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TRAINING OF OCCUPATIONAL HEALTH SUPERVISORS/FIRST-AIDERS FOR SMALL INDUSTRIES

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ABSTRACT

Small-scale industries represent a very important sector of the economy of many countries of the developing world. These include engineering workshops, small oil mills, gum arabic grading and packing, cotton ginning etc. They are usually scattered in different parts of the country. The modern trend has been to allocate a special site to small enterprises in every town. Most of them are privately owned and run.

The problem that usually faces the health worker in such situations is that most small factory owners do not respond easily to guidance recommendations for promoting health conditions on the assumption that such a state of affairs implies financial commitments that cannot easily be met. Recently, after the policy of alloting special sites to small-scale industries was augmented, the setting up of comprehensive occupational health centres has become a likewise accepted trend.

This "new" policy for the delivery of health care to small establishments will naturally need trained manpower especially primary health care workers who stand in the first-line of defence in the health care set-up. In order to implement the training of this important category of personnel it was found necessary to incorporate this category in the training programme of health services and to include special regulations and curriculum in the current Labour Law.

There are certain conditions to be fulfilled by prospective trainees chief among which is that they should be proposed by their respective employers or trade-union and agreed upon by the training institute's controller. A special curriculum includes safety training including principles and legislation, theoretical and practical first-aid in a comprehensive programme, introductory communicable disease treatment, pollutant measurement and control. This intensive training programme is followed by a final qualifying examination upon successfully passing of which an official health services certificate is granted. A special register for these primary health care supervisors is kept and the follow-up of their work is vested in the Occupational Health Department. This system is being quoted as an example of developing regular primary health care in small industries in developing countries.

The economy of the Sudan has always been dependent on agricultural production in the broad sense of the term which includes crops and animal production and the industries associated with them. Potentially productive land accounts for about 16% of the total area of about 619 million acres, cultivated land for about 1.2% or nearly 7.5 million, and forests for about 36.5% or nearly 226 million acres.

Modern agricultural methods have gradually been introduced since the inception in the 1950s of the Gezira scheme (about 0.5 million acres) for the production of long staple cotton to be exported for further processing by textile industries in Western Europe. Since then various major mining projects have also been set up and more modern mining methods introduced. This gradual development has brought the need for an organized planning and introduction of occupational health services for workers employed in mining and quarrying operations.

MEDICAL SERVICES AND HEALTH PROBLEMS

The Under-Secretary of State in the Ministry of Health and Social Welfare is responsible for all health services throughout the country including the training of local medical and health personnel.

The country is divided into 18 provinces, in which the Assistant Governor for Health Affairs (AGHA) is responsible for the health services. Every province is divided into districts; each district has a hospital and satellite dispensaries. The Medical Inspector of each district is responsible to the AGHA for all health problems in his district.

The Sudan still depends on medical helpers who represent the first line of this medical service. The figures quoted below are taken mainly from the Annual Reports of the Ministry of Health and Social Welfare. The average doctor–population ratio is 1:20 000 ranging from 1:1 000 in Khartoum to 1:40 000 in the rural areas. The number of hospital beds is 1.2 per 1 000, ranging from 3.5 per 1 000 in urban areas to 0.8 per 1 000 in certain rural areas. The budget is meagre and the annual per capita expenditure on health does not exceed US $ 3, most of which is spent for curative purposes, prevention taking only 10%.

Health problems

The country's health problems are great and diverse. The infant mortality rate is 93 per 1 000, ranging from 25 per 1 000 in Khartoum province to 185 per 1 000 in other areas. The main causes of death are pulmonary tuberculosis and other respiratory diseases, malaria, and enteritis. Among the communicable and endemic diseases, malaria tops the list, being endemic all over the Sudan, while bilharzia is endemic in the large plantation areas. Diseases due to poor sanitation are prevalent. Gastro-enteritis is the main cause of death among children, especially when complicated by measles or a secondary respiratory infection.

The Sudan has many public health problems which are aggravated through the large size of the country. Moreover, the long frontier with eight neighbouring countries coupled with the nomadic habits of a large section of the population, makes control of these diseases very difficult. However, careful planning and the help of international organizations, especially the World Health Organization (WHO), make the eradication of these diseases feasible. Certain projects assisted by WHO have already been launched. They include the B.C.G. campaigns, the T.B. pilot project at Wad Medani which is based on group

examinations and case findings, a malaria eradication project and the onchocerciasis pilot project. High hopes are entertained for the outcome of these schemes.

