

Immunization Coverage of Underfives in Marunda, North Jakarta

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ABSTRACT A study was prospectively carried out on the immunization coverage of underfives in a rural coastal area in Marunda, North Jakarta. It revealed that: (1) the immunization coverage was still far below target, to wit covering only 19.6 % of the 102 studied children except for BCG which fulfilled the national target; (2) the immunization coverage was significantly associated with the Road to Health Chart (KMS) utilization ($p < 0.05$), the number of mother's parity ($p < 0.05$), and very significantly associated ($p < 0.01$) with the family income; (3) Mother's reasons for not having their underfives immunized were not knowing at all about immunization or that it should be done consecutively several times (65.9 %), the child was then not considered quite healthy (15.8 %), or there had been no funds (18.3 %). [*Paediatr Indones* 1995;35:150-155]

Introduction

Reducing mortality especially the infant mortality rate is one of the main targets in the health sector of the government. By the year 2000 the government even plans to decrease the Infant Mortality Rate to become 35 per 1000 live births.¹

The main causes of death in infants and children are infectious diseases of which most of it are actually easily prev-

entable by immunization.² Reports of the Ministry of Health Republic of Indonesia stated that 38% of all infant mortality were as a consequence of actually by immunization preventable infectious diseases in that age group. Budiarso³ reported a figure of 28%. Adhiyatma⁴ was of the opinion that immunization to be one of most effective measures in reducing infant and child morbidity and mortality. Formally in Indonesia the aim of the immunization program is in general to prevent the morbidity, mortality and handicap in children as a consequence of six dangerous but preventable infec-

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tious diseases such as tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, measles and recently hepatitis B.⁵

In 1974 the World Health Assembly enhanced a campaign to have all children in the world immunized by the year 1990 against tuberculosis, poliomyelitis, diphtheria, tetanus, and measles. For this purpose the Expanded Program on Immunization (EPI) was formed in 1976. In Indonesia the EPI started to be done country wide, in 1979 (the beginning of Pelita III).¹⁰ The aim of Pelita V (5th Five Year Development) is to attain a 80% coverage of complete immunization in underfives. A complete immunization then comprising once BCG, 3 times DTP 3 times polio, and once measles. This study aims to find out the immunization coverage of underfives in a remote area in North Jakarta, and the contributing factors that have influence on it.

Methods

This study was conducted prospectively by interviewing mothers with underfives using questionnaires in Marunda, North Jakarta in the year 1986. The meetings with the mothers were performed by home visits.

The underfives were selected at random resulting in a number 102 out of a total 500 underfive children in that area. Other data concerning the child obtained from the interview comprised mother's educational level, utilization of the Road to Health Chart (KMS), immunization status, reason for incomplete immunization status, number of siblings in the family, and family income.

Good compliance of immunization was defined when at the age of less than 14 months the child had one BCG, 3 times DTP and 3 times Polio, or in cases when the child's age was less than 14 months the immunization status was already performed according to schedule at their age. Beyond that, it was considered poor compliance. We also included into poor compliance children who had never been immunized.

Parental educational level was considered low when they never had any schooling at all. The family income was considered to be insufficient when the income was <Rp. 15,000 per capita per month. The utilization of the growth chart was considered poor when the weight curve of the child had not been graphically plotted in the weight chart of the KMS.

Data recording and analysis

After having been coded and edited, the results of the interview were statistically analyzed at the Community Medicine Data Analysis Laboratory, University of Indonesia Medical School.

Descriptive data were presented in text and tables. Univariate hypothesis testing was performed to compare the groups by using chi-square test. Results were considered significant when the p value was <0.05, or very significant when the p value was <0.01. For analyzing the multiple influences of various independent variables on the dependent variable, computer aided multiple regression analysis was used by the stepwise approach of the standard statistical formula.

Results and Discussion

Marunda was a rural coastal area, about 30 km far from Jakarta, densely populated. The total population was 5000 people, 40% were under the age of 15 years, with 500 underfives. The total area was 7,46 square km, thus the population density was 760 /square km. There were many fish ponds found owned by the so called "juragans" or landlords who lived in the Jakarta city.

Most of the mothers under study were just housewives, 88.2 % of them had low education. Most of the fathers were fishermen working as laborers at the fish ponds they did not own themselves. The family income was low, the average was Rp 13,287 per capita per month.

There were all in all 102 children included in this study out of a total of 500 underfives of the whole area. The distribution of underfives studied is depicted in Table 1, while its sex distribution is shown in Table 2.

The mean age of the underfives was 31.8 (SD 16.3) months. Pechevis⁹ pointed out 12-36 months to be the most ideal age for underfives to be investigated in terms of their growth and development and other factors related to it.

Table 1. Distribution of underfives by age group

Age group (months)	No	Percentage
6 -	19	18.6
12 -	24	23.5
24 -	16	15.8
36 -	29	28.4
48 - < 60	14	13.7
Total	102	100.0

Table 2. Distribution of underfives under study by sex

Sex	Number	Percentage
Girl	43	42.2
Boy	59	57.8
Total	102	100.0

Table 3. Distribution of studied children by status of immunization (BCG, DTP, Polio)

Immunization status	No of children	Percentage
Good	20	19.6
Poor	82	80.4
■ incomplete	26	25.5
■ none	56	54.9
Total	102	100

Table 3 shows that 80.4% of the underfives had a poor immunization status, meaning that they were unprotected against those above mentioned diseases and even 53.9% had never been vaccinated, while in the 26.5% their vaccination was incomplete. Not one of the children had ever had a booster vaccination.

