KNOWLEDGE AND PERCEPTION OF MOTHERS ABOUT IMMUNIZATION OF CHILDREN UNDER 3 YEARS OF AGE IN THE SAYTHANY DISTRICT, VIENTIANE LAO P.D.R.

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ABSTRACT

A cross-sectional study was conducted on knowledge, perception and sources of information on immunization status for mothers with children under three years of age, aged 19 to 45 years old with mean age about 27 years in Xaythany district, Vientiane capital, Lao PDR. A total of 108 mothers who had children less than 3 years old were chosen for this study from 3 health centers and 10 villages.

A structured questionnaire was used to interview the respondents by visiting the households. Descriptive statistics were used to describe knowledge level and perception, and other independent variables while the associations between these factors were determined by using the Chi-square test.

The results of the study found that about (90%) of the respondent's children were vaccinated. Most children received their vaccination from the mobile services (57.41%). The total immunization coverage among children under three years of age among the group of incomplete immunization, was BCG(79%), OPV1(48%), OPV2(31%), OPV3(1.8%), DPT-HepB1(46%), DPT-HepB2(31%), DPT-HepB3(1.85%), and Measles vaccine coverage(9%). The results also indicated that higher maternal education level, lower number of children, younger age, and vaccination at heath center correlated with higher children's immunization status family income and mothers' occupation were not correlated.

Regarding the knowledge of mother on Expended Program Immunization diseases and immunization programs. Roughly-equal number of mother about on-third in each case-had good, fair, and poor levels of knowledge about immunization a difference in median score of perception on susceptibility, severity, barrier, and the overall perception scores were significantly different between the complete and incomplete immunization groups. Sources of information on immunization and side effects of vaccines were mostly received by the respondents from health centers and health volunteers.

KEYWORDS: KNOWLEDGE/ PERCEPTION/ SOURCES INFORMATION.

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LIST OF ABBREVIATIONS

BCG	:	Bacillus Calmette Guerin
CMC	:	Commission for Mother and Child
DPT-HepB	:	Diphtheria, Pertussis, Tetanus and Hepatitis type B
OPV	:	Oral Polio Vaccine
MsV	:	Measles Vaccine
EPI	:	Expended Program on Immunization
JICA	:	Japan International Co-operation Agency
Kip	:	Lao's Currency unit
Lao PDR	:	Lao People Democratic Republic
LB	:	Live Births
MMR	:	Maternal Mortality Rate
MOH	:	Ministry of Health
PHC	:	Primary Health Care
SD	:	Standard Deviation
Unicef	:	United Nation Children's Fund
WHO	:	World Health Organization
DCMC	:	District Commission for Mother & Child
PCMC	:	Provincial Commission of Mother & Child
VCMC	:	Village Commission for Mother & Child.
VHC	:	Village Health Volunteer

CHAPTER 1
INTRODUCTION

1.1 Rationale and Justification

The health of the people is really the foundation upon which all their happiness and all their power as a state depend

On may 14, 1769, Edward Jenner, a British Physician, performed an experiment that would revolutionize public health .He mad two small cuts on the arm of an eight – year- old boy , James Phipps , and insert material taken form a sore on a woman infected with cowpox , a mild diseases common to daily workers . Six weeks later , Jenner inject the boy with fluid from a smallpox lesion , and James did not contract smallpox . With did experiment , Jenner discovered that inoculation of a person with relatively harmless disease material could protect the person from a more dangerous disease . He call this process “Vaccination” derived from the Latin name of cowpox vaccinia.

Immunization is the most effective tool which greatly prevent and reduce incidence and severity of common seven diseases include of Whooping cough, Diphtheria, Tetanus, Hepatitis B, Tuberculosis, Poliomyelitis, Measles, which are together responsible as leading cause of all death in children under age of five. Moreover, immunization recognized as one of most powerful and cost effective prevention measures against immunizable diseases.(1)

Global situation on Expended Program on Immunization: Based on the latest World Health Organization (WHO)/UNICEF global estimates (for 2005), vaccine coverage for three doses of both diphtheria-tetanus-pertussis (DTP3) and polio vaccine remains at virtually the same level as previous years: 78%. Global measles vaccine coverage stands at 77%. An estimated 28 million infants worldwide have not

been vaccinated with DTP3 in 2005. Seventy-five percent of these children live in ten countries (India, Nigeria, China, Indonesia, Pakistan, Ethiopia, Demographic Republic of Congo, Sudan, Bangladesh and Philippines). Ninety percent or more immunization coverage with DTP3 was achieved in more than 100 countries for the first time: 112 countries (2005), compared to 100 (2004).

Two regions, the Americas and Europe, maintained over 90% immunization coverage, with the Western Pacific reaching nearly that level (87%). For the first time, the Eastern Mediterranean Region achieved over 80% immunization coverage (from 78% in 2004 to 82% in 2005). Countries reaching over 80% DTP3 coverage numbered 151 in 2005, up from 143 countries in 2004. Hepatitis B vaccine was introduced throughout 158 WHO Member States by the end of 2005, up from 153 in 2004. Global coverage is estimated at 55% and is as high as 86% in the Americas. This contrasts with 27% in the South-East Asian Region and 39% in the African Region. (2)

Estimates of vaccine-preventable deaths and recommended vaccines: Mortality estimates are helpful in prioritizing public health interventions. In the case of VPDs, these estimates indicate the number of deaths that could be averted if existing vaccines were used to their fullest potential. Among diseases for which vaccines are recommended through WHO's Expanded Program on Immunization (EPI), WHO estimates that in 2002 fewer than 1000 children aged under 5 years died from polio, 4000 from diphtheria, 15 000 from yellow fever, 198 000 children died from tetanus, 294 000 from pertussis, 386 000 from *Haemophilus influenzae* type b (Hib) and 540 000 from measles.2 In addition, 600 000 adult deaths in 2002 were attributed to hepatitis B infection. Furthermore, there are diseases for which vaccines exist but are not universally recommended by WHO. In 2002, the greatest numbers of child deaths from such diseases were attributed to rotavirus (402 000) and pneumococcal disease (716 000) (*Fig. 1*), while 240 000 adult deaths were attributed to human papillomavirus infections. During this year, 1.9 million (76%) of the 2.5 million VPD child deaths worldwide occurred in Africa and South- East Asia (*Table 1*). Vaccines for measles, polio, diphtheria, pertussis and tetanus have been part of WHO's

recommended immunization series since the inception of EPI in 1974. WHO recommended the inclusion of yellow fever vaccine in routine infant immunization in countries at-risk for yellow fever and hepatitis B vaccine globally, in 1988 and 1992, respectively. In 1998, WHO recommended that Hib vaccine should be included in routine infant immunization, as appropriate to national capacities and priorities. More recently, the WHO Immunization Strategic Advisory Group of Experts recommended global implementation of Hib vaccination(2)

