area of activity. A large portion of the latter population lacks medical services and any type of occupational health protection.

In recent decades, a considerable number of agricultural workers has been migrating from the countryside to the city where it constitutes a poorly skilled work force exposed to new and adverse labor conditions. This marginal population of urban areas is also subjected to other consequences, such as the deterioration of food intake, environmental pollution, inadequate housing, precarious health conditions, and unemployment. The latter currently constitutes one of the most important problems in the countries of the Region. Around 20% of the economically active population is unemployed and, if underemployment is added to this, the total would reach 40% of the work force in some countries. Occupational health actions have made few inroads in this field and it will be necessary to consider the different activities performed by this commonly named "informal sector," to determine its morbidity and mortality profiles and the role that occupational health should play in their control.

One problem that stands out in many countries of Latin America and the Caribbean is that of the participation of minors in the work force. It is known that minors between the ages of 5 and 14 make up 13% of the working population (2). Information on this subject is limited and the little data available do not reflect the magnitude of the child labor problem. Theoretically, labor laws in most countries prohibit the employment of minors, which means that in certain production centers child labor does not appear on official records. On the basis of studies carried out in some countries, it is estimated that in 1984 there were approximately 15 million children under 15 years of age working in Latin America (1). Official documents showed that in that same year, in 13 countries of Latin America and the Caribbean, the number of child workers between 10 and 14 years of age came close to four million

(Table 2). This critical situation is all the more complicated since these children are usually not protected by any occupational health program or, worse still, by any type of health service.

Table 2. Child workers: economically active population between 10 and 14 years of age^a in some countries of the Region of the Americas.

Country (Year)	Total	Child workers (%)
Argentina (1983)	198,034	8.1
Bolivia (1976)	71,636	31.1
Brazil (1980)	1,922,218	14.2
Costa Rica (1983)	19,859	13.7
Ecuador (1982)	64,957	6.3
El Salvador (1980)	85,727	13.6
Guatemala (1981)	78,878	10.4
Haiti (1982)	138,823	24.0
Honduras (1983)	78,755	14.8
Mexico (1980)	1,121,816	12.1
Panama (1980)	9,572	4.2
Paraguay (1982)	45,140	11.8
Peru (1981)	124,231	5.7
Subtotal, 13 countries	3,959,646	
Colombia ^b	3,000,000	11.4
Total	6,959,646	

^aAdapted from *Yearbook of Labor Statistics*, International Labor Organization, 1984.

^bData on Colombia estimated by the Ministry of Labor and Social Security (information for 1979).

Another element to be considered is the quantity and quality of occupational health services. In the Region there are various academic and operational organizations engaged in services research and training of human resources in occupational health; among them, the institutes of social security, secretariats or ministries of health and labor, universities and institutes, and also the occupational health services of corporations. In most cases, social security, as the institution responsible for protecting the worker population, has attained the greatest degree of development in occupational health programs. Unfortunately, social security coverage in some countries does not even amount to 10% of the total labor population, and the great majority remains completely unprotected.

Although labor legislation in most countries envisages requiring companies to provide health services, only a few fulfill this requirement. Those that do so, mainly set up centralized curative medicine services, where the component for industrial hygiene and safety, toxicology, or ergonomics is either very limited or nonexistent.

Universities have an important role to play in the training of professionals through education and research activities on occupational health. However, there is such a broad range of educational systems in the different countries, that some have programs at the undergraduate, graduate, and continuing education levels, while others do not include occupational health contents even in the undergraduate curriculum of the medical schools.

Fundamental changes in morbidity and mortality profiles have emerged in most countries. While infectious diseases have shown a declining trend, accidents and work-related diseases have been increasing. This is reflected in the death rate due to traffic accidents, inasmuch as many of them are work-related. Venezuela, Mexico and Panama had the highest rates in 1980 with 37.4, 26.8 and 20.0 deaths per 100,000 population, respectively (3).

A significant number of traffic accidents occur during travel to and from work centers, adding further complications for the worker population that is suffering from the impact of new living conditions in large cities. In Colombia, for example, morbidity rates due to accidents for the period between 1977 and 1980 were higher in men than in women, this difference being more pronounced in the group between the ages of 15 and 44 years, which "could be attributed to the greater risk deriving from work, since 40.0% of the accidents are related to labor activity" (4).

A study carried out in Mexico analyzed the heterogeneity of industrial labor processes as reflected in the various patterns of physical deterioration among workers. The authors identified three groups: the first, representing 12% of the workers, engages in simple manufacturing processes characterized by rudimentary technology, considerable physical effort performed during a long workday, and wages that are below the average industrial wage. The typical pattern of deterioration in this group is expressed in infectious-nutritional and musculoskeletal pathology. The second group includes 30% of the workers and it labors in machine processes characterized by a growing fragmentation of tasks which can reach the extreme of comprising only a few movements performed in less than 15 seconds. These workers' deterioration pattern is expressed in a growing number of accidents, together with psychic, psychosomatic, and osteoneuromuscular pathology. The last group, which represents 55% of industrial workers, performs its functions in discrete automatic processes or continuous flow processes, which for the most part are not very complex in technol-

ogy or in the number of phases involved. In this group deterioration is manifested by diseases derived from prolonged psychic tension, serious accidents, and malignant tumors (5).