Keeping in mind the general target of immunization coverage to be 80 % (4th Five-year Development,⁵) it was very obvious that the general coverage of immunization in Marunda (19.6%) was far from sufficient, meaning that there was a potential danger threatening the underfives to contract at any time one of those dangerous infection diseases.

Table 4. Distribution of studied children by reason of immunization incompliance

Reason of in-compliance	No of children	Percentage
not knowing (ignorance)	54	65.9
not well child	13	15.8
others (no funds, too far away site)	15	18.3
Total	82	100

This table reveals that the reason for immunization incompliance was more than half (65.9 %) because the mother did not know about immunization or even if she knew she was not aware that it should be done consecutively three times one month apart (DTP and Polio). Thirteen mothers (15.8%) put forward as reason because the child was not well enough. Thus the concept that mild diseases are no contra indication for vaccination was not widely known yet. This fact should not be overlooked and be included in the content when performing health education programs on immunization in that area.

This table indicates that factors like family income, utilization of the KMS and number siblings were significantly related to the child's immunization status.

The multiple regression formula for the occurrence of the immunization status by KMS utilization and mother's reproductive pattern was as follow:

$$y = 0.34x_1 + 0.19x_2 + 0.68$$

where y = immunization status
 x_1 = KMS utilization
 x_2 = mother's reproductive pattern

Table 5. Cross tabulation of immunization status by confounding factors

Factors	Immunization status		
	Good	Poor	p
KMS utilization			
■ good	8	9	<0.05
■ poor	12	73	
Mother's educational level			
■ good	15	65	>0.05
■ poor	5	7	
Family income			
■ sufficient	9	34	<0.01
■ insufficient	11	48	
No of siblings:			
■ <2	7	19	<0.05
■ ≥2	13	63	

This means that the immunization status of the child will be From the multiple regression analysis it was also found that the child's immunization status occurred partially 34% by the KMS utilization and partially 19% by the mother's reproductive pattern especially when the other factors were omitted.

Family income

This study reveals that families with sufficient income had very significantly better immunization states of their children than those with a poor income ($p < 0.01$). That the family income was closely related to the immunization status, and thus also its coverage, was very reasonable as in reality the family still needed some amount of funds to bring the child to the clinic or health post

(transportations and other payments). It was also in accord with the fact that 15 mothers (18.3 %) put forward reasons of no funds for immunization incompliance (see Table 4).

KMS utilization

Actually a proper utilization of the KMS card means that: (1) the KMS is always kept with the child or by the mother and thus be a source of important information for the health worker wherever and whenever the child has contact with him or her; (2) the KMS is filled in properly; the child's growth curve graphically plotted on the growth chart, the child's morbidity, feeding pattern especially breastfeeding, immunization status, etc.; (3) KMS as reminder and source of information on nutrition, growth, development for the mother/ family and reminding when the next visit should be. In this study, though, a good KMS utilization was meant just when the weight curve was present in the KMS.

In this study it was revealed that children with a proper use of the KMS had significantly a better immunization status ($p < 0.05$). So a proper utilization of the KMS and involvement of the mother in completing the KMS means a more frequent contact of the mother with the health worker and thus it will enhance a sense of belonging in the mother and relevance to her need. Also it will underline the mother's vital function in the care of her child. When the mother then afterwards feels the positive effect on the well-being of the child it will arouse a sense of satisfaction in her that will make the visits to weigh to child to be

enjoyable and thus will increase the inner motivation of the mother to properly utilize the KMS, so that it will also enhance the immunization coverage.

For the before mentioned reasons it is a very pity that the KMS proper utilization in this study was very low since though every child had at least one KMS only in 17 cases (6.9 %) was the utilization found to be proper enough. Thus it only stands to reason that the immunization status, as well as its coverage, was far from satisfactory (Table 5).

Number of siblings

It revealed that the number of siblings was significantly related to the child's immunization status ($p < 0.05$). Families with more than 2 children indicated a poor immunization status (see Table 5) which was also in accord with Hanlon's findings proving that children with immunization incompliance were significantly more found in larger families.⁸

It seemed that the more children a mother had the more busy she would be to rear all the children so that there was not enough time for her to take the child to the clinic or the integrated health post (Posyandu) for immunization and so to enlarge its coverage.

In conclusion, study on the immunization coverage in underfives in a rural coastal area in North Jakarta gave the following results:

■ BCG immunization coverage fulfilled the desired target of the fourth Five Year Development (Pelita IV) while the DTP and Polio coverage was far below the target, so was also the complete immunization very low.

■ A good and proper utilization of the KMS is very needed to fulfill the immunization coverage target as it was proven that it increased the immunization coverage.

■ Health education programs on the topics of immunization and family planning will also be of very beneficial to increase immunization coverage in underfives children.

■ In accordance with the national norm of a small, happy and prosperous family with two children (NKKBS, catur warga) the realization of this concept in real life will hopefully also make the immunization coverage optimal.

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