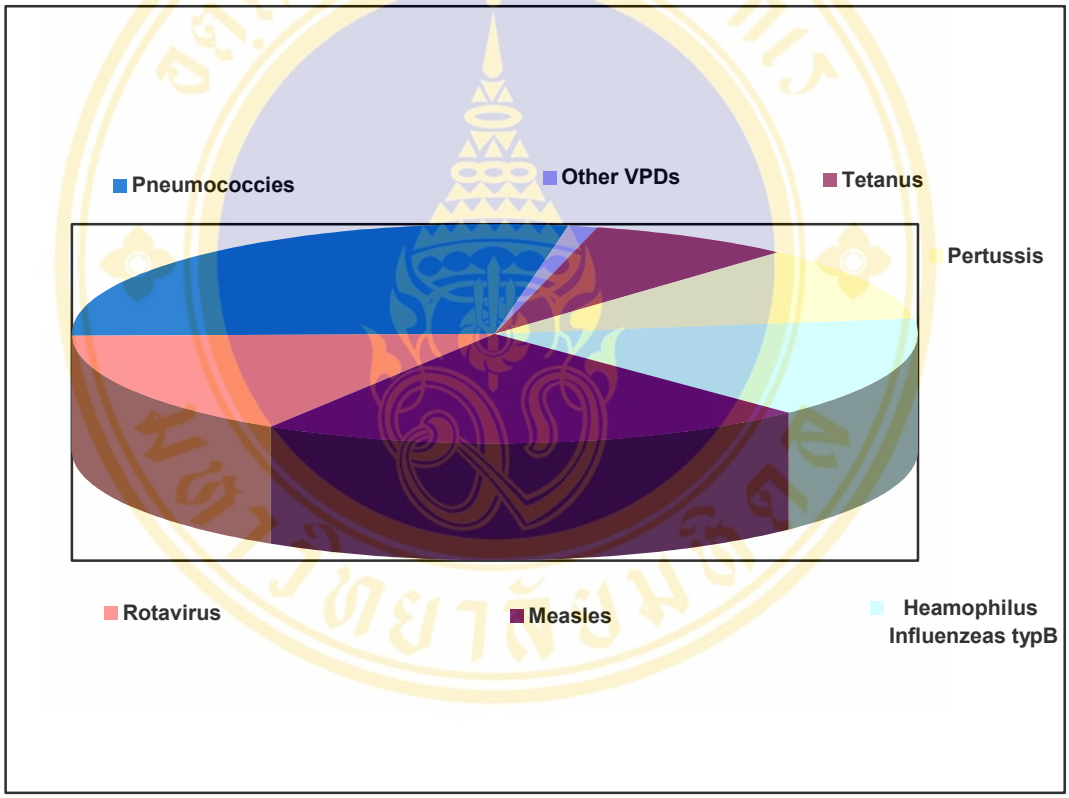

Figure 1 Causes of 25 million child death out of 10.5 million child deaths globally, 2002

Table 1 Regional distribution of vaccine-preventable diseases (VPD) child deaths (2002)

WHO region	VPD child deaths	DPT1 coverage	No of unvaccinated infants	DPT3 coverage	DPT1 minus DPT3	No of incomplete vaccinated infants
Africa	1,113	78	5,607	66	12	3,048
Americas	44	96	562	92	4	659
Eastern Mediterranean	353	86	1.948	78	7	1,186
European	32	96	458	94	2	158
South-East Asia	757	77	8.082	69	8	2.959
Western Pacific	252	96	1.051	90	6	1.302
Total	2,500	86	17,908	78	8	9,312

Unless robust evidence exists of low disease burden or overwhelming impediments to implementation.4 A 7- valent pneumococcal conjugate vaccine for infants was licensed in the United States in 2000 and is currently licensed in approximately 75 countries, including several developing countries. However, this vaccine does not contain serotypes 1 and 5, which are responsible for a sizeable proportion of severe disease in many developing countries. Vaccines containing these and additional serotypes are under development. Where the control of invasive pneumococcal disease is considered a public health priority, and where the vaccine serotypes are shown to match the most important local serotypes, WHO recommends that the conjugate vaccine should be considered for inclusion in childhood immunization programmes. A rotavirus vaccine has been licensed in the United States since February 2006; another is currently licensed in more than 36 countries and has received a positive opinion by the European Agency for the Evaluation of Medicinal

Products, which will allow registration of the vaccine in countries within the European Union. Data on the efficacy of this vaccine in children in developing countries in Africa and Asia and on efficacy when co-administered with oral polio vaccine are required before a recommendation for global use of the vaccine can be made. Human papillomavirus vaccine is currently under review by the United States Food and Drug Administration for licensure in the United States.(2)

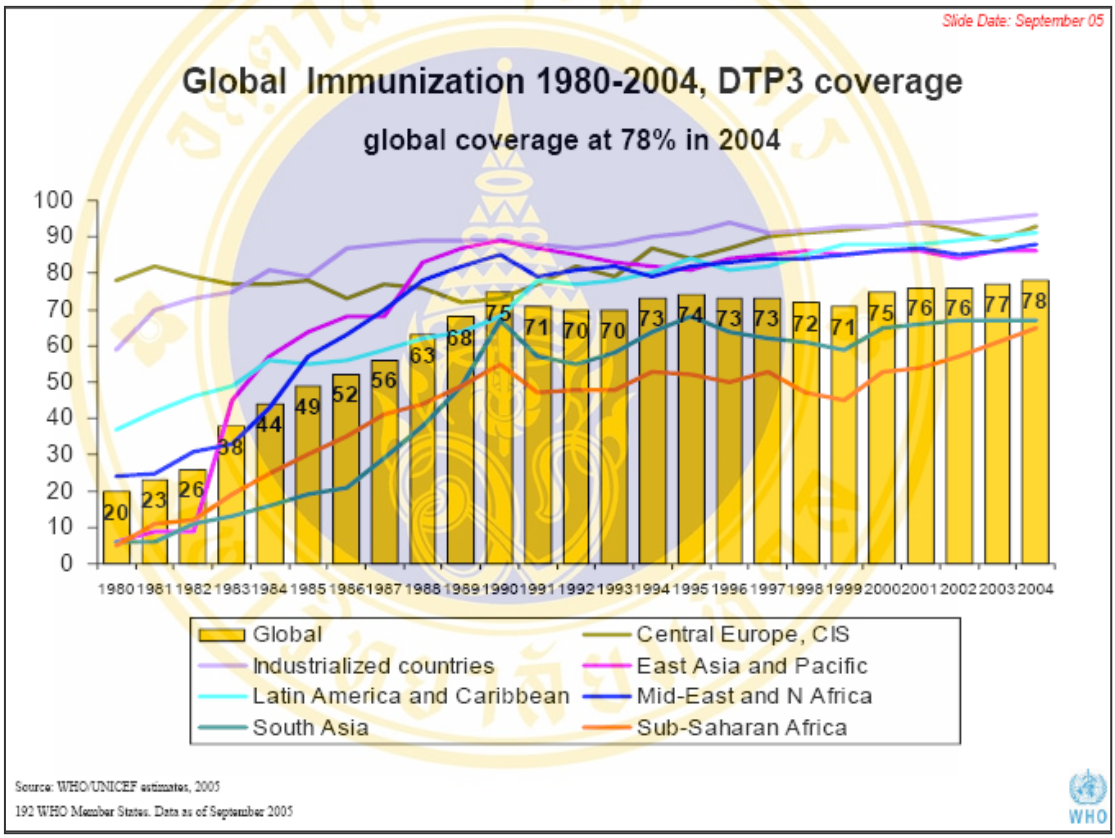

Figure 2 Global Immunization 1980-2004, DTP3 coverage global coverage at 78% in 2004

