

Epidemiology Training

Courses in environmental and occupational epidemiology

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The results of a survey are reported in which members of WHO's Global Environmental Epidemiology Network were asked for details of free-standing environmental and occupational epidemiology courses that were offered or planned for 1991–93 with tuition in English, French or Spanish and with places for persons living outside the countries concerned. Of the 126 courses on which information was received, 72 were open to health professionals from more than one discipline.

WHO has defined the objectives of epidemiological studies that examine the effects of environmental agents on health as follows:

- to provide decision-makers and health workers with information needed to establish health criteria and programmes for the control of pollution and other environmental hazards;
- to assist in evaluating the efficacy of preventive and control measures in protecting human health from environmental hazards and to improve the quality of life;
- to improve scientific knowledge of the effects of environmental conditions on health.

WHO's Global Environmental Epidemiology Network (GEENET) was formed in 1987 as part of efforts to integrate the various approaches to hazard recognition, risk assessment and pollution control. The Network has defined environmental epidemiology as the science that analyses and measures adverse or beneficial effects of environmental factors on health and evaluates the effectiveness of their control or optimization strategies. Its methods are used to establish whether biological, chemical, physical, psychosocial or ergonomic influences alter the probability of such events, and to examine the relationship between dose and response. By June 1993 the Network had about 1700 members in 110 countries.

Its objectives are to:

- target WHO materials for distribution;
- provide a sounding board for the development of WHO work;
- establish a panel of experts in specialized areas;

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- exchange information and develop cooperation in research among participants;
- strengthen training in environmental epidemiology.

In 1990, members of the Network were asked about their training needs in environmental and occupational health (1). The problems that were considered very serious varied with the degree of industrial development in the countries concerned. The least developed countries reported as very serious those problems related to inadequate sanitation and sewage disposal, inadequate garbage disposal, unhealthy or unsafe housing, food and water contaminated by pathogens, traffic accidents, exposure of workers to pesticides and non-pesticide chemicals, and indoor air pollution. In developed countries traffic accidents were the most frequently reported very serious problem, followed by air pollution, toxic waste disposal sites, and pollution from toxic waste disposal or spills. In universities and technical schools, the need was expressed for practical emphasis or field training, the integration of curricula in different departments or disciplines, the development of new degree or diploma programmes, and short courses and seminars for continuing education. Requests were also made for expanded training time, more materials, texts and equipment for training purposes, increased financial resources, and international cooperation in training and research. In support of these re-

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quests and similar ones expressed by members of the WHO Rural and Urban Development and Housing Network, information and training materials were issued by GEENET.

Worldwide survey and inventory

In May 1991 a survey was initiated of free-standing environmental and occupational epidemiology courses offered or planned for 1991-93 throughout the world by members of the Global Environmental Epidemiology Network, in English, French or Spanish. The aim was to produce an inventory (2) restricted to courses open to persons living outside the countries concerned as well as to residents in these countries. Persons who could attend were medical practitioners, environmental health officers, public health and factory inspectors, safety officers, environmental and sanitation officers, occupational hygienists, toxicologists, urban planners, architects and public health administrators. Courses in which environmental or occupational epidemiology tuition comprised a module, unit or other part of broader-based or longer courses were excluded.

The template for the inventory was established using CARDBOX-PLUS software and standard formats for material and courses developed by WHO. A questionnaire and accompanying letter were prepared and their circulation was supported by the World Federation for Research and Education in Public Health and the Association of Schools of Public Health in the European Region. The 1221 persons on the mailing list were invited to photocopy these documents and distribute them to colleagues who might also be interested in forwarding details of courses. Data entry was completed in March 1992 and checked with respondents by May 1992. Details of 126 available or planned courses were received from 46 countries (Table 1). The inventory was printed in July 1992 from the database files, and a copy was sent to each member of the Global Environmental Epidemiology Network.

Table 1
Numbers of free-standing environmental and occupational epidemiology courses offered or planned during 1991–93 by members of the Global Environmental Epidemiology Network

Country	Number of courses	Country	Number of courses
Algeria	4	Japan	2
Argentina	3	Kenya	1
Australia	6	Malaysia	1
Belgium	2	Mexico	1
Brazil	4	Netherlands	1
Canada	8	Pakistan	2
Chile	2	Nigeria	4
China	3	Poland	1
Colombia	1	Papua New Guinea	1
Costa Rica	1	Portugal	1
Cuba	3	Russia	1
Czechoslovakia ^a	2	South Africa	5
Denmark	1	Singapore	3
Egypt	1	St Lucia	1
El Salvador	1	Spain	1
France	3	Switzerland	1
Germany	2	Sweden	4
Greece	1	Turkey	1
Hong Kong	1	United Kingdom	10
India	4	Uruguay	1
Indonesia	2	USA	15
Ireland	3	Venezuela	1
Italy	8	Zambia	1

^a Now Czech and Slovak Republic.

