

FACTORS ASSOCIATED WITH IMMUNIZATION STATUS AMONG MYANMAR MIGRANT CHILDREN AGED 1-2 YEARS IN TAK PROVINCE, THAILAND

Daraporn Prakunwisit, Chitladda Areesantichai*

College of Public Health Sciences, Chulalongkorn University, Bangkok 10330, Thailand

ABSTRACT:

Immunization is a successful and cost-effective method to decrease child mortality and morbidity caused by severe diseases. United Nations General Assembly Special Session (UNGASS) goals by 2010 were 90% of under 1 year of age children fully immunized at the national level, with at least 80% coverage in every district. According to Tak Provincial Health Office data, there were about 200,000 Myanmar migrants living in four Thai-Myanmar border areas. Occurrence of vaccine-preventable disease was reported, and immunization coverage was low in children under 1 year old who lived in these areas. The was to characterize the associations of maternal knowledge, and of health services regarding immunization, with immunization status of Myanmar migrant children aged 1-2 years in Tak. A cross-sectional study was conducted, using a structured questionnaire and interviewing 386 Myanmar migrant mothers living in the four Thai-Myanmar border areas mentioned above. The overall coverage of under 1 year routine immunization was 56.7%. The overall Expanded Program on Immunization (EPI) coverage among Myanmar migrant age 1-2 years living in the study area was lower than the average EPI coverage of Thai children in the same area. Level of knowledge regarding immunization, source of information, content of information, language barriers to receiving information, health education and its content during immunization service were associated with immunization status of the children. Local health service providers and related agencies need to be aware of appropriate approaches and services to different subpopulations. Collaboration among government, private agencies, communities, and voluntary sectors is needed to strengthen the Expand Program on Immunization in the migrant community.

Keywords: Immunization status, Myanmar migrant, Maternal knowledge, Thailand- Myanmar border

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INTRODUCTION

Immunization campaigns are one of the most successful and cost-effective public health interventions available to prevent children from vaccine preventable disease. The under 1 year immunization includes the antigen to prevent from the six preventable diseases; tuberculosis, poliomyelitis, diphtheria, whooping cough, neonatal tetanus, measles and hepatitis B [1]. Some experts mentioned immunization has saved in the vicinity of twenty million lives in the last two decades and it is

a fundamental human right which governments having acknowledged by signing a succession of treaties, including the 1989 United Nation (UN) convention on the Rights of the Child [2, 3]. Strengthening routine immunization services, especially in countries with the greatest number of under vaccinated children, should be a global priority to help achieve the fourth Millennium Development Goal of reducing mortality among children aged <5 years by two thirds from 1990 to 2011 [4]. However, one fifth of the world's children, especially those in low-income countries, still were not fully vaccinated during the first year of life due to immunization systems, family characteristics,

* Correspondence to: Chitladda Areesantichai
E-mail: chitlada.a@chula.ac.th

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parental attitudes and knowledge as well as limitations in immunization-related communication and information [5, 6].

The overall coverage for children immunization in Thailand is higher than most of the countries in South East Asia Region (SEAR) according to World Health Organization (WHO) and United Nations Children's Fund (UNICEF) coverage estimation [4-7]. Albeit the remarkable improvement in immunization, the immunization coverage in Myanmar is declining compared to Thailand. Thailand coverage presented over 90% for all types of immunization while Myanmar presented 93% and 90% of BCG and OPV respectively but the rest immunization coverage were lower than 90% [8].

According to Annual Committee for Coordination of Services to Displaced Persons in Thailand health information report of Thai-Myanmar Border, the 2006 border-wide under 5 mortality rate was 28% which is higher than Thailand's rate of 21 and much lower than Myanmar's rate of 105 (per 1000 live births) [9]. Incomplete vaccination has contributed to the morbidity of vaccine preventable diseases among Myanmar migrant population especially in Tak province [10]. Although there is a growing concern about children immunization status, there has been little research into understanding the reasons why mothers do not bring their children to receive immunization or why a child did not get full immunization in the context of Myanmar migrants.