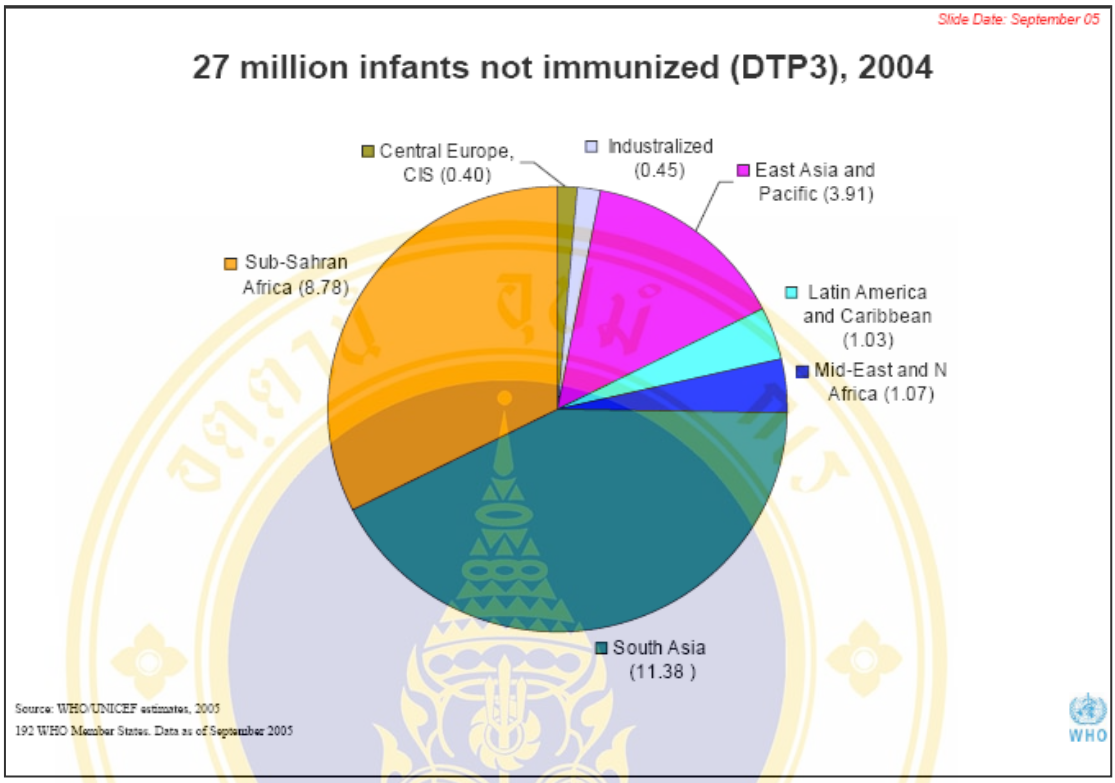

Figure 3 27 million infants not immunized (DTP3), 2004

1.2 BACKGROUND INFORMATION ON LAO PDR

1.2.1 COUNTRY PROFILE

The formal name of Lao is Lao People's Democratic Republic (Lao PDR).The country is divided in 17 provinces and 140 districts and 10,558 villages(4)

1.2.2 GEOGRAPHY AND CLIMATE

Lao PDR is land -locked country locates in South Asia with and area of 236,800 squares kilometers, stretching more than 1,700 km from the North of South and between 100 km from the East to the West. The Lao PDR has eastern border of 1,957 km with socialist Republic of Vietnam, and Western border of 1,730 km with the Kingdom of Thailand ,a Southern border of 492 km the Kingdom of Cambodia , and a Northern border of 416 km with the People's Republic of China and the Union of Burma (See map, appendix page 100) A bout two thirds of the country is the

mountains pose difficultly for transportation and complicate development . The Loa PDR is a tropical country which is affected by monsoon rain from May to September.

1.2.3 POPULATIONS

The population of Lao PDR in 2005:5, 621, 982.and project to grow at2.1 % per year. Population density remains of the lowest in the region, with 24 persons per square kilometer. Vientiane the capital city has population 698,318. And a modest population density of 178 per square kilometer. the province highest number of inhabitants are Savannakhet province 825,902 in the center and Champasack 607,370 in the south and Luangprabang 407,039 in the north two thirds of the of the population live in rural areas. The population lives in 685,230 households with an average of 5.9 members. The population of Lao PDR is ethnically divers. Up to 68 ethnics groups have been identified inhabiting the country, which can be roughly categorized in tree main groups as follow. (5)

1) **Lao Loum**(Lao lender),

Who occupy the low land plain and the Mekong rivervalley and constitute two thirds of the total population(68%)

2) **Lao Theung** (Mainlanders),

Who occupy the mountain slopes comprising 22%ofthe population, are thought to have been the first inhabitants of Laos, are aboriginal origin , and speak the languages of the Mon-Khmer family.

3) **Lao Soung** (Mong people),

Who occupy the high mountain top over 1,000 meters(10%) original from Burma ,Tibet or China , speak language of the Tibeto-Burma or Miao-Yao families constitute about 10% of the total population, and carry indigenous linguistic tradition in the remote and highly mobile settlements. Lao all speak and write the same language , which has been a crucial factor contributing to their strong national identity. Model Lao language has several dialect. English and French used business.

1.2.4 EDUCATIONS

The level education of Lao PDR is still very low .According 2005 census, 73% literacy of the total population aged 17-47 years and over was either enrolled in or had completed some from education. The female population is characterize by a low level of education than the male population.(6). (Female 254,067, literacy 88.1%. Mal 249,894, literacy 95.3%).

1.2.5 RELIGIONS

Religious behavior is a synthesis of Theravada Buddhism with remnant Brahmanistic beliefs and rituals and a strong underpinning of Indigenous animism. Buddhism now fully recognize as the main religion of the county. Despite the importance of Buddhism of Lao Loum and some Lao Theung group, animism beliefs era widespread among all segments of the Lao population. The beliefs in phi (Spirits) color the relationship of many Lao with nature and community and provides one explanation for of illness and disease. Most of the

Lao Theung and Mong are animists . In rural areas , where access to health care is limited , when people are likely to turn to the world of the spirit dealing with day to day problem and hardship . Since illness frequently attribute the action of evil spirit or to soul loss , people still seek care spirit practitioners (Morphi) , and several kind of practitioners specialize in their treatment . The spirit practitioners are respected as having particular abilities to exorcise malevolence spirit from sick person or keep them out of the house . There for, when somebody is sick in the family , instead of seeking medical care or going to the hospital , the spirit practitioners are call to carry out curing rites .

1.2.6 Economic indicators

According to the 1990 World development report, in 1989 the Lao PDR was the then poorest country in the world , with GNP per capital of US$ 180. Real Gross Domestic Produce (GDP) growth rate have been volatile over the year and GNP has growth little, in 2005 the GDP per capital 450 US$. (Ministry of foreign2006)(7)

1.2.7 HEALTH INFRASTRUCTURES

In 1975 when the government of Loa PDR came to power, it inherited a national health infrastructure essentially compose of urban an semi-urban hospital , mainly concentrated in Vientiane plain (the capital areas) and providing almost exclusively curative service to privileged population accounting for lest than 20 percent of the national.