Great diversity

The courses differed widely in length, content, level and admission requirements. Seventy-two courses were available to health professionals from more than one discipline. Their duration ranged from two days to four academic years; the median duration of one week was shared by 16 courses; 15 courses, however, lasted a year. Several courses were offered simultaneously at the introductory, post-basic and higher levels. The aspects of environmental and occupational epi-

demiology which were dealt with varied considerably.

The respondents were asked about seven topics and 14 themes; differences in approach and emphasis were identified both within and between WHO Regions (Tables 2, 3). The findings can be considered in the context of the health-for-all strategy.

For example, as part of the multidisciplinary and intersectoral approach to educational needs, encouragement is given to closer links between epidemiology, clinical practice and environmental protection. In this connection it is a good sign that 72 of the 126 courses identified for the worldwide inventory are available to health professionals of more than one discipline.

For each WHO Region, differences had been expected in the approach to and emphasis placed on topics and themes that could be included in courses in environmental and occupational epidemiology. The differences between Regions are less readily explained. For example, communicable diseases were included in only 29% of 42 courses in the American region but in 56% of 43 courses in the European Region. The control of environmental hazards was taught in 93% of courses in the African Region, 94% of those in the Western Pacific Region, but in only 71% and 58% of those in the American and European Regions respectively. Except in the Western Pacific Region, chemical safety was only occasionally covered.

Similar numbers of courses were identified in the American and European Regions, but epidemiological principles, survey design, statistical methods, uses of routinely available data, principles of outbreak/incident investigation, risk assessment, and uses of epidemiology in policy formation were less commonly mentioned in the themes of courses in the

Table 2

Percentages of free-standing courses including various topics offered or planned for 1991–93 by members of the Global Environmental Epidemiology Network in each WHO Region

Topics	WHO Regions					
	Africa	Americas	Eastern Mediterranean	Europe	South-East Asia	Western Pacific
General epidemiology	73	55	67	77	50	100
Environmental epidemiology	80	62	0	74	33	88
Occupational epidemiology	53	67	100	67	33	69
Communicable diseases	87	29	33	56	50	69
Noncommunicable diseases	80	57	33	70	33	75
Chemical safety	47	52	33	33	33	81
Environmental hazard control	93	71	33	58	33	94
Total number of courses	15	42	3	43	6	16

Table 3

Percentages of free-standing courses including various themes offered or planned for 1991–93 by members of the Global Environmental Epidemiology Network in each WHO Region

Themes	WHO Regions					
	Africa	Americas	Eastern Mediterranean	Europe	South-East Asia	Western Pacific
Epidemiological principles	93	76	100	91	83	100
Survey design	93	55	67	86	83	94
Statistical methods	93	52	100	81	83	88
Uses of routinely available data	93	64	100	79	83	88
Field methods	93	60	67	58	100	88
Investigation of incidents/outbreaks	100	52	33	60	83	88
Principles of toxicology	67	48	67	35	67	75
Principles of microbiology	60	17	0	23	50	50
Clinical effects	67	40	100	40	100	75
Methods of environmental surveillance	80	60	0	58	100	88
Biological screening	53	38	33	40	83	81
Risk assessment	80	60	0	74	83	88
Risk management	73	50	0	51	83	75
Epidemiology in policy formation	73	43	0	60	50	63
Total number of courses	15	42	3	43	6	16

American Region than in those of Europe. For these two Regions less than 50% of the courses included the principles of toxicology and microbiology, clinical effects, and biological screening.

In general, there is a need for greater access to environmental and occupational epidemiology courses (1). The present findings suggest that tutors should periodically review course content to see whether educational objectives and the requirements of students are being met. As the availability of these courses becomes more widely known, prospective students are likely to seek more detailed information from tutors and to be increasingly selective. Three important educational factors are likely to determine the success of teaching programmes:

- the context, which modifies the expectations, interests and experience of all concerned;
- the nature and intentions of participants and course organizers;

- the teaching methods, which can influence course impact and the achievements of participants (3).

Course audit could start with a consideration of these factors. Tutors might also find it useful to read a general self-assessment guide (4). ■

References

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