Full Length Research Paper

Factors influencing immunization status of Myanmar migrant children among 1-5 years in Mahachai District, Samutsakorn Province, Thailand

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Children under five years of age constitute about 15% of population of most developing countries. An estimated 12.2 millions of deaths occur in this age group every year and most of the deaths are vaccine preventable diseases. According to Samutsakorn Provincial Health Office Data (2010), the total migrant population was approximately 250,000 and negligence of the health of the migrant children resulted in risky behaviors. The immunization coverage rate of Myanmar migrant children in Samutsakorn Province was very low compared to immunization coverage of children in Thailand. The objective of the study is to investigate the factors influencing immunization status of Myanmar migrant children among 1-5 years. A cross-sectional study was conducted in 183 Myanmar migrant mothers who had 1-5 years old children, and were interviewed by structured questionnaires. The data were collected from 28th January to 24th February, 2008, using purposive sampling. Data were analyzed by frequency distribution and Multiple logistic regression with the significant level set at p-value of <0.05. The results found that the education of mothers and perception of mothers towards Expanded Program on Immunization had significant influence on the immunization status of children (p-value <0.05). Low education of mother had 4.92 times higher chance of incomplete immunization of children. Poor perception of mother had 4.22 times higher chance of incompletely immunized children than those with good perception. For high Expanded Program on Immunization and to ensure complete immunization, the involved organizations have to emphasize health education and improve maternal and child health activities in the district, especially in migrant group. It is important to strengthen the activities of outreach mobile clinic.

Key words: Perception of mothers, immunization status, Myanmar migrant.

INTRODUCTION

Immunization is one of the most important and cost-effective interventions that health systems can provide and is essential to save children's lives. It is an affordable means of protection against communicable diseases for the whole communities and also reduces poverty. Immunization has saved over million lives in the last decades. It is also the most effective measures of public health in helping children attain better lives without any disability (UNICEF, 2010). In May 1974, the World Health Organization (WHO) initiated a global immunization program, know as Expanded Program on Immunization (EPI), as one of the major public health interventions to prevent childhood morbidity and mortality (Park, 2005). The Expanded Program on Immunization (EPI), the World Health Organization (WHO), United Nations Children's Fund (UNICEF), other United Nations agencies, bilateral development agencies, and non-

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government organizations intended to immunize children of the world to prevent suffering, disability and death due to six vaccine preventable diseases, namely diphtheria, whooping cough, tetanus, tuberculosis, poliomyelitis and measles by year 2000 (Park, 2005).

By receiving routine immunization, more than 2 millions of deaths are estimated to be averted each year, preventing countless episodes of illness and disabilities (WHO, 1995). Global coverage for DPT3 (three doses of the combined diphtheria/pertussis/tetanus vaccine) has been steadily climbing from 20% in 1980 to 74% in 2000 and 82% in 2009. In most of the regions, the coverage has stayed flat in recent years (UNICEF, 2010). The exception is East Asia, where coverage jumped from 89% in 2007 to 93% in 2008 and remained at that level in 2009. While most regions' coverage is near 90% level, two regions are still languishing below the global average: South Asia at 7% and sub-Saharan Africa at 70%. Global coverage for DPT3 has slowly but steadily increased to 82% in 2009, a remarkable improvement from 20% in 1980 (UNICEF, 2010). According to 2006 Annual Committee for Coordination of Services to Displaced Persons in Thailand (CCSDPT) health information report of Thai/Myanmar Border, the 2006 border-wide less than 5 mortality rate is 28.0 which is slightly decreased from the 2005 rate of 28.5 (CCSDPT, 2006). When comparing this rate to Thailand and Myanmar, the border-wide rate is higher than Thailand's rate of 21 and much lower than Myanmar's rate of 105 (per 1000 live births) (CCSDPT, 2006).