More than 10 year later, despite quantitative improvements, the quantity of the health care system remain low . Although a number of new personal have been train and more facilities have been built , the high under mortality rate (estimated at 179/1000 live birth) but now estimated 70/1000 live birth (National statistic 2006)(5) and the live expectancy at birth (59 years) an till now still (63 years) characterize the county as having on poorest health situation in the world .

1.2.8 HEALTHS PERSONAL

The number of medical personal has been steadily in creasing since 1990. in 2006, the department of Organization and Human Resource Development of the Ministry of Health registered 1,722 doctors , 2,621 medical assistances and 8,752 nurses . The number of the doctor was 1 per 3,269 inhabitants in 2006. however these figures do not reflect the various imbalances or inadequacies in human resources within the health system . Most personal are concentrated in the Vientiane area , where the population per physician ratio of 1,400/person is more than ten times lower than in the provinces.(Ministry of Health)(8)

1.2.9 MINISTRY OF HEALTH STRUCTURE

The Lao Ministry of Health is leader by the Minister and two Vice-Ministers, who each share specific directions . The structure of MOH is essentially vertical in nature , where is the administration of health program is often centrally controlled . The MOH divided six department , four Institutes ,four Health Centers and one Medical council . Health planning and budgeting is done primarily at the provincial and district levels . Provincial expenditures are final largely by a contribution from the central government combined with a little bit of the local revenues . Public health

services are under responsibility of the provincial health Department , which guides and supervises the activities of the District Health Department . Both the provincial and district health department are divided into different unit , such administration , Organization and Human Resource Development , Planning , Finance and Statistics, Hygiene and Prevention Department , Mother and Child Health Center , Malaria , Tuberculosis and Leprosy . Personal in these unit are responsible for supervision of the district health department and other lower levels of health services . Since 2006 , to simplify administration and reduce overlapping responsibilities, the doctor of provincial health department also assumes the position of provincial hospital director . This apply also district health department .(8)

1.2.10 HEALTH CARE FACILITIES

The Lao health care system consists of 4 central hospitals, all located in Vientiane Capital (750 beds), 4 part hospitals, 12 provincial hospitals (1,848 beds) and 127 district hospitals (2,823 beds), 739 dispensaries / health service post, working 705 health centers (3,448 beds) villages health worker have been trained in the hold counties (13,970 persons) to provided basic health services at villages level

In reality, most health services / dispensaries are unsafe, unequipped, and unsupplied. The physical condition off the facilities is poor, with clean water , latrines unavailable as most of health post , and electricity unavailable 60% district hospital . Give that the present orientation of hospital is almost totally toward curative care , very few resource remain for health facility support services below district level .The number of health personal , particularly nurse , who work outside the public health sector , is reported to be very high . Yet ,the majority of the dispensaries and health post are underutilize . People prefer stay at home or, when they can afford it, try to be accepted into the few operating hospitals of the country , most of them located in Vientiane . the rate occupancy at central Mahosot hospital is over 92% compared per cent in some province hospitals.(Ministry of Haelth2006)(8)

1.2.11 Situations on EPI in Lao PDR

Health indicator have show some improvement of health status of Lao PDR population. The infant mortality rate (IMR) has reduced from 82 per live births (LB) since 2000 to 70 by the year 2005. The under fives years mortality rate (IMR<5) has reduced from …? per LB to97.6/100,000 The maternal mortality ratio (MMR) has also reduced from 530 per 100,000 per LB to 350. The Expended Program on Immunization contributed those improvements. Among the major of diseases of contributing to the situation are the seven childhood vaccine preventable diseases namely: tuberculosis, poliomyelitis, diphtheria, tetanus, pertussis, hepatitis type B, measles. The Expended Program on Immunization (EPI) was initiated by the Word Health Assembly in 1974. Immunization services which reached less than fives percent of the children in the developing word when the program established. Now, the expended program on immunization has succeeding almost countries in the world. This include many countries in the Southeast Asia, which reached the largest with highly immunization coverage more than 85 percent, except Lao PDR . The Expended Program on Immunization, which is the priority of work plan in the Ministry of Health and is importance element of primary health care strategies. Since the strategy of implementation, consists of two strategies, there are center service (Fix center) and mobile service (Outreach: have overnight and non overnight). Now a day , the Expended Program on Immunization reaches every provinces of the country. This includes 141 districts, 10,029 villages 705 health centers on regular basis of 4-6 time per year and the remaining only 423 villages, which could not reach regular basis. To contribute and promote the health of children, the government organized the committee for mother and child in each level. These committees focus on implementation, therefore immunization coverage increased in each year. But it was not intended that the program should be terminated, because the national immunization coverage was lower than other countries in this region and could not reach the target more than 85 percent due to the lot of barriers especially people still have lowest perception about the immunization program. Event though the Ministry of Health emphasize EPI by giving immunization and health check up frees of charge. The result have not been satisfactory especially number of DPT-HepB3 the drop out

still high in the 2005(Loa National statistics(5)), the rate of all vaccination were trended the lowest. As show in the table 1

Table 2 Immunization coverage (%) of children under two years of age, Lao P.D.R., 2000-2005

Year	Immunization coverage % (<2 years)			
	BCG	OPV3	DPT-HepB3	Measles
2000	58	57	52	60
2001	58	52	47	85
2002	61	48	46	56
2003	58	65	63	54
2004	68	73	70	61
2005	70	74	73	69

Source : information: MCHC Ministry of Health (EPI center)(9)

During 2001-2005,AFP, diphtheria, pertussis, neonatal tetanus, and measles remained prevalent in Lao P.D.R. (Table 2). The outbreaks of diphtheria and measles were observed in 2002. During this five-year period, the overall case-fatality rates were 32.9 % for diphtheria, 0.61 % for pertussis, 34.2 % for neonatal tetanus, and 0.76 % for measles.

Table 3 Number of cases and deaths from some vaccine-preventable diseases, Lao P.D.R., 2000-2005

Year	AFP		Diphtheria		Pertussis		Neonatal tetanus		Measles	
	No. Cases	No Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths
2000	71	1	3	1	80	0	26	5	332	2
2001	55	2	2	1	111	0	15	8	94	1
2002	80	3	40	16	61	0	13	3	2,070	22
2003	73	1	24	10	200	0	17	2	1,810	8
2004	79	2	10	0	199	4	14	1	1,491	14
2005	59	2	9	1	70	1	20	0	329	0
Total			88	29	809	5	105	36	6126	47
CFR%				32,9		0,61		34,2		0,76

Source: Center for Laboratory and Epidemiology, Ministry of Health, Lao P.D.R. [10]

1.2.12 Situation on EPI in Saythany district

Vientiane Capital was the capital of Lao P.D.R., situated in the central part of the country, and composed of nine districts. Vientiane Capital had a population of about **697,**473 in 2005, 9 districts 499 villages, 68 regions, 4 centrals hospital,42 health center(PHC coverage status 2006).

