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Trends in Inquiries on Poisoning: A Five-Year Report from the National Poison Centre, Malaysia

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Summary

This report describes inquiries relating to poisoning cases which were received by the National Poison Centre of Malaysia from the years 1996 to 2000. The study utilized data from the NPC report forms. Only data relating to patient contact with a poison or chemical were included in the analysis. The poison centre received an average of 186 poisoning inquiries per year. Doctors remained the highest group of caller to the poison centre throughout the five-year period. Nearly 50% of all inquiries was regarding pesticide poisoning and this trend remained constant during the five-year period. Overall, the findings showed that poisoning inquiries relating to patient care were lower than in Japan and the United States.

Key Words: Inquiry, National Poison Centre, Malaysia

Introduction

The National Poison Centre (NPC) of Malaysia was founded in 1994. It is the only poison information centre in Malaysia which provides toxicological information to medical personnel and the general public, serving a population of approximately 22 million. It functions as a drug and poison information centre, provides continuing education for health programs in toxicology and undertakes research and documentation services in toxicology and related areas.

A toxicology laboratory supports the centre in the analysis of poisons in active poisoning cases. It also conducts a poisoning surveillance program among high risk groups. Inquiries regarding poisoning and related cases are attended by three staff pharmacists on a rotation basis. The centre operates only during office hours (9.00 am to 5.00pm). Inquiries to the centre after these hours and on weekends are answered by a pharmacist on-call. In 1996, the centre provided a toll free number to encourage inquiries from the general public.

From 1995 to March 2000 the NPC received a total of 3898 inquiries. Over 60% of those inquiries were related to general information and tobacco. This report describes inquiries regarding human exposure to poisons or chemicals. It is hoped that the findings will be useful in planning for prevention education, clinical research and training.

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Materials and Methods

Inquiries to the NPC are recorded in the poisoning case report forms. The structure of the form has been adapted from INTOX of the International Programme on Chemical Safety. These data were used for analysis in this report. Case report forms from the years 1996 to 2000 were collected.

Information collected on the form were categorized into several sections including information regarding the caller, patient background data, information surrounding the exposure, description of clinical manifestation and the types of management already given to the patient.

Descriptive analysis was used and results are presented as percentages.

Results

A total of 929 cases of poison exposure inquiries were handled by the NPC during the five-year period with the number increasing steadily every year. The majority of these calls came from physicians (range: 76.3% to 96.8%). Total inquiries from the general public were found to be less than 5%. Calls were received from all fourteen states including the Federal Territory, and as far as Sabah and Sarawak.

A male predominance was found throughout the five-year period. The age and gender distributions are outlined in Table I. Children younger than 9 years were involved in about 20% of cases, and over one-third occurred in individuals below 19 years.

A single substance was implicated in the majority of patients and only 3.1% of them were exposed to more than one substance. Table II presents the most common substance categories listed by frequency of exposure. Exposure to pesticides was found to be the highest which remained constant throughout the five-year period, followed by pharmaceuticals, household products and industrial chemicals. Only five cases involved coingestion with alcohol. Data on patient's outcome were not complete but 21 (2.2%) confirmed fatalities, which included two children below 6 years old, were reported. Twelve (57%) of these deaths were associated with exposure to pesticides.

Reasons for exposure were recorded in 726 cases. There was almost equal distribution of intentional (47%) and unintentional (52%) poison exposures (Table III). Ingestions accounted for an average of about 85% of exposure routes (Table IV) and remained consistently high throughout the five-year period. The vast majority of exposures were reported to have occurred at a residence (83%) followed by the workplace in about 12% of cases.

Data on exposure in children age twelve and below revealed that pharmaceutical and household products were implicated in the majority of cases (Table V). There was a wide variability of products involved. About 70% to 90% of exposures in these children were classified as unintentional. The majority of these exposures (range: 78% to 94%) occurred in the home.

Table I: Age and gender distributions of poisoned patients from 1996 to 2000.

	1996	1997	1998	1999	2000	Total N (%)
Age group (years)						
< 9	27	26	50	39	40	182 (19.6)
10 -19	18	26	31	30	41	146 (15.7)
20 - 29	23	30	39	46	32	170 (18.3)
30 - 39	16	19	38	46	37	156 (16.8)
40 - 49	16	9	23	18	13	79 (8.5)
50 - 59	2	5	14	12	17	50 (5.4)
>60	2	3	10	4	15	34 (3.6)
Unrecorded	14	13	25	21	39	112 (12.1)
Total	118	131	230	216	234	929 (100)
Gender						
Male	58	73	118	100	98	447 (48.1)
Female	36	46	84	92	77	335 (36.1)
Unrecorded	24	12	28	24	59	147 (15.8)
Total	118	131	230	216	234	929 (100)

Table II: Distribution of categories of substances implicated in poisonings 1996 to 2000.

	1996	1997	1998	1999	2000	Total N (%)
Pesticides	52	61	126	96	111	446 (46.7)
Pharmaceuticals	22	14	39	65	59	199 (20.8)
Household products	23	31	33	34	35	156 (16.3)
Industrial chemicals	11	19	21	21	19	91 (9.5)
Traditional products	4	2	6	2	7	21 (2.2)
Plant and mushroom	1	2	3	2	3	11 (1.1)
Animals	4	1	3	3	2	13 (1.4)
Other*	2	3	3	6	4	18 (1.9)
Total	119	133	234	229	240	955 (100)

Includes 29 patients were exposed to more than one agent.
*Other includes veterinary drugs, food, gases and unknown

Table III: Reason for poison exposure

	1996	1997	1998	1999	2000	Total N (%)
Unintentional	52	53	102	81	90	378 (52.1)
Intentional	43	58	81	81	78	341 (47.0)
Adverse reaction Drug	4	1	0	1	0	6 (0.8)
Total	100	112	183	163	168	726 (100)