Thailand is one of the most successful and stable economies in south-east Asia and thereby draws tens of thousands of migrant workers from Myanmar every year. More than 2 million people from Myanmar live and work, predominantly illegally, in Thailand [11]. It is estimated that only 10% of migrants are legally registered in Thailand and most do not use the Thai health services; as a result, children of migrant workers rarely receive immunizations [10]. The Thai Government maintains immunization records for all Thai children but not for migrant children living on the Myanmar border. The Thai district health authorities attributed this to difficulties completing immunization courses due to the mobile nature of migrants. [10].

Among the provinces along Thai-Myanmar border, Tak and Ranong provinces had received most of the migrant workers from Myanmar. In 2011, migrants contributed 37 % of Tak province population and 97% of migrants were living in four western district; Phop Pra, Mae Sot, Mae Ra Mad and Tha Song Yang [12]. In 2012, Project for Local Empowerment (PLE) base line survey conducted in

four border districts of Tak-Myanmar presented only 53.7% of Burmese migrant children age 1-2 years were fully immunized according to Thailand national immunization schedule (for children under 1 year) compare to 95.2% of the Thai Children [13]. This revealed a big gap between global immunization coverage goal and the real migrant immunization status some specific area. This study aimed to describe the association between maternal knowledge and health services regarding immunization and immunization status of Myanmar migrant children aged 1-2 years in order to identify areas of improvement through strengthening maternal knowledge regarding immunization in line with immunization service enhancement.

MATERIALS AND METHODS

Study design

This is a cross-sectional study to understand the association of maternal knowledge and health service to immunization status of Myanmar migrant children aged 1-2 years in Tak, Thailand.

Study population and sample

Tak Provincial Health Office survey in October 2011 reported 2,814 migrant children under one year of age during survey period who will be age 1-2 years by the time of study [12]. Thus, number of migrants mothers with a child aged 1-2 years old can be assumed from the number of migrant children with mentioned age under the assumption of one mother would have one child aged 1-2 years in a year. The latest Infant Mortality Rate (IMR) in Thailand among non Thai language user was 23.0 per 1,000 live birth [14]. Accordingly, estimated migrants children ages 1-2 years of four border district in Tak during the study period would be 2,750. Sample size from each district was proportionately selected according to the population size in different districts 386 samples were included in the study.

Measurement tool

The questionnaire consists of four main parts; socio-demographic characteristic, knowledge of mother regarding immunization, health service regarding immunization. Knowledge part was adjusted from a study of maternal knowledge and attitude of children aged 1-2 years in Myanmar done by Khant Soe with 0.73 of validity and reviewed by three experts in aspect of content validity resulted 0.87 Index of Objective Congruence (IOC). Thirty respondents who were comparable to the target respondents were interview, the Cronbach's alpha resulted 0.71 of reliability. Myanmar migrant mother who has a child age 1-2 years living at least

Table 1 Socio-demographic characteristics of the study population in Tak Province, Thailand