Saythany District was one of the nine districts in Vientiane Capital. It was located in the East of the Vientiane Capital. The north shared a border with Tolakhome District of Vientiane province, the west with Chanthabouly district and Xaysetha District, the east with Parkgnum district and the south with Hatsayphong District. It had 104 villages and 7 catchments areas. It contained **80,086** km^2, of which about 30 % were suburban areas and 70 % were rural areas, there are. The district had 23,964 houses with families, average 5-6 members per households, estimated children under 3 years of age 4,874,estimated number of children born in the 2005: 2,990 persons, but reported by districts hospital: 430cases delivery in the hospital , delivery at home, and help by nursing 171 cases, by themselves 58 cases total of children in the year 2005: 659 persons, birth spacing average 2-3 years, number of

women married 24,205(16.19%)and contraceptive using 3,550(14.6%)childbearing women 32,892(22%), The total population was **149,507.** in 2005. sixty percent of them were farmers. Saythany had one district hospital and seven health centers. Provision of maternal and child health services, including the EPI, was onetime per month for zone (Fix center) in Saythany district Hospital and health center, and three monthly by a mobile team for rural areas far from the health center and district hospital.

Tables 3 and 4 showed the immunization coverage's reported from Vientiane Capital and Saythany District during 2000-2005 respectively. The rates for Vientiane Capital were consistently lover than those for Saythany District. The rates reported from this district were commonly higher than 80% in 2003 and 2004 for DPT3. The unusual high measles immunization coverage in 2001 might be due to the implementation of the measles immunization campaign throughout the country.(11)

Table 4 Immunization coverage (%) of children and women, Vientiane Capital, Lao P.D.R., 2000-2005

Year	**Coverage (%)**					
	BCG for <1 yr.	DPT3 for <1 yr.	OPV3 for <1 yr.	Measles for 9-23 m.	TT2+ for pregnancy	TT2+ for CBA*
2000	68	67	67	52	57	80
2001	62	67	68	137	43	72
2002	56	48	52	39	45	60
2003	58	63	65	54	56	45
2004	62	67	71	53	57	27
2005	75	70	71	66	48	25

* women of child-bearing age

Source : Maternal and Child Health Center, Ministry of Health, Lao P.D.R.[12]

Table 5 Immunization coverage (%) of children and women, Saythany District, Vientiane Capital, Lao P.D.R., 2003-2005

Year	Coverage (%)			
	BCG for <1 yr.	DPT3 for <1 yr.	OPV3 for <1 yr.	Measles for 9-23 m.
2003	66	71	74	45
2004	54	58	80	42
2005	67	57	58	57

Source : Maternal and Child Health Center, Ministry of Health, Lao P.D.R.[12]

During 2001-2005, cases of AFP,diphtheria, pertussis, neonatal tetanus, and measles were still reported from Vientiane Capital (Table 5). In 2002 and 2003 the outbreaks of diphtheria and measles were suspected.

Table 6 Number of cases and deaths from some vaccine-preventable diseases, Vientiane Capital, Lao P.D.R., 2001-2005.

Year	AFP		Diphtheria		Pertusis		Neonatal tetanus		Measles	
	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths
2001	6	0	1	0	1	0	1	0	15	0
2002	14	0	14	2	1	0	2	0	87	1
2003	6	0	12	7	4	0	8	1	280	0
2004	8	0	2	0	1	0	2	0	19	0
2005	2	0	5	0	1	0	0	0	5	0
Total	36	0	34	9	8	0	13	1	406	1
CFR (%)	0		26,4		0		7,6		0,24	

Source: Center for Laboratory and Epidemiology, Ministry of Health, Lao P.D.R.

During 2001-2005, cases of diphtheria, pertussis, and neonatal tetanus were not reported from Saythany District (Table 6). (10)

Table 7 Number of cases and deaths from some vaccine-preventable diseases, Saythany District, Vientiane Capital, Lao P.D.R., 1998-2002

Year	Diphtheria		Pertussis		Neonatal tetanus		Measles	
	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths	No. Cases	No. Deaths
2001	0	0	0	0	0	0	0	0
2002	1	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Case-fatality rate (%)	0.0		0.0		00.0		0	

Source: Center for Laboratory and Epidemiology, Ministry of Health, Lao P.D.R. [5]

In Saythany District, there had not been any survey to determine the EPI coverage for many years. The rate reported above was calculated from the number of EPI injections in the area and the estimated number of children at particular age (or pregnant women). This reported coverage could not include the number of injections of Saythany individuals who received vaccination from other health care centers outside the district.(10)

1.3 Research questions

1.3.1 What is the knowledge and perception about immunization of children under 3 years of age of the children's mother/parent?

1.3.2 Hypothesis

Mothers of partially immunized child or none immunized children have not enough knowledge and less contact with intervention activities (ex: health provider's activity, health care home visit, health education session) compare to the mother of fully immunization child.

1.4 Research objective

1.4.1 General objective

This study aims to identify the knowledge and perception, of mothers with children under 3 years of age who have either complete or not completed their immunization status

1.4.2 Specific objective

1. To describe socio-demographic characteristic, knowledge, perception and source of information of mothers on immunization of 3 years old children regarding on immunization

2. To identify the relationship between the immunization status of children under two years and socio-demographic, knowledge, perception and source information of mother towards Expended Program on Immunization.

