

The immunisation status of some preschool children in a new village in West Malaysia

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Introduction

IN WEST MALAYSIA, the routine immunisation programme for children includes immunisations against tuberculosis, smallpox, diphtheria, whooping cough and tetanus (Ministry of Health, Malaysia). These immunisations are given free of charge at government hospitals, rural health centres, and municipal health clinics. The usual immunisation schedule followed in the first year of life is as follows:

Soon after birth	—	Intradermal B.C.G. vaccination
Two months	—	First dose of triple antigen (diphtheria, pertussis and tetanus)
Three months	—	Second dose of triple antigen
Four months	—	Third dose of triple antigen
Five months	—	Primary vaccination against smallpox

The purpose of this study is to assess the immunisation status of some preschool children, aged one to five years, in a new village in West Malaysia, and to explore some of the factors relating to the differences, if any, in the rates of different kinds of immunisations.

Study area

The study area, Semenyih new village, is situated near a trunk road in the state of Selangor, West Malaysia. Established nearly 20 years ago, it now has a population of about 1,500, predominantly Chinese, most of whom are rubber tappers, earning generally a low income. The health facilities include a main health centre with a health officer, several staff nurses and midwives, in the village itself; a district hospital with two medical officers, and three private practitioners in Kajang, a small town six miles away.

Procedure

This study was made on households situated east of the main health centre. House-to-house interviews were conducted between 24.2.69 and 7.3.69.

Households that had at least one child between the ages of one and five years at the time of the interview were included in the study. The immunisation status of the younger or youngest child (if there was more

IMMUNISATION STATUS OF PRESCHOOL CHILDREN

than one child in the stated age group) was first determined through interviews with the parents (only the youngest child within the age group was included in the study as the pre-test showed that the parents could recall more accurately details about the youngest child than those of the older children). The parents' statements were then checked with:

- a. The immunisation record on the birth certificate of the child, the child health clinic appointment card issued by the health centre and the child health record card kept in the health centre, as well as
- b. Scars on the body of the child consistent with that of B.C.G. vaccination or primary vaccination against smallpox.

There was good cooperation from all the households in the study area.

Results

The results were based on the study of 84 households with at least one child between the ages of one and five. The age and sex distribution of the children included in the study are given in Table I.

Table I.

Number of children by age and sex

Age (years)	Male	Female	Both sexes
1 —	24	29	53
2 —	9	16	25
3 —	4	1	5
4 —	1	0	1
5 — 6	0	0	0
Total	38	46	84

The place of delivery of each child was also determined. (See Table II).

Table II

Place of delivery by the number of children

Place of delivery	No. of children
Nearest district hospital (6 miles away)	69
Other hospitals (20 miles away)	12
At home, in the village	2
At home, in another village	1
Total	84

Thus, most of the children studied were between the ages of one and three and were born in the nearest district hospital, or other hospitals.

Immunisation status

(A) **B.C.G. Vaccination:** Of the 84 children studied, 77 (or 92%) had evidence of B.C.G. vaccination. The majority were immunised soon after birth. Their place of immunisation is given in Table III. Most of them had their vaccination in the hospitals where the birth took place or in the health centre in the village soon after their return from hospital.

Table III

Number of children who received each kind of immunisation and the place where immunisation was carried out.

Place where immunisation was carried out	B.C.G. vaccination	Vaccination against smallpox	Immunisation* with triple antigen
Nearest district hospital (6 miles away)	46	4	0
Other hospitals (20 miles away)	7	0	0
Health centre in the village	23	31	17
Other health centres	1	1	0
General practitioners	0	6	0
Unknown	0	1	0
Total	77	43	17

* completed 3 doses

(B) **Vaccination against smallpox:** 43 children (or 51%) had evidence of vaccination against smallpox. Among the vaccinated group, 30 children received it before 1 year, 5 between 1 and 2 years, and 4 during 2 years and above. There were 4 children whose dates of vaccination were unknown. Most of the vaccinations were carried out at the Health Centre in the village (see Table III). A significantly higher rate of vaccination was found in children whose household income was higher (US\$100 and above per month)

and whose mothers had received at least four years of primary school education.

(C) Immunisation with Triple Antigen: Only 17 (or 20%) of the children studied had evidence that they had received 3 doses of triple antigen. They all received them before the age of one at the health centre in the village (see Table III). Ten other children received only one dose while 3 others received only two doses of the triple antigen. Again, a significantly higher rate of immunisation was found in children whose household income was US\$100 and above per month.

(D) Completed all 3 kinds of immunisation: Only 14 out of the 84 children (i.e. 17%) studied had received all three types of immunisation.

