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Prevalence of Poliomyelitis Among Taipei City School Children

To determine the prevalence of paralytic poliomyelitis among Taipei City school children and assess risk factors for acquiring the disease, we conducted a lameness survey in Taipei City elementary and junior high schools in 1984. Fifty-one of Taipei's 200 elementary and junior high schools were randomly selected to estimate the prevalence of polio in children 6-15 years of age to within ±20% of the true value with 90 percent confidence. School attendance in Taipei City is high (>99%). A case of polio was defined as a child with acute onset of flaccid paralysis of an extremity with intact sensation and no history of injury or progression of symptoms in the affected limb. Lame children identified by teachers, students, and a school record review were referred for physical examination. Two age- and sex-matched classmates were selected per case to compare immunization with polio vaccine, parental educational level, and number of siblings.

Fifty-three lame children were identified among the 77,622 children included in the survey. Of these, 47 (88%) met the polio case definition. The median age at onset of illness was one year, and 89 percent of cases had onset of illness before the age of five years. The prevalence of polio was 0.61 cases per 1,000 students. Prevalence was slightly higher among males than females (0.66 compared to 0.54 cases per 1,000 students), and increased with age (Table 1). Compared to controls, students with polio were less well immunized with polio vaccine, had parents with lower educational levels, and had larger numbers of siblings (Table 2).

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Editorial Note: Children in this study were born between 1969 and 1978. During this period, the incidence of polio declined rapidly (Figure 1) accounting for the higher prevalence of disease in older compared to younger children. Despite the decline, a major island-wide epidemic of type 1 polio occurred in 1982. The majority of cases during the

1982 epidemic were infants and young children (63% of cases were < 2 years old);[1] however, a significant number of older children were also affected including six of the 47 cases identified in the school survey. Both the 1982 epidemic investigation[1] and the school lameness survey showed that inadequate immunization and low parental educational level were important risk factors for disease.

Inactivated (Salk) polio vaccine first became available in Taiwan in 1958. Liv (Sabin) oral polio vaccine was introduced in 1963. During the first few years after introduction of these vaccines, relatively few persons were immunized and the incidence of polio changed little. Polio vaccine was first included in the government's immunization program in 1964, and the following year, approximatly 1.3 million persons were immunized (Figure 2). In the ensuing two years, the incidence of polio fell more than tenfold. Although the number of persons immunized decreased in 1970 and

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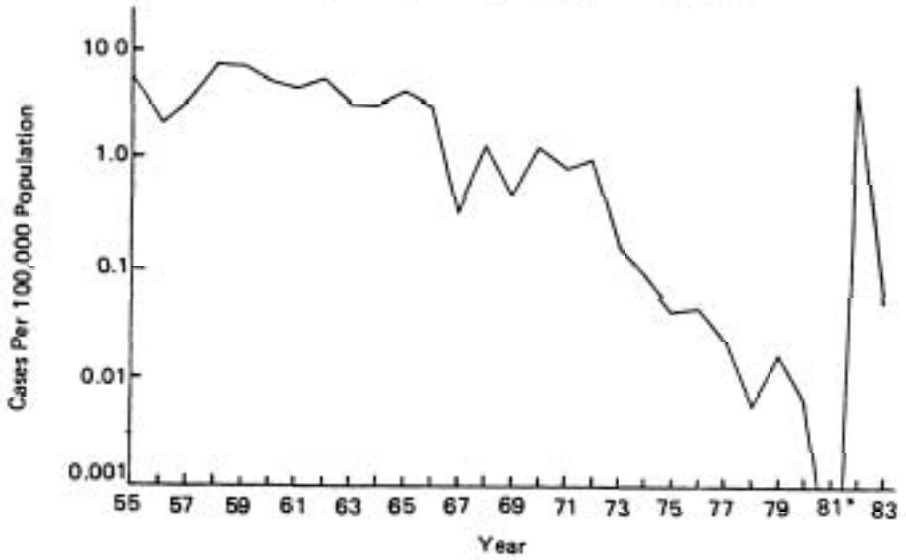
Table 1. Age-specific prevalence of paralytic poliomyelitis in Taipei City school children

Age (years)	No. cases	No children	Prevalence (per 1,000)
6	1	3,900	0.26
7	2	7,811	0.26
8	2	7,876	0 25
9	2	7,713	0.26
10	3	7,423	0 40
11	4	7,350	0.54
12	5	8,505	0 59
13	7	11,017	0 64
14	13	11,107	1 17
15	8	4,920	1.63
TOTAL	47	77,622	0.61

Table 2. Risk factors for paralytic poliomyelitis, among 47 polio cases and 92 age- and sex-matched classmate controls, Taipei City, 1984

Risk Factors	Cases (N=47)	Controls (N=92)	Odds ratio	χ^2	p-value
Father's educational level junior high or less	27	31	2 66	7 2	<0 01
Mother's educational level junior high or less	37	50	3 18	7.9	<0 01
Four or more siblings	32	42	2 54	6 3	<0 05
Received one or more doses of polio vaccine	12	80	19 44	52 4	*<0 001*

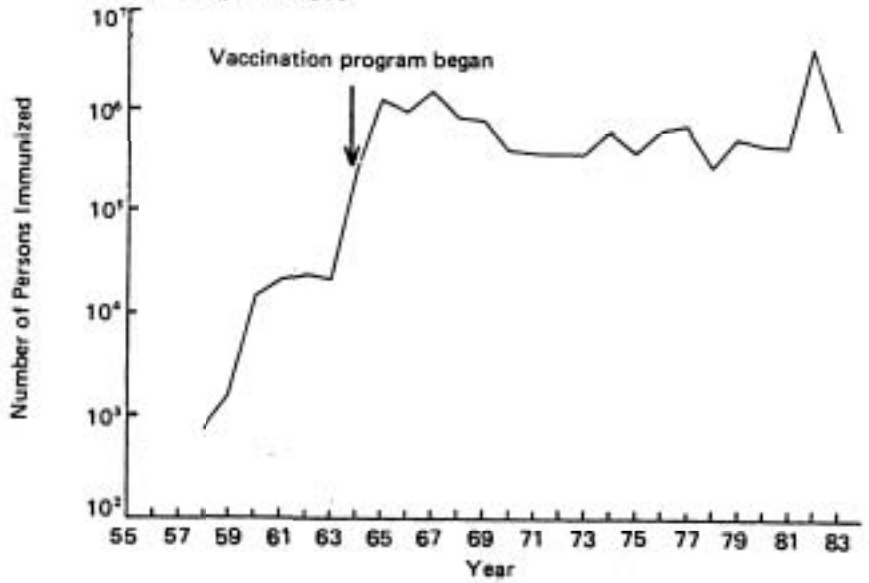
Figure 1. Incidence of poliomyelitis per 100,000 population, Taiwan, 1955-1983.



*No cases were reported in 1981.

Source: Department of Health. Health Statistics (1): General health statistics. Republic of China, 1983, p. 272.

Figure 2. Number of persons immunized with one or more doses of polio vaccine, Taiwan Area, 1955-1983*



*Note: Immunization rates cannot be calculated from these data since age and dose-specific information are unavailable.

Source: Department of Health. Health Statistics (1): General health statistics. Republic of China, 1983, p. 261.