1.5 Conceptual framework

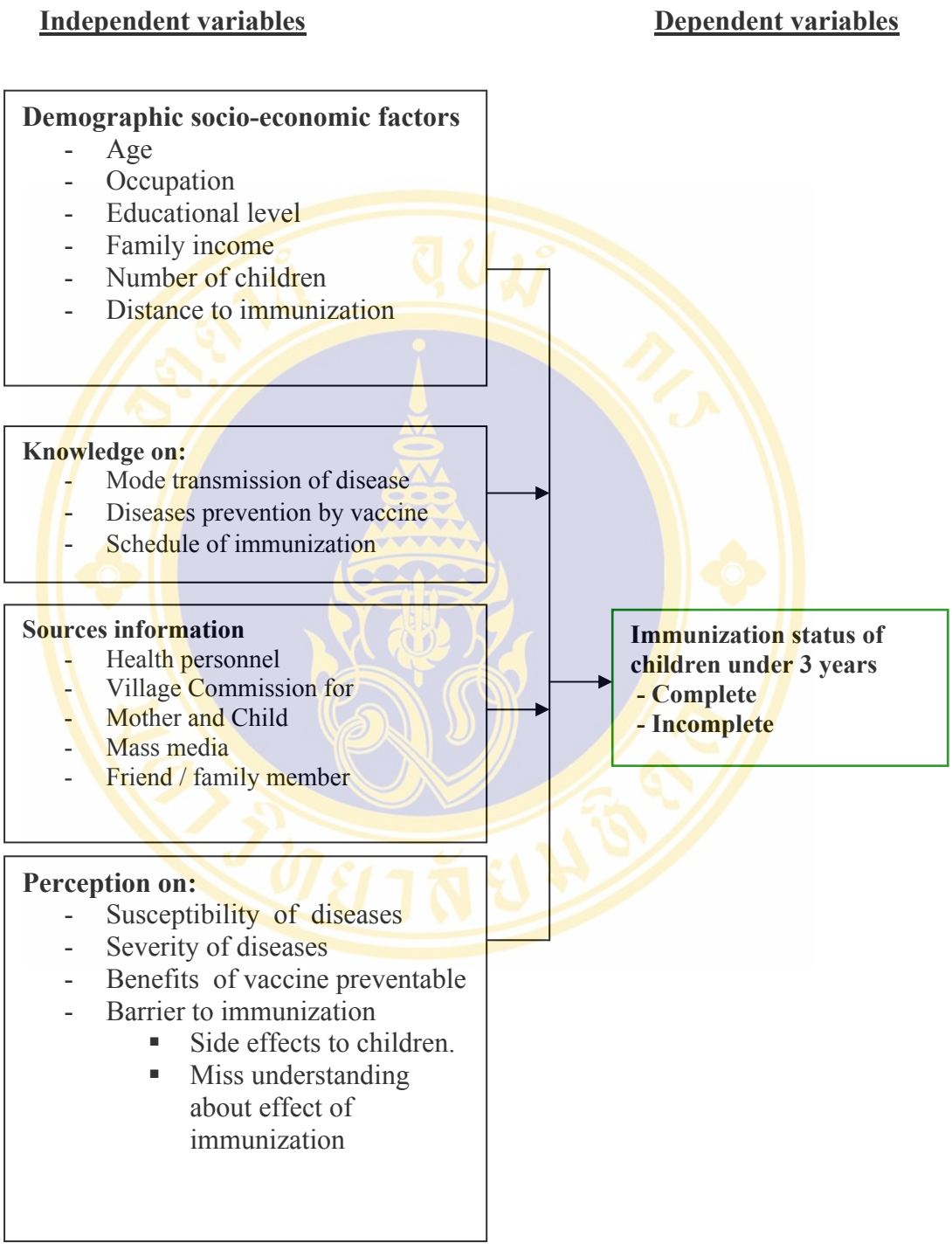

Figure 4 Conceptual Framework

1.6 Variables and Operational Definitions

1.6.1 Independent variables

Age : refer that under 2 years children.

Occupation refer to the current of the job of the respond

Education refer to respond level of formal education that graduated from school

Income: refer respondent's family earnings money per month

Number of children: refer to those children that the respondent have had in their family

Immunization schedule

In this study refer to the children under two years that get immunization completeness and incompleteness. Completed immunization means a children receipt all vaccines according to the country immunization schedule . There are three doses of DPT-HepB, three doses of OPV , that started at six weeks of age , with four weeks intervals between firs dose and second , four weeks intervals between second doses and third doses , BGC one dose at birth , Measles one dose during the age of children were nine month (National schedule 9months-11 months)

The incomplete immunization: the status in which a children missed either one or more doses of vaccine or those who never received any vaccine.

Knowledge: Refer to the understanding of mother in EPI program , such as the transmission of the preventable disease by vaccine , and benefit of immunization on the prevention against those diseases and knowing of them about schedule of immunization .

Perception: Perception of the mother refer to the perceived susceptibility and severity of the immunization diseases as well as the perceived benefit , barrier of the immunization program and also perceived the side effects of vaccine .

Source of information: Refer to determine where the mothers of children get the information of immunization from health personal, friend , head of the villager , health volunteer of village, Lao women union in the village ,family member, mass media ,

1.6.2 Dependent variables

The children immunization completed and incomplete:

The completed immunization: the status of in which a children received all vaccine according to the immunization country schedule. There are BCG one dose at birth, three doses of OPV/DPT-HepB start at sixth weeks of age within four weeks intervals, and Measles one dose at the age of 9 to 11 months old. The children immunization incomplete refer to the status in which a children missed either one or more doses of vaccine or those who never received any vaccine.

1.7 Expected outcome of this study is the reliable information on:

Knowledge and perception of mothers of children aged under three years old,and source of information regarding immunization Factor related to immunization status of children aged under three years old.

This information will be useful for improve the immunization program/activities that can lead to narrow and/or fill the gap in order to achieve the garget by year 2007(85%immunization coverage)

CHAPTER 2
LITERATURE REVIEW

2.1 The concept of immunization

Immunity is the ability of the body to tolerate material that is indigenous to it and eliminate material that is foreign. The immune system is comprised of organ and specialized cells that protect the body by identifying harmful substances , known as antigens , and by destroying them by using antibodies and other specialized substance and cells . There are two basic ways to acquire this protection – active immunity and passive immunity.

Active immunity is provided by a person's own immune system . This type of immunity can come from exposure to diseases or from vaccination. Active immunity usually lasts for many years and often can be permanent .

Passive immunity results when antibodies are transferred from one person or animal to another . The most common form of immunity occurs when the fetus receives antibodies from his or her mother across the placenta during pregnancy. Other sources of passive immunity includes blood and blood products, immune or hyper-immune globulin, and animal antitoxins. Passive immunity disappears over time, usually within weeks or months

.

Live microorganisms or antigens bring about the most effective immune responses, but an antigen does not need to be alive for body to respond .

A basic concept of the public health is that every individual who is protected from a disease as result of an immunization is one less individual capable of transmitting the disease to others . Individual who have been immunized serves as a protective barrier for other individuals who have not been

immunized , provided that number of immunized has reached to a certain level . Reaching and maintaining that level , which varies by communicable disease , provides " herd immunity" to immunized individuals.(1)

2.1.1 The Global Immunization Vision and Strategy

Recently, WHO and UNICEF have worked with partners to develop a Global Immunization Vision and Strategy (GIVS) for implementation during 2006–2015. The GIVS seeks to "protect more people against more diseases by expanding the reach of immunization to every eligible person".1 This document articulates WHO and UNICEF's vision for the world of immunization in 2015 and is composed of 4 strategic areas, each with key strategies and activities. These strategic areas include:
(i) "protecting more people in a changing world" by improving routine immunization coverage, ensuring at least 4 immunization contacts per child, and expanding immunization programmes to all ages;
(ii) "introducing new vaccines and technologies";
(iii) "integrating immunization, other linked health interventions and surveillance in the health systems context"; and
(iv) "immunizing in the context of global interdependence".

Editorial note. Implementation of many activities outlined in the GIVS had begun before the development of GIVS. However, GIVS unifies these activities under its umbrella and provides countries with a mechanism to identify critical areas and resource needs, as well as an opportunity to track progress. The development of country comprehensive multi-year plans (cMYP) based on GIVS serves as an important first step towards GIVS strategies at the country level. At least 40 countries are developing cMYPs that include estimates of the cost and financing of all immunization activities and outline future initiatives to improve coverage and reach the un-reached. A total of 53 countries have implemented the reaching every district (RED) strategy, WHO's key strategy for increasing routine immunization coverage. The RED strategy encourages supportive supervision, regular outreach services, community links with service delivery, monitoring and use of data for action, and better planning and management of human and financial resources. Increasing access