Discussion

The findings indicate that of the 3 kinds of immunisation recommended for children under the age of one, the highest immunisation rate achieved in this group of children was for B.C.G. and the lowest, triple antigen, with the vaccination rate against smallpox in between the two. What factors might have brought about the differences in the immunisation rates? They will be discussed under the following headings:

- (a) Awareness of the need.
- (b) Time of vaccination.
- (c) Perception of the severity of reactions to immunisations.
- (d) Number of doses required.

(a) Awareness of the need

In the interviews with the mother, it was found that there was general awareness of the need for the 3 kinds of immunisation for children under the age of one, and that these immunisations were available either in the district hospital 6 miles away or the health centre of the village. With regard to B.C.G. vaccination, several mothers did not know why it was given. They thought that it was meant to protect the infant against all illnesses — a non-specific preventive measure. With regard to vaccination against smallpox, most mothers were not aware that it was a legal requirement to have their children vaccinated before the age of 6 months as stated on the birth certificate of the child. With regard to immunisation with triple antigen, the mothers whose children were not immunised did not know the purpose of getting it.

(b) Time of vaccination

B.C.G. vaccination was generally given soon after birth at the hospital. This was very convenient for the mother. This factor has evidently accounted for the high immunisation rate for B.C.G.

(c) Perception of the severity of reactions to immunisations

B.C.G. immunisation generally produces a very mild local reaction with no general reaction. However, vaccination against smallpox and immunisation with triple antigen usually produce a local reaction, such as ulceration or swelling and a general reaction, such as fever. It appears that most parents had learnt to accept the reactions to vaccination against smallpox as being relatively harmless. On the other hand, most of the parents whose children did not receive the immunisation with triple antigen or whose children did not complete the immunisation with triple antigen stated that their main reason for not starting or completing the immunisation was because of the fever that usually developed after the procedure. A few mothers volunteered the information that the grandparents were against the immunisation, for they (the grandparents) could not bear to see their grandchildren falling "ill" as a result of the immunisation.

(d) Number of doses required

Of the three kinds of immunisation, only immunisation with the triple antigen requires 3 visits to complete the course. However, none of the mothers gave the need for 3 visits as a reason for not starting or completing this immunisation. It appears that this factor played only a minor role in the low immunisation rate for the triple antigen.

Implication for the immunisation programme

How can we raise the immunisation rate of this group of children? In other words, how can we increase the participation of parents in the immunisation programme? Based on the findings, the following measures are suggested:

1. Education of parents: Opportunities for the education of the parents on the need for immunisation exist in antenatal clinics, maternity hospitals, post-natal clinics, child health clinics and general out-

IMMUNISATION STATUS OF PRESCHOOL CHILDREN

patient clinics. For parents who do not make use of these services, several methods have to be used to reach them, e.g., through the mass media, home visits and community organisations. More attention has to be paid to the lower income and lower education groups, whose participation in the immunisation programmes are generally low. Emphasis in the health education programme should be placed on the kinds of vaccination recommended for children, their purpose, and their side effects. For those parents who are not convinced that diphtheria, pertussis and tetanus are serious diseases, an effective method recommended by Professor Gale is to take the parents to the hospital to see the severe cases of the diseases or if this is not practical, an alternative method is to show the parents photographs of the sick children. This was carried out in Thailand (Professor Gale, 1970). At the same time, the staff should particularly reassure the parents that certain side effects, such as swelling at the site of injection and fever after immunisation with triple antigen, are relatively harmless. An antipyretic should be given together with instructions to the parents on how to use it. For some anxious parents, it may be necessary for the staff to visit their homes at the time the child develops the local and the general reaction to give the parents the necessary assurance and moral support. This also helps in preventing defaultation.

2. Change in the immunisation schedule: If B.C.G. vaccination and vaccination against smallpox are both carried out at the same time soon after birth, the immunisation rate for smallpox could be raised with little additional effort. This is being done at the University Hospital (Dugdale, 1967). This change will decrease by one the number of visits necessary, and thus make it easier for those who live at some distance from an immunisation centre to complete the course.

Summary

A study was made of the immunisation status with respect to immunisation against tuberculosis, smallpox, diphtheria, whooping cough, and tetanus of children between the age of one and six of one section of a new village in West Malaysia. Only one child from each household, i.e. the youngest that falls within the specified age-group, was included in the study. It was found that of the 84 children studied 77 (or 92%) had evidence of B.C.G. vaccination, 43 (or 51%) had vaccination against smallpox, and 17 (or 20%) had received the full course of triple antigen. Only 14 children, i.e. 17% received all the three kinds of immunisation.

Some of the factors relating to the difference in the rates for different immunisations were discussed. It was suggested that certain measures might be used to increase the participation of parents in the immunisation programme: stepping up the education of parents about immunisation through health clinics and hospitals as well as other channels of communication in the community, provision of social support to parents who have brought their children for immunisation through home visits by health personnel, and a change in the immunisation schedule.

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References

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