Functions of the Occupational Health Department

The general picture of conditions in the Sudan presented above should give an idea of the type of work the Occupational Health Department should be doing as part of preventive and Social Medicine. Its function may be summarized as in Table 1.

TABLE 1
Set up of Occupational Health Department of the Ministry of Health.

Preventive Social Medicine				
Occupational Health Department		Occupational Health Advisory Board		
Administration	Training department	Occupational hygiene laboratory	Guidance inspection	Medical division
Social work research Statistics Medical commission Clerks and stores	Training centre Labour health education Specialized training	Chemical engineering Chemical analysis	Inspection Field survey researches Technical committee for buildings and factories	Occupational diseases clinic Labour health centres
Administration Inspectors Technicians Clerks	Combined unit	Chemists Engineers	Public health inspectors Officers	Physicians Medical assistants

Teaching

Undergraduate teaching is important and should be provided for medical students, non-medical (engineering) students, and public health officers in training. The type of teaching appropriate to the individual categories varies, while for medical students occupational health teaching should be confined to basic and related subjects but should also include visits to factories and demonstrations of clinical cases.

For engineering students, who will be responsible for creating new work environments, the teaching should be aimed at presenting occupational hazards and the possibilities of eliminating them by means of planned design before the factory is built, or of reducing them to a minimum in existing factories and works.

Public Health Officers, as agents of the Assistant Governor for Health Affairs, should be taught how to inspect a work site in order to be able to make recommendations regarding the work environment, hygiene (general and personal), and waste disposal in accordance with the factories' acts.

Survey of industries

Regular surveys are carried out of industrial establishments, agricultural projects and mining operations in order to assess the size of the various problems, investigate the health of workers and the conditions under which they work, and establish the prevalence and severity of possible occupational health hazards. Such surveys are carried out according to a set plan and in co-operation with the Ministry of Health, the Ministry of Industry and Mining, the Geological Survey Department, the National Mining Corporation, the Factory Inspectorate, and the Labour Department. Public Health Inspectors and Industrial Hygienists are of great help in carrying out these surveys.

Research

An occupational health department cannot continue to develop unless engaged continuously in studies and research of specific problems of public health interest which are numerous and varied and open a wide field to investigation work.

Library

Building up a good library and ensuring a regular supply of relevant national periodicals is a necessary part of this development.

Occupational hygiene laboratory

Great use is made of the existing laboratory for all field surveys and various research and practical activities.

First aid services

It is a well known fact that the main risks to which mine workers are exposed are occupational accidents, pulmonary dust disease and some of the communicable diseases. Since health education is still on a very low level, occupational accidents keep increasing. Due to lacking instruction in the safe use of technical methods, cases of pneumoconiosis also occur from time to time.

Amongst the responsibilities of the Occupational Health Department are organization of first line medical care and first-aid treatment in work places and running and maintaining an occupational health and safety training institute which runs regular courses of instruction in general and occupational first-aid for supervisors, technicians and trade union officers at work sites.

Section (13) of the Factories and Workshops Regulations reads as follows:

1. A first-aid box or cupboard equipped to the scale set out in the second schedule hereto shall be provided and kept readily accessible in every factory provided that where a first-aid room or dispensary exists, the commissioner may grant exemption from this requirement.
2. Whenever more than thirty persons are employed at any one time or in any other case if an inspector so directs, such first-aid equipment shall at all times be in the charge of a responsible person who has been trained in first-aid, and the name of such person shall be prominently displayed near the first-aid box or cupboard.
3. At every factory, arrangement shall be made to the satisfaction of the health ministry authorities for the moving to hospital without undue delay of any serious case of accident or disease.

In order to satisfy this broad line philosophy, the Department has set up a small institute for accomplishing the requisite training. The Governing Board responsible for the quality of the training is a corporate body to which the Director of the Occupational Health Department is Reporter. It has the following membership structure:

1. Under-Secretary of State (for Training), Ministry of Health, Chairman
2. Director, Occupational Health Department, Reporter
3. Chief, Safety Section (Labour Department), Member
4. Head, Preventive and Social Medicine Department, Faculty of Medicine, University of Khartoum, Member
5. Chief, Fire and Civil Defence, Member
6. Regional Labour Inspector, Member
7. Controller, Occupational Health and Safety Training Institute, Member

Although "the Institute" forms a section of the Department, for its policy, guidance and development it depends on this corporate body, which is responsible mainly for the following:

a) laying down the Institute's curriculum and plans of operation
b) planning and development of training
c) periodic revision of the curriculum and introducing changes if required
d) looking into the final examinations results and approving them.

