ORIGINAL ARTICLE

Notification of Occupational and Work-Related Diseases and Poisonings in Malaysia, 1997- 1998

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Summary

In 1997, the Ministry of Health Malaysia introduced a surveillance programme for occupational and work-related diseases including poisonings for cases seen in government health facilities. Between June 1997 and November 1998, there were 36 cases of respiratory disease and 95 cases of poisoning by chemicals and pesticides notified while skin diseases were 108 cases. Respiratory diseases reported were predominantly occupational asthma (25%), pneumoconiosis (17%) and infections (39%). The commonest reported skin disease was contact dermatitis (87%). The commonest causes of occupational poisonings were paraquat (19%), organo-phosphates (16%), agro-chemicals excluding pesticides (15%) and gases (10%). The number of cases reported is still relatively few compared to data from other countries, suggesting that there is still considerable under reporting.

Key Words: Occupation, Work-related, Disease, Poisoning, Notification, Surveillance

Introduction

Throughout the world there is an increasing interest in occupational and work-related diseases. There is increasing evidence that they contribute substantially to the morbidity and mortality of working populations. Epidemiological notification schemes for occupational and work-related diseases are now seen in many countries including Finland, Canada, USA, and the UK, although many of these have concentrated initially at least on lung diseases rather than the complete spectrum of disease[1-4]. In addition, in many countries some epidemiological information may be gained from other sources such as statutory notification schemes required for investigation of work-related accidents and diseases, and the number of individuals applying for and receiving workmen's compensation.

In Malaysia, notification of occupational and work-related diseases has been required since the 1967 Factories and Machinery Act[6], mainly to allow investigation of such cases by the Department of Occupational Safety and Health (DOSH). Subsequently the Occupational Safety and Health Act of 1994[7] reinforced this responsibility for both factory managers and doctors to report all cases of occupational and work-related diseases and poisoning to DOSH. However, this system has not worked well with few cases being reported. Some of the probable factors contributing to underreporting include reluctance of employers to report problems arising within their own factories, doctors reluctance to break confidentiality (as required with any reporting scheme) and poor recognition of occupational and work-related diseases by clinicians.

This has been illustrated by the apparent disparity between the number of cases reported to DOSH and the number of cases awarded compensation by the Social Security Organisation (SOCSO) in Malaysia. In 1996, SOCSO compensated 113 cases of occupational poisoning, 13 cases of occupational lung disease, and 328 cases of occupational skin disease. An additional four cases of unspecified cancer due to asbestos exposure and 28 due to wood dust exposure were also compensated. Few of these cases were reported to DOSH.

Thus, it seems likely that there remains considerable under-reporting of occupational and work-related diseases within Malaysia. Epidemiological data on occupational and work related diseases nonetheless is important as only with good information can problems be identified and prioritised, and resources allocated appropriately. During 1997, a number of initiatives were undertaken to try to improve reporting and make doctors more aware of their responsibilities in this regard, particularly those in government service. New simplified reporting forms and procedures were introduced, and a number of workshops were held to introduce these new processes for reporting, as well as to emphasise the importance of work as a cause of disease. This paper presents a summary of information of all cases reported during approximately the first year following the introduction of these modified reporting schemes.

Materials and Methods

Notification of cases of occupational lung diseases and poisonings commenced in June 1997, and occupational dermatoses in September 1997. Notifications to the end of November 1998 were included in this reported. All patients reported by any doctor who believed that on the balance of probabilities a case of disease was caused by or related to work were included. Guidance documents for lung and skin diseases including instructions on completing the forms and diagnostic criteria were made available to all government hospitals and government clinics through the Occupational and Environmental Health Unit of each state. These were distributed widely to relevant clinicians, medical officers, medical assistants and health inspectors.

All cases reported to the occupational health unit of the Ministry of Health following the introduction of the new reporting procedure were included in the analyses. On arrival within the unit reporting forms were checked for completeness, and then entered onto computer by a single operator (HS). Incomplete information was sought from the original doctor completing the form where possible. Data were entered onto an IBM compatible personal computer and analyses undertaken using SPSS Version 7.5.

Results

Lung diseases

Between June 1997 and November 1998, a total of 36 cases of occupational and work related lung disease were reported (Table I). Of the cases reported, 22 were males and 14 females; all the patients with pneumoconiosis were males. There was no apparent relationship between occupational lung diseases and smoking or atopy. The mean age of the reported cases was 31 years. The mean age of the individuals with pneumoconiosis was somewhat greater at 54 years. The industrial sector and cause of the disease (when specified) are shown in Table I.

Occupational dermatoses

One hundred and eight cases of occupational dermatoses were reported between September 1997 and November 1998 (Table II). Eighty seven percent had contact dermatitis. For the majority of notifications it was not possible to reliably differentiate irritant from allergic dermatitis. Fifty six percent (n=61) of cases were male, 44% female (n=47). In only four reports was the notified case reported to be atopic. The mean age of reported cases was 30 years. Seventy percent of all cases were reported by dermatology clinics.

Poisoning by chemicals and pesticides.