From the Burmese Migrant Maternal and Child Health Survey by Mark and Foundation for Education and Development, Thailand (FED) (Mark, 2011) found that 23% of children may not be adequately vaccinated, 76% of women had vaccination cards for their children and 24% did not have vaccine card. The immunization coverage of Myanmar migrant children in Samutsakorn Province was very low compared to the immunization coverage of children in Thailand in 2009 with Bacille Calmette-Guérin (BCG), diphtheria, pertussis, tetanus (DTP3), oral polio vaccine (OPV3) and measles which were 99, 99, 99 and 98%, respectively (UNICEF, 2009).

Moreover, the result of previous study revealed that factors associated with immunization coverage of children in Assam, India in over the first year of life include lack of information among the parents and level of mothers' education (Rup et al., 2009). The study of Maekawa et al. (2007) showed that the factors affecting routine immunization coverage among children aged 12-59 months in Lao PDR are distance, literacy, mothers' knowledge of immunization target diseases, attitude towards vaccine, and obtained information on immunization before delivery. The literature review showed that there was association or none between

general characteristics, knowledge of mothers, perception of mothers and sources of information about immunization and immunization status of children. The present study attempted to analyze the factors influencing immunization status of 1-5 years children among Myanmar migrants population using the Health Belief Model to develop the conceptual framework. It included the relationship between general characteristics, knowledge of mothers toward immunization status of children, perception of mothers towards immunization status of the children and source of information about immunization and immunization status of children. Even though several researchers had studied the factors related to immunization status of children in different groups of population, there has been little research in the area of Myanmar migrant children and even less research using full model of Health Belief model. The result could be helpful in promoting immunization coverage of Myanmar migrant children.

MATERIALS AND METHODS

A cross-sectional study was conducted in Samutsakorn Province, Thailand. The data were collected by researchers. The interview of mothers and assessment of child immunization took place during 28th January to 24th February, 2008. The 183 Myanmar migrant mothers who have one to five years old children were selected by purposive sampling. A structured questionnaire in English version then translated into Myanmar Language was a tool used for data collection. The fully vaccinated means a child received one dose of BCG, one dose of measles, and three doses of DPT/OPV. The questionnaires consisted of five parts: Part-I composed of 8 questions about age of mothers, occupation of mothers, education of mothers, family income, age of children and place of delivery (general characteristics of mothers and children). Part-II was 14 questions about knowledge of mothers on immunization, mode of transmission of diseases preventable by vaccines and side effects of vaccination. Part-III was 16 questions about perception of mothers on immunization, included in perceived susceptibility, perceived severity, perceived benefits and perceived barriers. Part-IV was sources of information about immunization. There were 2 questions in this part, using yes/no and multiple responses. Part-V was 6 questions about children immunization status, included place and age at the time of vaccination, EPI card and BCG scar, and the reason for not taking the vaccine.

Pretest was done to find out the problems concerning the structure, component, wordings used to be clearly understood by the interviewers and respondents and to revise the draft of questionnaires. The reliability of the

Table 1. General characteristics of mothers (n=183) of 1- 5 years child

General characteristics	Number	Percent
Age of mothers (years)		
<25 year	51	27.9
≥25 year	132	72.1
Range = 17-40		
Median = 27		
Education of mothers		
Illiterate	32	17.5
Primary	81	44.3
Secondary	59	32.2
High school	10	5.5
University or higher	1	0.5
Marital status		
Married	174	95.1
Divorced	8	4.4
Widow	1	0.5
Occupation of mothers		
Housewife	79	43.2
Factory worker	59	32.2
Seafood worker	35	19.1
Labor	10	5.5
Total family monthly income (Baht)		
<3,000	3	1.6
3,000-7,000	106	57.9
>7,000	74	40.4
Median = 7000		
Sufficiency of monthly income		
Sufficient	104	56.8
Insufficient	79	43.2

questionnaire was assessed in 30 Myanmar migrant mothers of 1-5 years children who shared similar characteristics with the study subjects. Cronbach's alpha coefficients for perception of mothers and Kuder-Richardson Formula (KR-20) for knowledge of mothers were 0.81 and 0.75, respectively. Data were analyzed by frequency distribution and percentage to describe the general characteristics of the subjects. Multiple logistic regression was used to study the factors influencing immunization status of children from one to five years old with significant level set at p-value of <0.05. The study was done under the approval of the Ethical Committee, Faculty of Public Health, Mahidol University with Proof No. MUPH2008-030.