to new vaccines has the potential to greatly reduce the number of child deaths. Two GIVS priorities are to assist countries in developing capacity to make informed decisions regarding vaccine introduction based on disease burden, economic analysis and feasibility of introduction and to ensure that national systems are able to sustain vaccine delivery. In 2005, the Global Alliance for Vaccines and Immunization (GAVI)7-funded Hib Initiative was launched to assist countries in making such a decision for introduction of Hib. Other GAVI-funded initiatives exist for pneumococcal and rotavirus vaccines. The GIVS acknowledges the need to strengthen the health sector to decrease barriers to immunization, improve disease surveillance and strengthen data management, and suggests strategies for implementation. Furthermore, as immunization services often have the greatest community penetration of any public health intervention, the GIVS encourages that immunizations be linked to other interventions rather than provided in isolation. Vitamin A supplements have been distributed through immunization services since 1987: in 2004, 73 countries provided Vitamin A with routine immunizations, immunization campaigns or both. In addition, in 2005, 3 immunization campaigns in Africa distributed antihelminthic medications and 9 African countries distributed insecticide-treated bednets during immunization campaigns or routine services. Pilot projects are under development to assess the integration with routine immunization services of medical care for HIV-exposed infants and of intermittent preventive therapy against malaria for infants. Several global partnerships and funding mechanisms are available to sustain immunization programmes. For example, GAVI7 offers financial support to introduce new and under-used vaccines, improve injection safety and strengthen routine immunization services. In addition, the International Finance Facility for Immunization (IFFIm),8 an initiative of the Government of the United Kingdom government, has provided a new paradigm for immunization funding. Based on donors' legally binding, long-term commitments, the IFFIm will leverage money from international capital markets by issuing bonds to increase the funds available for immunizations. (2)

2.1.2 A review on EPI in the Lao PDR.

The Expanded Program on Immunization (EPI) is a major program of the Ministry of Health(MOH), implemented since 1982 . EPI program was conducted only in 2 provinces (Vientiane capital and Svannakhet province), aimed at immunizing children under two years old against BCG, OPV, DTP and Measles. Since 1993, this program received highest priority in the Ministry of Health and it was the only element of the primary health care approach. The implementation strategy consists of two, which are centre service Zone 0 (Fixed center) and zone 1, 2, 3, service by mobile team. At present, the Expended Program on Immunization is being covered in every province of the country. This included 17 provinces, 141 districts, 10,500 villages on regular basis of 4-6 times a year. In 2003, DTP-HepB vaccines were introduced in the routine immunization services in the selected 3 provinces and gradually expanded to all the provinces of the country in 2004. The immunization of children under 2 years old was targeted at 85% coverage, but this coverage was not able to achieve due to various reasons. Despite having provided immunization and other health services like Vitamin A supplementation and Deworming at free of charge to the beneficiaries of children 1-5 years old, the immunization achievement has not been a success. In the year 2005, the immunization coverage of DPT-HepB3, OPV3, BCG, Measles vaccines were only 73 percent, 74 percent, 70 percent, 69 percent respectively for the children under 2 years of age.(12)

2.1.3 A Relation studies on the relationship between socio-demographic, knowledge , perception of mother on child immunization status

2.1.3.1 Age:

The study on the immunization coverage for the children under 5 years of age was conducted by Suvandy V ., in the rural community of the Prachinboury province , Thailand in 1989. This study showed that among 213 cases, the age of respondents were between 17-45 years old, who were the mothers of the children. About 70.0 percent were found to be in the majority group of age between 20-30 years. (16)

The study conducted by Ashraf UA., (1989) in Kabinburi district, Prachinboury province , Thailand , showed that 76 percent of mother's age between 15-45 years have had their children completely immunized . However , there was no statistical significance between the age of mother and completed of immunization among child.(17)

The study conducted by Vongkhamdy K., (1999) in Pakse district , Champasack province , Lao PDR , showed that the percentage of immunization completed among children age 6-24 months was 59.7 percent in the group of mother less than 30 years old , 76.1 percent of children with incomplete immunization were also in the group mother less than 30 years of age . However , there was no significance relationship between mother age and completeness of vaccination (18).

The study conducted by Saleumsak K, (2002) in Khamemeuan province , Lao PDR show that the percentage of immunization completed was 37,5 percent in the group of mother more then 40 years of age, there was significance relationship between mother age and completeness of vaccination.(19)

2.1.3.2 Education

The study conducted by Suhandi V.,(1989) in the rural community of Prachinburi province , Thailand . This study had revealed the 13.1 percent of women had no formal education , 67,6 percent had primary level education . The last group of the secondary and higher level consisted of 19.3 percent , there was no significance association between education level of woman and tetanus toxoid immunization (16)

The study conducted by Ashraf UA., (1989) in Kabinburi district, Prachinboury province , Thailand , showed that most of mothers , who can read, write had their child completely immunized, which is 66 percent. This rate was higher than those mother who had no education. There was no significance between be level of education of mother and immunization received (17)

The result from the study of Budisuharda D., (1995) done in the rural areas of Chonburi province , Thailand showed that 83.7 percent of mother had low level of education (primary school including no education) and 16.3 percent had high education (secondary school , vocational school and university). 83.8 percent of mother with high level of education had been completely immunized compared to 78.9 percent of the mother with low level of education . However , the result of statistic testing showed the level of education had no significance association with the basic immunization acceptance of mother (20)

The study conducted by Vongkhamdy K., (1999) in Pakse district, Champasack province, Lao PDR , showed that the children who had completed immunization was found to be 65.9 percent among group of mothers' education equal or more than secondary school. But 57.5 percent of children with complete immunization were in the group of mother' education that was equal or less than primary school . There was significance relationship between children completed immunization and mothers' education (P=.002)(18)

The result from the study of Saleumsak K., (2002) done in the Nongbok district of Khammeuan province , Lao PDR showed that only 31.2 percent of children with complete immunization of mother had low level of education (primary school including no education) and 44.8 percent of children with complete immunization in the mother had high education (>primary school).(19)

2.1.3.3 Occupation

The study conducted by Suhandi V., among women in the rural community of Prachinburi province , Thailand in 1989 found that most women were involved in the agriculture. The findings showed that 69 percent of the total women were farmer and only 30 percent were involved in other field. The result also showed that the low immunization coverage was due to the fact that their occupation were farming (16)

The study conducted by Ashraf UA., (1989) in Kabinburi district, Prachinboury province , Thailand , showed that there was no significance association between the occupation and immunization received by mothers for their children(17)

The result from the study of Budisuharda D., (1995) done in the rural areas of Chonburi province , Thailand showed that immunization coverage between two groups had no significance association with completeness of immunization . However , mother occupation with as house-keeper or farmer had higher a percentage of completeness of children' immunization than the other group like self-business , government service, private employee and laborer (20)

The study conducted by Vongkhamdy K., (1999) in Pakse district, Champasack province, Lao PDR , showed that the group of children who had completed immunization, most of them (68.2 percent) belonged to the mother whose occupation were house-wife , only 3.9 percent found among farmer and 12.4 percent in government employee. Those who got incomplete immunization , their mother were house-wife 65.2 percent , were farmer 15,2 percent and government employee 4.5 percent. There significance relationship between complete immunization of children and mothers' occupation (P-value=.0018)(18)

The study conducted by Saleuamsak K, (2002) in Khammeuan provice, Lao PDR, showed that the group of children who had completed immunization, most of them 66.7 percent belong to the mother whose occupation government employee, group of mother's farmer only 30 percent the number of children completed immunization.(19)

2.1.3.4 Family income

With reference to the study among women in the rural community by Suvandi V., in the Prachinburi province, Thailand (1989), it was found that 36.2 percent of the total women were high-income group , whereas 83.8 percent of them were the low income group . When compared the relation of the practice of the tetanus toxoid immunization with their income, the study had made the following

observation of those women who were the high income group . The result showed that 26 percent have good practice of tetanus toxoid , 49,4 percent were the moderate practice group , and 24,7 percent are under the poor practice of tetanus toxoid immunization among them are women who had no relation with level of income(16).