A total of 49 cases of occupational work-related poisonings by chemicals and 46 cases of poisoning by pesticides were reported between June 1997 and November 1998 (Table III). Agro-chemicals (n=14) and gases (n=9) were the commonest causes of chemical poisonings, while paraquat (n=18) and organo-phosphates (n=15) the commonest causes of pesticides poisonings. Pahang state recorded the greatest number

Table I
Occupational Lung Diseases Notified to Ministry of Health, Malaysia
June 97 - November 98

Disease	Industrial Sector	Job	Cause
Asthma	Manufacturing	Labourer in sawmill	Wood dust
		Store man in sawmill	Wood dust
		Labourer in palm oil mill	Unknown
		Textile manufacture	Textile treatments
		Engineer	Unknown
		Metal manufacturing	Metal working fluid
		Electrical appliance manufacturing	Solder flux
	Health Care Workers	Dispenser	Unknown
	Services	Teacher	Chalk dust
Inhalation accidents	Agriculture forestry and fishing	Palm oil estate worker	Pesticides
		Settler	Pesticides
		Palm oil estate worker	Pesticide
		Palm oil estate worker	Pesticide
	Palm oil estate worker	Pesticide	
	Manufacturing	Rubber manufacture	Chlorine
Bronchitis/ emphysema	Agriculture forestry and fishing	Tobacco grower	Pesticides/ organic dust
Infections	Agriculture forestry and fishing	Settler	My Tuberculosis
		Palm oil estate worker	My Tuberculosis
		Palm oil estate worker	My Tuberculosis
		Palm oil estate worker	My Tuberculosis
		Palm oil estate worker	My Tuberculosis
	Manufacturing	Electrician in saw mill	My Tuberculosis
		Metal manufacturing	My Tuberculosis
	Services	Public relations worker	My Tuberculosis
		General administration	My Tuberculosis
		Education services	My Tuberculosis
		Taxi Driver	My Tuberculosis
	Health Care Workers	Staff Nurse	My Tuberculosis
		Assistant Nurse	My Tuberculosis
		Attendant	My Tuberculosis
Pneumoconiosis	Mining and quarrying	Rock blasting	Silica
		Rock blasting	Silica
		Rock blasting	Silica
		Quarry worker	Silica
		Metal manufacturing	unknown metal
	Manufacturing	Production operator	Unknown

Table II
Occupational Skin Diseases Notified to Ministry of Health
September 1997 - November 1998

Disease	Industrial Sector	Cause	No. of Cases
Contact dermatitis	Agriculture forestry and fishing	Horse hair	1
		Paraquat	2
		Unspecified	2
	Manufacturing	Glue and resins	10
		Coolants/oils/greases	7
		Metals	5
		Wood	4
		Solvents	4
		Other	1
		Unspecified	14
	Construction	Cement	3
		Other	1
		Unknown	1
	Services	Food and food products	4
		Gloves/latex	6
		Unknown	8
	Health Care Worlers	Gloves	2
	Unspecified		19
Urticaria	Services	Unknown	3
Occupational skin cancer	Construction - Squamous cell (Rt. ear pinna)	Tar	1
	Manufacturing - Basal cell (Lt. cheek)	? Paint	1
Burns	Construction	Petrol	2
Occupational	Manufacturing	Metal	2
acne	Mechanic	? Oil	1
Nonspecified			4
TOTAL			**108**

of poisoning cases (39 cases), Pulau Pinang and Sarawak the least (2 cases each). Of all cases of poisoning reported, 14 received outpatient treatment only and 81 required in-patient treatment. One subject died due to pesticide poisoning several days after being admitted to hospital. Poisoning was definitely confirmed by clinical findings or laboratory investigations in 38%. The most common route of occupational poisoning was by inhalation (42 cases), the oral and dermal routes accounting for 15 cases each. In 23 cases exposure was reported to have occurred by an 'other' route, but on seeking further details, many cases reported within this category in fact involved splashing onto eyes or skin and so the dermal route accounts for a somewhat greater proportions of cases than specifically notified. With both chemicals and pesticides poisoning the majority of cases were males.

Table III
Cases of Poisoning by Chemicals and Pesticides Notified to Ministry of Health, Malaysia June 1997 - November 1998

Chemical Poisonings	Number	%
Therapeutic drugs	1	1.1
Gases	9	9.5
Agro-chemicals	14	14.7
Organic solvents	5	5.3
Other Industrial Chemicals	8	8.4
Mixed	1	1.1
Other	8	8.4
Unknown	3	3.2
Pesticide Poisonings		
Paraquat	18	18.9
Glyphosphate	1	1.1
Organophospate	15	15.8
Carbamate	3	3.2
Organochlorine	1	1.1
Others	8	8.4
TOTAL	**95**	**100**

Discussion

Lung diseases

The total number of cases of occupational and work-related respiratory diseases reported does appear low given that the scheme had been operating for 17 months by the time of these analyses. This probably reflects considerable underreporting. In comparison, during 1996 an estimated 3,322 new cases of occupational and work-related lung diseases were notified to the SWORD (Surveillance of Work-related and Occupational Respiratory Diseases) scheme in the UK, although this too may be an underestimate[8]. The SWORD scheme involves notification of cases by interested occupational and chest physicians who volunteer to participate, and it is likely that some cases of occupational and work-related lung disease were never referred to participating doctors.