Variables	District				Total 386 cases n (%)
	Mae Sot 156 cases n (%)	Phop Pra 137 cases n (%)	Mae Ra Mad 20 cases n (%)	Ta Song Yang 73 cases n (%)	
Ethnicity					
Burmese	117 (75)	127 (92.7)	1 (5.0)	1 (1.4)	246 (63.7)
Karen	37 (23.7)	8 (5.8)	18 (90)	72 (98.6)	135 (35.0)
Other	2 (1.3)	2 (1.5)	1 (5.0)	0 (0.0)	5 (1.3)
Years living in the study area					
Less than 3 years	33 (21.2)	36 (26.3)	6 (30.0)	7 (9.6)	82 (21.2)
3-7 years	52 (33.3)	70 (51.1)	9 (45.5)	8 (11.0)	139 (36.0)
8-12 years	34 (21.8)	25 (18.2)	4 (20.0)	11 (15.1)	74 (19.2)
13-17 years	8 (5.1)	6 (3.6)	1 (5.0)	10 (13.7)	24 (6.2)
18-22 years	19 (12.2)	1 (0.7)	0 (0.0)	13 (17.8)	33 (8.5)
More than 22 years	10 (6.4)	0 (0.0)	0 (0.0)	24 (32.9)	34 (8.8)
Religion					
Buddhism	109 (69.9)	128 (93.4)	20 (100.0)	56 (76.7)	313 (81.1)
Non Buddhism	47 (30.1)	9 (6.6)	0 (00)	17 (23.3)	73 (18.9)
Education					
Illiterate	53 (34.0)	21 (15.3)	12 (60.0)	40 (54.8)	126 (32.6)
Primary school	70 (44.9)	93 (67.9)	8 (40.0)	28 (38.4)	199 (51.6)
Middle school	29 (18.6)	15 (10.9)	0 (0.0)	4 (5.5)	48 (12.4)
Above middle school	4 (2.6)	8 (5.8)	0 (0.0)	1 (1.4)	13 (3.4)
Occupation					
Jobless	88 (56.4)	89 (65.0)	2 (10.0)	47 (64.4)	226 (58.5)
House maid	11 (7.1)	4 (2.9)	0 (0.0)	21 (28.8)	36 (9.3)
Contractual worker	32 (20.5)	1 (0.7)	2 (10.0)	0 (0.0)	35 (9.1)
Plantation worker	14 (9.0)	36 (26.3)	16 (80.0)	5 (6.8)	71 (18.4)
Factory worker	9 (5.8)	6 (4.4)	0 (0.0)	0 (0.0)	15 (3.9)
Selling	2 (1.3)	1 (0.7)	0 (0.0)	0 (0.0)	3 (0.8)
Family income (Baht)					
<2000	7 (4.5)	3 (2.2)	0 (0.0)	6 (8.2)	16 (4.1)
2000-3999	44 (28.2)	57 (41.6)	19 (95.0)	32 (43.8)	152 (39.4)
4000-5999	46 (29.5)	49 (35.8)	1 (5.0)	20 (27.4)	116 (30.1)
6000-7999	35 (22.4)	21 (15.3)	0 (0.0)	6 (8.2)	62 (16.1)
8000-9999	14 (9.0)	5 (3.6)	0 (0.0)	5 (6.8)	24 (6.2)
≥10000	10 (6.4)	2 (1.5)	0 (0.0)	4 (5.5)	16 (4.1)
Place of delivery					
Home based	17 (10.9)	86 (62.8)	10 (50.0)	31 (42.5)	144 (37.3)
Health facility based	139 (89.1)	51 (37.2)	10 (50.0)	42 (57.5)	242 (62.7)

six months in study area were interviewed at home about their knowledge and their experiences on health service (information regarding immunization service, provider practice, waiting time and availability of outreach clinic) relating to immunization.

Data collection

Tak Provincial and District Health Office was informed about the study as well as inclusion and exclusion criteria of respondents. Local health centers were coordinated for the list participants and Border Health Worker (BHWs) was trained for questionnaire structure, meaning of questions and interviewing skill before conducting the interviewing at respondent's home.

Data analysis

Descriptive statistic was used for describing the general characteristic and chi-square was used to examine the association of socio-demographic, maternal knowledge on immunization and health service to an immunization status with significant level of p -value < 0.05.

Ethical consideration

The Ethics Review Committee for Research Involving Human Research Subjects, Health Science group, Chulalongkorn University approved this study (COA no. 059/2013).

RESULTS

Respondents were 386 Myanmar migrant mothers

Table 2 Level of knowledge regarding immunization by district

Variables	District				Total 386 cases n (%)
	Mae Sot 156 cases	Phop Pra 137 cases	Mae Ra Mad 20 cases	Ta Song Yang 73 cases	
	n (%)	n (%)	n (%)	n (%)	
Low (less than 9)	63 (40.4)	46 (33.6)	20 (100.0)	19 (26.0)	148 (38.3)
Moderate (9-12)	68 (43.6)	76 (55.5)	0 (0.0)	39 (53.5)	183 (47.5)
High (more than 13)	25 (16.0)	15 (10.9)	0 (0.0)	15 (20.5)	55 (14.2)