Conditions to be fulfilled by prospective trainees

A trainee should fulfil the following criteria before being eligible for admission to the course:

1. He is to be proposed by his employer or his trade union committee in consultation with the Reporter.
2. He must have completed junior secondary education or an equal qualification, on condition that he has gained an experience of two years or more in his present job or similar technical jobs.
3. He is to pass the requisite competitive examination set by the Controller of the Institute in consultation with the Reporter.

4. The tuition fee is to be paid by the employer.
5. He has to observe the regulations and guidance of the Institute particularly as regards his attendance.

N. B. Some first-aid trainees might be selected by the Reporter with the agreement of the Board.

Teaching periods and methods

Instruction extends over a period of three months during which the trainees must be relieved of all his duties in his establishment.

Teaching methods include: regular teaching by lectures, general discussions and seminar groups, practical first-aid, demonstrative first-aid, group work and field visits.

The curriculum is broadly composed of the following subjects (with percentages in brackets):

Occupational safety:
- principles and legal aspects (10%)
- causal factors of accidents (10%)
- engineering methods and role of the supervisor (10%)
- electrical, mechanical and environmental factors (10% – 40%).

Occupational health:
- occupational diseases and prevention (12.5%)
- pollutant measurement and control (12.5 – 25%).

First-aid:
- lectures and demonstration (12.5%)
- practical first aid (12.5 – 25%).

Fire fighting and civil defence (10%).

In addition to this set curriculum, the trainee must submit a practical project dealing with a major problem of his industry or enterprise and suggest practical solutions for the problem. In the light of the above, the individual subjects are given the following evaluation in the final examinations: written examination (220 marks), practical project (30 marks), viva and discussion of the project (25 marks), attendance and punctuality (20 marks) and activity in participation (5 marks), in total 300 marks.

After passing the final examination, the trainee is awarded the Ministry of Health Certificate and Medical Badge. The graduate is registered in the Ministry's register and as such licenced to practice first-aid, while the badge gives him access to all hospitals and medical units.

Utilization of graduates

As mentioned before, the medical services in this country mainly rely on the first line of defence which is composed of various medical helpers and cadres similar to those graduating from the Institute. There is a great demand for such

personnel in industrial and agricultural projects, hence the programs started in 1968 for the training of supervisor and first-aiders had been of great assistance to the medical services. For purposes of prevention, supervisors make inspection visits of factories and submit their recommendations as regards work environment and maintenance of personal and public health and also a correct use of protective clothes. On the curative side, supervisors perform some first-aid duties (for light injuries) while any cases of occupational disease among the workers have to be referred to the nearest hospital or health centre.

Table 2 shows the number of these supervisors and their activities according to industry, whilst Table 3 shows the content of the standard first-aid box which is statutorily issued to supervisors/first-aiders for routine use.

TABLE 2

Graduates of the Occupational Health Centres and Industrial Safety Institutes "Cairo" (A) and Occupational Health and Safety Centres "Khartoum" (B).

Industrial sector	Year															
	1969		1970		1971		1972		1973		1974		1975		Total	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Medical and administrative professions	6	2	10	28	5	25	4	23	4	19	5	18	9	7	43	132
Sugar industry	0	10	2	4	0	2	0	0	0	0	2	0	0	0	4	16
Tanning industry	0	3	1	2	0	1	0	2	0	0	1	2	0	1	2	11
Engineering industries	0	9	0	29	0	38	0	32	1	9	1	47	0	4	2	168
Textile industry	2	3	0	6	0	5	0	8	0	5	3	2	0	7	5	36
Soap oil industry	0	0	0	11	0	2	0	2	0	2	0	4	1	1	1	27
Food production industry	0	3	1	12	1	29	2	11	0	9	1	4	1	2	6	70
Lead industries	0	4	0	3	0	2	0	2	0	1	0	0	0	6	0	18
Total	8	34	14	95	6	104	6	80	5	45	13	77	11	28	63	478

Type of services

As mentioned above, the country still depends on medical helpers. Since 1967, the presence of occupational health supervisors/first-aiders has helped to solve a big part of the problem both in the preventive and in the curative sphere. On the preventive side they carry out periodic inspections and make recommendations on the environment, hygiene (general and personal), waste disposal, and personal protective clothing. On the curative side they are allowed to deal with minor injuries and ailments, do resuscitation work in cases of injuries and poisoning, and, generally, deal with a situation pending the visit of the estate's doctor or the patient's transfer to hospital.