The pattern of lung diseases within Malaysia is somewhat different to that reported elsewhere. There is a greater proportion of cases of pneumoconiosis, nearly all of which are due to silica. In contrast there are relatively fewer cases of lung diseases due to asbestos exposure. This may be because the use of asbestos in Malaysia has been less than in some other countries, and the control of the fibres greater. It could also be due to the long latency period of asbestos related diseases. There were also relatively few cases of occupational asthma notified.

A wide variety of causes have been implicated in the aetiology of the cases of occupational lung diseases notified through the scheme. However, few cases were notified as being due to agents commonly identified in other countries. For example, in the United Kingdom the causative agents identified by the SWORD scheme and compensated by the Department of Social Security (DSS) most frequently were: isocyanates (SWORD 15%, DSS 22%), flour and grain (SWORD 9%, DSS 13%), colophony (SWORD 4%, DSS 7%) and wood dusts (SWORD 4%, DSS 8%)[8]. This may reflect differences in industrial processes between Malaysia and other countries, but could also suggest that a significant number of cases were not identified or notified.

Another finding from these data was that some of the sources described for cases of tuberculosis appear to be para-occupational rather that truly occupational or work related. This included hostel accommodation provided for the palm-oil plantation workers. Nonetheless, there were a number of truly occupational acquired infections, including three health care workers infected by tuberculosis while working in hospitals.

Occupational Dermatoses

Considerably more cases of occupational skin diseases were reported than lung disease, but it is likely that there is still considerable under-reporting of these diseases. A survey of self-reported work-related ill-health in the UK in 1995, estimated a prevalence of 66,000 cases of skin diseases[9]. Malaysia, with a population of approximately one third of the UK might therefore expect a higher incidence than that reported here. However, the pattern of reported occupational skin diseases in Malaysia, predominantly contact

dermatitis, is similar to that reported by other schemes. The most commonly notified causative agent was epoxy resins used in electronics and other manufacturing industries, with a smaller but still substantial number of cases reported as due to exposure to oils or greases.

Poisonings

There were more notifications of poisonings by both chemicals and pesticides reported through this scheme than cases of occupational lung and skin diseases. All the cases of poisoning that were notified presented with acute symptoms, and one died on arrival at the hospital. Disease episodes presenting in this way, with an acute onset of symptoms, are easier to recognize and diagnose and this probably contributed to the better reporting of such cases. The more obvious relationship to a hazardous exposure would also help recognition. Despite the fact that a relatively large number of cases were reported, it is possible that some cases may not be captured, especially those that did not seek treatment and those who sought treatment at private clinics and hospitals. Eighty cases (84.2%) required admission and appear to have been managed appropriately.

Estimates from hospital surveys in the United States (1949-1988) indicate that approximately 20,000 people per year receive emergency care for actual or suspected pesticide poisoning, and of these approximately 10% were hospitalized[10]. During the same period between 20 and 40 people died each year of acute poisoning. If the ratio of total poisonings to hospitalized poisonings were closer to that in the United States (that is approximately 10:1) this might again suggest under-reporting, particularly of less severe cases.

More males were reported to be affected than women, perhaps because more men were engaged in agricultural employment than women. Inhalation was the main route of entry reported, followed by dermal and oral routes. The major causes of poisoning incidents were paraquat, organo-phosphates and agro-chemicals. Agro-chemicals in this context exclude pesticides. Paraquat is widely used throughout Malaysia in many agricultural situations and is highly toxic to human both by direct contact and when ingested in adequate doses. Organo-phosphates are widely used pesticides that may cause acute or chronic poisoning after exposure and untreated patients usually die within 24 hours of exposure while treated patients who die usually do so within 10 days[11]. Organo-phosphates may be rapidly absorbed by inhalation, ingestion and through intact skin. The best described toxic effects on human are due to the inactivation of acetyl-cholinesterase enzymes within the nervous system, and the usual cause of death is respiratory depression[12].

Prevention of poisoning episodes depends very much on the safe usage and storage of these chemicals. Simple measures to ensure safe systems of work, secure storage, good personal hygiene, and intelligent use of personal protective equipment could prevent many cases of accidental poisoning each year. Adequate supervision and training of agricultural workers could also help to reduce cases of poisoning. An understandable chemical Safety Data Sheet should always be made available to workers handling pesticides or chemicals.

Conclusion

The overall number of cases reported through this notification scheme is still low and probably there is a great deal of under-reporting. Nonetheless the information obtained is very useful. Efforts are being made to improve this notification scheme, including further training courses at both state and district levels. The Ministry of Health of Malaysia remains committed to reducing the incidence of these wholly preventable diseases, and this notification scheme comprises an important tool to raise awareness and ensure appropriate allocation of resources in fulfilling this commitment.

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