Table 3 Level of knowledge regarding immunization by immunization status of the children

Variables	Immunization status		χ^2	p-value
	Complete 219 cases	Incomplete 167 cases		
	n (%)	n (%)		
Knowledge regarding immunization				
Low (less than 9)	69 (31.5)	79 (47.3)	32.661	<0.001**
Moderate (9-12)	100 (45.7)	83 (49.7)		
High (more than 13)	50 (22.8)	5 (3.0)		

*Significant at $p < 0.05$; ** Significant at $p < 0.001$

Table 4 Relationship between maternal knowledge regarding immunization and health services and immunization status of children 1-2 years

Variables	Immunization status		χ^2	p-value
	Complete 219 Cases	Incomplete 167 Cases		
	n (%)	n (%)		
Source of information				
Loud speaker	26 (16.9)	11 (8.8)	3.919	0.048*
Village leader	13 (8.4)	9 (7.2)	0.146	0.702
Neighbor	51 (48.6)	54 (51.4)	2.989	0.084
Information board	11 (7.1)	7 (5.6)	0.272	0.602
Home visit by health provider	112 (72.7)	92 (73.6)	0.027	0.870
Information content				
Vaccine preventable Disease	65 (42.2)	69 (55.2)	4.666	0.031*
Side effect	102 (66.2)	55 (44.0)	13.861	<0.001**
Timing of vaccination	80 (51.9)	67 (53.6)	0.076	0.783
Consequences of un-vaccination	28 (18.2)	16 (12.8)	1.504	0.220
Place of vaccination	50 (32.5)	50 (40.0)	1.702	0.192
Language barriers for receiving information				
Used to received health education	165 (75.3)	108 (64.7)	5.212	0.022*
Health education content (273 cases)				
Immunization advantages	85 (51.5)	55 (50.9)	0.009	0.924
Consequences due to un-vaccinated	38 (23.0)	29 (26.9)	0.515	0.473
Side effect of vaccination	120 (72.7)	55 (50.9)	13.483	<0.001**
Health education content - (273 cases)				
Immunization advantages	85 (51.5)	55 (50.9)	0.009	0.924
Consequences due to un-vaccinated	38 (23.0)	29 (26.9)	0.515	0.473
Side effect of vaccination	120 (72.7)	55 (50.9)	13.483	<0.001**
Vaccination schedule	46 (27.9)	28 (25.9)	0.126	0.723
Received health education during last service (246 from 386 mothers received health education during last service)				
Duration of health education during last service (246 cases)	147 (67.1)	99 (59.3)	2.521	0.112
Duration of health education during last service (246 cases)				
Less than 10 mins.	72 (49.0)	21 (21.2)		
10-30 mins.	74 (50.3)	72 (72.7)	23.079	<0.001**
More than 30 mins.	1 (0.7)	6 (6.1)		

*Significant at $p < 0.05$; ** Significant at $p < 0.001$

living in Mae Sot (n=157), Phop Pra (n=137), Mae Ra Mad (n=20) and Ta Song Yang (n=73). Age of mothers ranged from 19 to 47 years with the mean of 29 years. All respondent has been live in community at least for 6 months and 36.0 % of them have been stayed in community for 3-7 years. Majority of respondents in Mae Sot and Phop Pra were Burmese but Mae Ra Mad and Ta Song Yang was Karen. The result showed 51.6% studied in primary school as the highest level of education and 32.6% were illiterate. Most of respondents (58.5%) especially in Mae Sot and Phop Pra district were unemployed. Immunization records were taken from 218 (56.5%) boys and 168 (43.5%) girls that aged between 1 to 2 years. Majority of them (62.7%) attended health facility based delivery and the rest attended home based delivery. Mae Sot has the highest percentage of health facilities based delivery (89.1%). Phop Pra showed the lowest percentage at 37.2%. None of the mothers have universal coverage insurance (Table 1).