RESULTS

General characteristics of mothers

The finding revealed that 72.1% of subjects were aged 25 years and above with average age of 27 years. Nearly half of the mothers (44.3%) received education at primary school level. Nearly all (95.1%) of them were married. Most of them (43.2%) were housewives and some (32.2%) were factory workers. The highest percent (57.9) of total family income was between 3,000-7,000 baht with average income of 7,000 baht. More than half (56.8%) of the mothers had sufficient monthly income for family expenditure (Table 1).

General characteristics of children

The finding revealed that 54.1% of the children were two years with average age of 2 years. Majority of the children (85.8%) were delivered at the hospital (Table 2).

Immunization status of children

The finding showed that 60.7% had incomplete immunization whereas 39.3% of the children had complete immunization. For 111 children who had incomplete vaccination, 36.6% of the mothers did not take their children for vaccination because they worked

Table 2. General characteristics of children of 1-5 years old age (n=183).

General characteristics	Number	Percent
Age of child (years)		
1	38	20.8
2	99	54.1
3	27	14.8
4	17	9.3
5	2	1.1
Median age = 2		
Place of delivery		
Hospital	157	85.8
Home delivery	13	7.1
Private clinic	7	3.8
Health center	6	3.3

Table 3. Immunization status of children among 1-5 years old age (n=183).

Factors	Number	Percent
Status of Immunization		
Incomplete	111	60.7
Complete	72	39.3
Reasons for Incomplete immunization		
Work all day long	67	36.6
No work permit	28	15.3
Others(maternal illness, disagree by husband)	8	4.4
Do not know	7	3.8
Dangerous to give vaccination	1	0.5
Existed of EPI Card at present		
Existed	133	72.7
Lost	38	20.8
Never had	12	6.6
Place of Vaccination		
Hospital	115	62.8
Health center	50	27.3
Mobile clinic	10	5.5
Others(IOM, other clinic)	4	2.2
Received type of Immunization		
BCG	177	96.7
DPT1/OPV1	163	89.1
DPT2/OPV2	143	78.1
DPT3/OPV3	109	59.6
Measles	81	44.3
BCG scar present	147	80.3

all day long, and some of the mothers (15.3%) had no work permit.

Concerning EPI cards, 72.7% had the card, 20.8% had the card but lost it and 6.6% had never had the card before. More than half (62.8%) of them were given vaccination by hospitals and 27.3% were immunized at health centers. The result revealed that 96.7% received BCG, 89.1% received DPT1/OPV1, 78.1% received DPT2/OPV2, 59.6% received DPT3/ OPV3 and 44.3% received measles vaccine. Among the children (177) who had BCG vaccine, 80.3% had BCG scar (Table 3).

Factors influencing the immunization status of children

Multiple logistic regression analysis was used to investigate the relationship between independent

Table 4. Multiple logistic regression analysis between general characteristics of mothers, knowledge of mothers, perception of mothers, sources of information and immunization status of children (n=183).

Factors	B	Odd ratio	(95% CI)
Age (years)			
<25 [1]	0.607	1.84	(0.834-4.039)
Education			
Primary or Lower[2]	1.592*	4.91	(2.448-9.865)
Occupation			
Housewife[3]	-0.509	0.60	(0.292-1.237)
Monthly income			
Sufficient[4]	-0.128	0.88	(0.429-1.805)
Knowledge of mother			
Poor[5]	0.210	1.23	(0.579-2.630)
Perception of mother			
Need to improve[6]	1.439*	4.22	(1.824-9.751)
Source of information			
Ever heard about child's immunization[7]	-1.107	0.33	(0.104-1.054)
-2 log Likelihood	202.197		
p-value	<0.001		

Note: Immunization status of children: complete immunization = 0; incomplete immunization = 1; *statistical significant at p-value <0.05; OR = Odds Ratio; B = Coefficient; Number in bracket after the OR is 95% Confidence Interval (95%CI); Number in bracket after each factor is referencing member 1. ≥25 years; 2. Secondary or Higher education; 3. Workers; 4. Insufficient income; 5. Moderate level of knowledge; 6. Good perception; 7. Never heard about child's immunization.

variables and immunization status of children. Likewise, multiple logistic regression analysis was applied when exploring immunization status of children influencing factors. The dependent variable in this study was a dichotomous variable; consisting of two categories of immunization status that were incomplete and complete immunization of children. In this study, general characteristics of mother consisting of age, education, occupation, and monthly income, knowledge of mother, perception of mother and sources of information were independent variables.