Table IV: Route of exposure

	1996	1997	1998	1999	2000	Total N (%)
Ingestion	93	114	193	183	203	786 (86.3)
Inhalation	14	9	24	17	16	80 (8.8)
Cutaneous	4	3	5	3	8	23 (2.5)
Bite/sting	4	1	3	3	2	13 (1.4)
Ocular	0	0	1	2	2	5 (0.5)
Injection	1	2	0	1	0	4 (0.4)
Total	116	129	226	209	231	911 (100)

Table V: Substances most commonly involved in children 12 years and below

	1996	1997	1998	1999	2000	Total N (%)
Household products	10	15	14	8	11	58 (29.1)
Pharmaceuticals	5	5	16	14	17	57 (28.6)
Pesticides	7	4	14	7	13	45 (22.6)
Industrial chemicals	3	2	3	8	3	19 (9.5)
Traditional medicines	1	2	5	1	2	11 (5.5)
Other*	3	2	1	1	2	9 (4.5)
Total	29	30	53	39	48	199 (100)

*Other included animal, plant, food, gases.

Discussion

This is the first report of poisoning calls from the National Poison Centre of Malaysia since it was established nearly eight years ago. The data do not directly identify a trend in the overall incidence of poisonings in the country. For example, there was an average of about 750 cases per year of pesticide and chemical poisoning that were reported to the Ministry of Health[1,2]. Thus, our findings represent an underestimation of all poisoning cases occuring nationwide. There may be several reasons for this. Since hospitals are not required to report poisoning cases to the NPC, the disparity in data is possibly due to those exposures that have occured for which no call was made. Furthermore, data acquired by telephone are limited to those who have access to telephone and knowledge of the poison centre service.

Physicians working at health care centres have accounted for the majority of poisoning calls reported to the NPC. Calls regarding poison exposure from the general public was minimal despite the NPC having its toll free number available since 1996. This is in contrast with data reported in Japan and the United States in which the majority of all inquiries were from the public[3,4]. This phenomena probably reflects the dependence of the Malaysian public on health centres when dealing with acute exposure. It is possible that under these circumstances, patients or parents who are already faced with uncertainty and heightened anxiety may not be able to perceive the seriousness of the exposure rationally. Consequently, such cases will be immediately referred to the nearest health centres or clinics where medical treatment is readily available. In a nationwide community survey,

nearly 90% of the estimated population lived within 5km of a health centre or clinic, thus making it easily accessible to the public[5]. In addition, most health centres or clinics are open 24 hours whereas the NPC is not.

Pesticides make up the greatest percent of substances implicated (47%) throughout the five-year period in this study. This is in contrast to findings reported by poison centres in the United States with a much lower percent of calls (3 to 4%) on pesticide exposure [4,6]. Malaysia has one of the highest pesticide users compared to other Asian countries[7]. The pattern of pesticide use has been dominated by herbicides, which accounted for over 75% of total consumption. This utilisation trend is expected to increase in years to come as a result of rapid growth in the oil palm industry [8].

Substances implicated in poisoning involving children shows a similar pattern to that reported by others[3,4,6]. This is also consistent with a local study where about 80% of cases admitted to the hospital were associated with such household products and pharmaceuticals[9]. The fact that these exposures were typically accidental in nature and occurring at home indicate that they were potentially preventable. Several risk factors have been identified and prevention efforts have been suggested [10].

In general, the findings allow identification of several areas of interest to the NPC. Poisoning in children and among people working with pesticides are two such areas that should be given emphasis. Efforts could be targeted toward increasing awareness and vigilance among parents and agrochemical workers. There is also great opportunity for the NPC to explore its role in reducing unnecessary hospital visits among the public. This could be done by encouraging participation from the public. With this responsibility, the NPC should be ready to provide more sophisticated intervention when a poisoning actually occurs. This also includes providing its service 24 hours a day.

References

1. Ministry of Health. Annual Report. Malaysia: Ministry of Health Malaysia, 1997.
2. Ministry of Health. Annual Report. Malaysia: Ministry of Health Malaysia, 1999.
3. Goto K, Kuroki Y, Shintani S, Kusakawa S. Accidental poisoning of children in Japan: A report from the Japan Poison Information Center. Acta Paediatr Jpn 1993; 35: 193-200.
4. Litovitz TL, Klein-Schwartz W, White S, et al. 1999 Annual Report of the American Association of Poison Control Centeres Toxic Exposure Surveillance System. Am J Emerg Med 2000; 18: 517-74.
5. Hamid MA, Sararaks S. Recent illness/injury and health seeking behaviour. In: Malaysia's Health 2000. Technical Report of the Director-General of Health Malaysia. Ministry of Health Malaysia, 2000; 246-60.
6. Litovitz TL, Klein-Schwartz W, Caravati EM, Youniss J, Crouch B, Lee S. 1998 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1999; 17: 435-87.
7. Jeyaratnam J, Lun KC, Phoon WO. Survey of acute pesticide poisoning among agricultural workers in four Asian countries. Bull World Health Organ 1987; 65: 521-27.
8. Tenaganita and Pesticide Action Network Asia and the Pacific. Poisoned and Silenced. A study of pesticide poisoning in the plantations. Malaysia: Ganesh Printers, 2002.
9. Awang R-A, Quah BS. Epidemiology of childhood poisoning in Kelantan. Malaysian J Med Sci 1998; 5: 40-4.
10. Azizi BHO, Zulkifli HI, Kasim MS. Risk factors for accidental poisoning in urban Malaysian children. Ann Trop Paediatr 1993; 13: 183-88.