Table 2 showed maternal level of knowledge regarding of immunization by district. Most of mothers (45.7%) had moderate level of knowledge regarding immunization but Mae Ra Mad district presented 100% of low knowledge which was different from another three district with majority on mother's knowledge were at moderate level. (Table 2) Among complete immunization group, there were 45.7% of mothers with moderate level of knowledge regarding immunization and 31.5% of mother with low level of knowledge and 22.8% of mother with high knowledge (Table 3). Table 4 presented significant association between immunization status and level of knowledge regarding immunization ($p < 0.001$). There was an association between immunization status and source of information ($p < 0.05$) as well as its content ($p < 0.001$). Among complete immunization group, there were 66.2% of mother who received information content related to vaccine side effect and those received information content related to vaccine side effect more likely to have completely immunized children. In addition among completely immunization group, there were only 18.7% of mothers with language barriers for receiving information regarding immunization compare to 81.3% mothers who had no language barriers. This revealed the significant association language barriers of mother and immunization status of children ($p < 0.05$). There was a significant association between immunization status and receiving information during the service content of the health education provided at the service ($p < 0.05$). Among a group of completely immunization, there were 75.3% of mothers who received health education during the service. Among complete

immunization group, there were 72.7% of mothers who received information about side effect of vaccination during the service.

DISCUSSION

Complete immunization could prevent children from severe illnesses which can cause amputation of an arm or leg, paralysis of limbs, hearing loss, convulsions, brain damage and death but it is estimated that 10% of migrants in Thailand are legally registered and most did not use the Thai health services; as a result, children of migrant workers rarely receive immunizations [15]. According to this study result, maternal knowledge was related to children immunization status, table 3 showed that among a group of complete immunization, moderate level of knowledge was a major group except Mae Ra Mad that presented 100% of mothers had low level of knowledge. The study showed an association between knowledge and immunization status ($p < 0.00$) which similar to a study in Vientiane province, Lao PDR by Siharath that found a relationship between mother's knowledge and immunization status of children as well as a result of another study among Myanmar migrants in Mahachai, Thailand also reported the association between knowledge of the mother and incomplete immunization of children [16, 17]. The low level of knowledge was responsible for up to 95.5% of incomplete immunization while the moderate and high level knowledge caused 4.5% of incomplete immunizations [16].

This study revealed an association between information content regarding vaccine preventable disease and immunization status ($p < 0.05$). This result conform to the results of a study in Lao PDR that mentioned knowledge regarding to vaccine preventable diseases increased the chance of fully immunized children ($p < 0.01$) [18]. In addition, Information on side effects of vaccination was associated with immunization status ($p < 0.001$). This similar to the result of a qualitative study which presented those side effects due to immunization were a barrier to immunization among Myanmar migrant children in Tak province [10]. Another study by Wortley [19] also reported that unpleasant experiences, concerns of vaccine safety may lead clients to postpone or even prevents some parents from receiving needed vaccinations to their children.

The study result showed association between language barriers of mother and immunization status of children ($p < 0.05$) which conform to a study result in Thailand reported by PHAMIT in 2005 that language and cultural barriers were factors that limited migrants' access to health services [17]. Information provider should aware of providing

messaging in local migrant language since language barrier can be one of an obstacle for migrants to received effective information.

In addition, duration of health education during the service time was also associate with children's immunization status ($p < 0.001$) the appropriate service time should be considered not to be too long or too short.

Local health service providers and related sectors in the study areas should promote health facilities based delivery especially in Phop Pra district. Information providing to migrant mothers should be prepared in local migrant language. Health education during immunization is very important especially message related to the side effects. Appropriate duration of health education should be considered. Outreach clinic should be organized in low immunization coverage area at a time that migrant mothers are convenient with more frequencies in order to minimize missed opportunity due to distance and inconvenience timing.

In-depth interview or focus group discussion should be perform in future among mothers with incomplete immunized children in order to know more detail such as barriers of receiving health education, role and responsibilities area of both government and non government health provider should be assess prior implementation. Community health volunteer role could be additional included and examined by further study to confine the whole aspect that may influence immunization status. Similar studies should be conducted among migrants in other areas or in different ages (< 5 or school aged) to draw out more representative samples and carry out to determine the most appropriate methods to increase immunization coverage of children.

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