Most of the independent variables in the model have kipositive effect on immunization status of children. Occupation of mothers, monthly income and source of information about immunization of children had negative impact on the immunization status of children. The present study showed that the education of mother and perception of mother towards EPI had strong significant influence on the immunization status of children (p-value <0.05). Low education of mother had 4.92 times higher chance of incomplete immunization of children. Poor perception of mother had a 4.22 times higher chance of incompletely immunized children than those with good perception (Table 4).

DISCUSSION

The present study revealed that incomplete immunization was 60.7% and complete immunization was 39.3%. The reason was most migrant mothers had low education and moderate level of perception of the vaccines and diseases preventable by vaccine. Therefore, they did not know appropriate time to take the children for vaccination and the frequency of vaccines needed before one year of age.

Although, the percentage of BCG vaccination (96.7%) was high, the percentage of third dose of DTP/OPV (59.6%) and measles vaccination (44.3%) were very low. They received the first dose of vaccination (BCG) from hospital that delivered the children and other episodes of vaccination were not taken because they cannot go outside due to lack of work permit card. International Organization for Migrants (IOM) is employed with Myanmar staff; they usually go into community as mobile clinic, together with health personnel from Samutsakorn hospital. That also solved the problem that comes from language barriers. However, they could not attend to children's immunization because they have to work all day long and they are mobile and move from one place to another. In the study of PHAMIT (2005), in Thailand, it was found that the factors that limited migrants' access to health services were language and cultural barriers; barriers to proper treatment (explaining symptoms or receiving instructions on treatment), and conflict between the time of service provision by health providers with working hours of migrants.

Among the completely immunized children, the

hepatitis B vaccines were also found to be given. Since this study emphasized EPI schedule, HBV was not taken into account according to the reference schedule from UNICEF/WHO.

For the general characteristics of mothers, only education of mothers had significant association effect on immunization status of children (p<0.05). Low level of education of mother had 4.92 times higher chance of incomplete immunization. The hypothesis that the more education mothers obtained the higher percentage of complete immunization status of children was also supported by this result. Therefore, those who had low level of education had increased chance of incomplete immunization status of children. This finding corresponds well with the study of Marks et al. (1979), Lewis et al. (1988), Rup et al (2009) and Owais et al. (2011) in which there was significant association between education of mothers and immunization status of children. Relating to the perception of mothers about immunization of children, there was also strong significant association effect on immunization status of children (p<0.05). The poor perception of mother had a 4.22 times higher chance of incompletely immunized children than those with good perception. Therefore, the perception of mothers' factors had an influence on immunization status of children. The finding was consistent with Sanou et al. (2009) who showed that the perception of the mothers towards the immunization services had significant association with the immunization status of children.

The result from multiple logistic regression analysis indicated that education and perception factors assumed to influence immunization status of children among low education and poor perception of mothers in Samutsakorn Province were statistically and significantly related to incomplete immunization status of children.

In conclusion, one can say that the hypotheses of this study were almost supported except age of mother, occupation of mothers and monthly income, knowledge of mothers and source of information. These factors were found not to have any effect on immunization status of children when controlling any other independent variables.

In order to make high EPI coverage and to ensure complete immunization the involved organizations have to emphasize health education and improve maternal and child health activities in the district, especially in migrant group. It is necessary to strengthen the activities of outreach mobile clinic. The visual aids such as posters, leaflets should be introduced and explained to the mothers in order to encourage them to have clear understanding of EPI program. According to the finding, younger mothers' age had higher percentage of incomplete immunization; therefore, the family planning services for migrants should be emphasized to prevent teenage pregnancy.

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