Reports and statistics

In their work these first-aiders have to observe strict regulations regarding submission of reports, keeping records and making recommendations. The reports are submitted to the factory management, to factory inspectors (Labour Department) and to health inspectors according to the following plan:

TABLE 3
Second schedule – standard equipment of first-aid box, Regulation 13.

No	Item	Quantity	No	Item	Quantity
1.	Bandage $2^1/_2$ inches	12	22.	Tourniquet	1
2.	Triangular bandages	6	23.	Dressing forceps	1
3.	Cotton wool	1 lb.	24.	Eye bath and dropper	1
4.	Gauze	1 roll	25.	Lotion bowls	1
5.	Elastoplast dressing	4 rolls	26.	Soap tablets	1
6.	Lint boric	4 oz.	27.	Elastoplast strips, small	6 tins
7.	Lint white	1 lb.	28.	Elastoplast strips, large	6 tins
8.	Boric eye lotion	1 lb.	29.	Potassium permanganate	6 oz.
9.	Albucid eye drops 10%	1 lb.	30.	Sulpha powder	5 g
10.	Albucid eye ointment	5 tubes	31.	Penicillin powder	5 g
11.	Sodii bicarbonate	4 oz.	32.	Entrovioform tabs.	500 tabs.
12.	Boric lotion for eye	8 oz.	33.	Sulpha, 24	100 tabs.
13.	Medicinal paraffin eye drops	1 oz.	34.	Sulphatriad	500 tabs.
14.	Acriflavine antiseptic solution (1/1000)	$^1/_2$ pint	35.	Sulphaguanidine	500 tabs.
15.	Tr. iodine	1 lb.	36.	Spasmocibalgine	500 tabs.
16.	Talc or boracic powder	8 oz.	37.	Cascara sagrada	100 tabs
17.	Gooch splint 12 in. × 9 in.	2	38.	Aspirin or A.P.C.	500 tabs.
18.	Sodium bicarbonate	1 lb.	39.	Multivite tabs.	500 tabs.
19.	Burns ointment	4 tubes	40.	Cough tabs.	500 tabs.
20.	Safety pins	12	41.	Salt with vitamin C	500 tabs.
21.	Scissors 5 inches	1	42.	Ear drops	4 vials
			43.	Throat paint	4 vials
			44.	Dettol	1 l
			45.	Champhor ointment	6 oz.

Periodic inspections – reports have to be submitted to the Occupational Health Department with copies to the local factory inspector and to the factory's management.

Inspection on request of the management – in this case the report is submitted to the management, preferably with copies to the local factory inspector and the Occupational Health Department.

Inspection following a complaint by a worker or group of workers – in these cases the report is submitted to the local factory inspector with copies to the management and the Occupational Health Department.

Inspection on request of the trade union committee – in this case the report is submitted to both the trade union committee and the management, with copies to the local factory inspector and the Occupational Health Department. Records are kept both of these inspections and of the statistics of injuries and ailments which have to be submitted monthly.

An increasing number of industries rely today on this cadre including some of the large mining and quarrying organizations and other industrial activities e.g. sugar plantations and refineries, cotton ginning, spinning and weaving mills, and dates curing and vegetable and fruit canning factories both in the Northern Region and Southern Region of the country.

As they are members of the factory enterprise as foremen or technicians, and are proposed by the management in agreement with the trade union committee and the Occupational Health Department they have been a great help in improving the health conditions at work sites and in workshops. Led by the establishment's doctor, they act as "running" or orderlies. Up to now the system has functioned smoothly and proved quite successful. The experience gained from the application of this system can be of use to other interested parties, and information about such an institute and organization will gladly be supplied. Although the teaching is now conducted mainly in Arabic some courses are held in English (e.g. for the benefit of supervisors from the Southern Region) while additional courses can be organized to suit other supervisors (e.g. from neighbouring countries).

In this way we can build up bilateral experience and thus develop the scope of this training towards the attainment of the ultimate goal, i.e. ensuring a higher level of health and productivity.