Another study, also carried out in Mexico, was centered on electricians who work with high-voltage current. It showed that this group of workers not only suffers a higher frequency of accidents but also a number of diseases that according to common medical interpretation do not appear to be work-related. Thus, hypertension and diabetes rates were four times greater than those of the control group; those for ischaemic heart diseases, six times greater; and those for peptic ulcer, eleven times greater. Morbidity excess was also expressed in a reduced survival rate, since after 10 years of retirement only 61.6% of those exposed to high-voltage electricity were still alive as opposed to 93.4% of the control group (5).

The International Labor Organization points out that in 1984, 6,843 fatal cases of work-related accidents were recorded in the Region. This figure seems unrealistic when compared to the figures provided by the countries. Brazil alone, with a worker population of 25 million, notified 1,117,832 work-related accidents in 1982 with death rates reaching 18 per 100,000 population. In regard to morbidity, WHO studies that include other countries such as Bolivia, Chile, Colombia, Ecuador, and Peru point out that the annual incidence of work-related accidents affects between 21 and 34% of the active population.

With work diseases the situation is more critical, since existing information is very limited. While accidents account for more than 90% of the total morbid processes officially recorded as work-related, work diseases recorded in some countries do not reach 1%.

In a survey carried out in 1984 by the Pan American Health Organization on occupational diseases in 12 countries of Latin America and the Caribbean, it was found that 25% of work pathology is due to lead poisoning, pesticides, and alcohol; 24% to respiratory diseases, which include silicosis, byssinosis, and asthma; 20% to occupational dermatopathies; 14% to hypoacusis and deafness, and 17% to diseases of the musculoskeletal system, and infectious and mental diseases. Most of this pathology was produced in the mining industry. The foregoing illustrates the need for occupational pathology, and especially toxicology, to be given special attention within the epidemiological surveillance of worker's health.

From what has been stated it may be derived that knowledge of the type and magnitude of health prob-

blems related to work is incomplete and that there is an urgent need to develop and expand occupational health programs. However, this will only be feasible after adequate knowledge of the problems involved and of their determining factors is obtained. For this reason it is essential to organize information and epidemiological surveillance systems, preferably under common guidelines, in order to determine with firmer technical bases the true extent of biological and social damages, and the current effectiveness and efficiency of existing programs.

(Source: Workers' Health Program and Health Situation and Trend Assessment Program, PAHO.)

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Acute Respiratory Infections in a Cohort of Malnourished Children in Mexico City

Introduction

Acute respiratory infections (ARI), along with diarrheal diseases, are the most common causes of morbidity and mortality among children in developing countries. It is estimated that each year there are 2.2 million ARI-associated children deaths (1). The burden imposed by these infections on health services is considerable; in many clinics, they account for about one quarter of all consultations. Besides, they have other important consequences; one to two weeks of school per child per year may be lost because of ARI (2).

In spite of the excessive mortality and morbidity rates due to ARI, little is known about associated risk factors. Malnutrition is said to increase children's risk of contracting ARI (3) but this claim has not been clearly substantiated. It is, however, associated with increased mortality by that cause (1). In Mexico, for instance, childhood mortality due to ARI is about 30 times higher than in the United States and Canada (2), and malnutrition is often given as the underlying cause (4). Complications of ARI have been found significantly more frequently in malnourished children (5).

Two studies provide information about the occurrence of ARI in malnourished children. A longitudinal study by James (5) concluded that the attack rate was the

same for malnourished and normal-weight children, but that the average duration was significantly longer for the former. This study evaluated nutritional status several times during the follow-up period but it was assumed to remain constant at the level assessed at entry. In addition, duration was defined as the sum of all days ill during the year, without controlling for number of episodes. A cross-sectional study by Wray (6) found the prevalence of ARI to be similar in normal and malnourished children. However, as in most cross-sectional studies, the direction of causality could not have been established even if an association had been found.

The objective of the present longitudinal study was to examine the association between nutritional status and the incidence and duration of ARI. The results indicate that nutritional status, defined in anthropometric terms, was not a predisposing factor for increased incidence or prolonged duration of ARI in this population.

Methods

This study was based at the Center for Primary Health Care Studies (CPHCS), a joint venture of the Ministry of Health and the National Autonomous University of Mexico. The Center is located in Tlalpan, a district in the southern part of Mexico City, and