The study conducted by Ashraf UA., (1989) in Kabinburi district, Prachinboury province, Thailand , showed that influent of the annual income of the family for expenditure to the immunization status , the higher rate of complete immunization was found in the group of mother whose annual income and the expenditure was adequate . There was statistical significance for the relationship between income for expenditure and immunization received (17)

The result from the study of Budisuharda D., (1995) done in the rural areas of Chonburi province , Thailand, regarding to the survey 63.4 percent of the family have income between 200-500 Bath and 36.6 percent had income more than 500 Bath . The last group that has income more than 500 Bath had higher rate of completed immunization than the first group whose income between 200-500 Bath, but there was no significance association between family income and completion of vaccination(20).

The study conducted by Vongkhamdy K., (1999) in Pakse district , Champasack province , Lao PDR , found that 63.6 percent of the children complete immunization were those with total monthly family income less than 300,000 kip , and 72,7 percent with incomplete immunization were total monthly income less than 300,000 kip . There was no significance relationship between children complete immunization and total family income permonth(18)

The result from the study of Saleumsak K., (2002) done in the Khammeuan province, Lao PDR, regarding to the survey that the number of children completed immunization between low income, medium income, high income there was no significance relationship, of children immunization status.(19)

2.1.3.5 Number of children

The result from the study of Budisuharda D., (1995) done in the rural areas of Chonburi province , Thailand . It showed that 88.9 percent of mother had only one child, but who had two child under five years of age had higher completed immunization rate compare to the group who had only one child under five years of age. There was no significance association between number of children under five years of age and the completeness of immunization (20)

The study conducted by Vongkhamdy K., (1999) in Pakse district , Champasack province , Lao PDR ,(1999) , it showed that the complete immunization of children from mothers who had number of children equal or less than two was found to be 58,9 percent , while among mother who had children more than two was found to be 53.0 percent of children incomplete vaccination . There no significance relationship between children complete immunization and number of living children of mother .(18)

The study conducted by Saleumsak K., (2002) in Nongbok district, Khammeuan province , Lao PDR ,(2002) , it showed that the complete immunization of children from mothers who had number of children equal or less than two was found to be 44.3 percent, this proportion was slightly higher than other those who had 3-4 and more than 4 children, there was significance association between number of children alive by the mothers and children's reception of immunization.(19)

2.1.3.6 Knowledge on immunization diseases and EPI program

With reference to the study among women conducted by Suhandi V ., in the rural community in Prachinburi province, Thailand (1989). This survey revealed that those women whose had good knowledge on tetanus neonatorum also shows to have good practice and moderate practice compare to those respondent who had poor knowledge . The respondent who had poor knowledge had also poor practice (16)

Ashraf UA., (1989) in Kabinburi district, Prachinboury province, Thailand , showed that 82,4 percent of mother who had adequate knowledge has their children

completely immunized while only 56 percent of mother with inadequate knowledge had their children completely immunized . Their was no association between the knowledge and completeness of immunization (17).

The result from the study of Budisuharda D., (1995) had done in the rural areas of Chonburi province , Thailand . It shows that 88.5 percent of the mother knew about children diseases , which can be prevented by immunization . Majority (98.7 percent) of the mother knew that BCG vaccination should given on age 0-2 months , and 86.6 percent of the mother also knew that the first those for DPT/OPV at 2-3 months of children's age and frequency of DPT/OPV was three. Child should receive this under one year of age . Almost 75 percent of mothers had high average of knowledge and there was significance association between the knowledge of mother and completeness of child vaccination (20).

The study conducted by Vongkhamdy K., (1999) in Pakse district , Champasack province, Lao PDR ,(1999) revealed that 60.5 percent among the mother with children completely immunized children had high knowledge and only 39.5 percent of them had low knowledge . 63.6 percent of mother with completely immunized children had inadequate knowledge and 36.4 percent had adequate knowledge. There was significance relationship between children immunization status and knowledge of mother on immunization(18).

The result from the study of Saleumsak K., (2002) had done in Nongbok district Khammeuan province, Lao PDR, about the type of knowledge, this study found majority (75 percent) who knew about vaccine preventable diseases transmission. But they were confused about negative question, especially 36.6 percent and 44.3 percent though that using utensil as the sick person does not transmit tuberculosis and touching the rush of body could not transmitted measles. As well as the knowledge about vaccine preventable diseases, most of them(more than 80 percent) had known how protected their children from contracting those diseases. But items of negative questions, their knowledge was lower than the positive question. About half (46.7 percent) knew that injecting antibiotic won't protecting a child from

contracting poliomyelitis, 48 percent had know the schedule of DPT, OPV and Measles vaccine.(19)

2.1.3.7 Perception on immunizable diseases and EPI program

The study in the rural areas of Chonburi province, Thailand, by Budisuhardja D., (1955) shows that the perception of the mother towards the immunization services was significance association with the utilization of immunization services by the mother (20).

The result from the study of Petchavai Limtragool in Northeast Thailand, (1987). In order to ascertain the mother perception of susceptibility to the immunizable diseases, that found the mothers who had a high degree of perception had their children completely immunized to a greater extent at 72.20 percent that mother who had medium or low degree of perception . When perception of severity was study , it was found that 65 percent of mother who had high degree of the perception of severity of diseases have had their children completely immunized , again higher than for mother with medium or low degree perception . Similarly with the perception of the benefit of the immunization , mother with a high immunized more, at 68,8 percent, than mother with medium or low levels perception of the benefit of immunization. There is found to be significance relationship (P=.01) between perception and immunization (21).

For the perception concerning the receipt of each type of immunization. When perception of the susceptibility to the infection diseases was tested, it was found that mother with a high degree of the perception had high level of receipt : 91.7 percent for BCG , 78.7 percent for complete DPT vaccination and 73.0 percent for the complete OPV vaccination . These rate are higher than the equivalent rates for mother with medium or low degree of perception . In the same way , a high degree of perception of the severity of diseases leads the mother to have the highest rates of receipt of immunization : 88.1 percent for BCG , 78.7 percent for complete DTP vaccination and 66.9 percent for complete OPV vaccination. These are higher than for mother of low or medium levels of perception . The level of immunization for mother

having a high degree of the perception of the benefit of immunization are : 88.0 percent for the BCG , 74.5 percent for complete DPT vaccination and 68.8 percent for complete OPV vaccination . These rates one again higher than for mother with medium or low degrees of perception . The relationship between the perception of immunization and the different type of vaccine is found to be significance at the .01 level (19).

2.1.3.8 Source of information

The study in the rural areas of Chonburi province, Thailand , by Budisuhardja D.,(1955) shows that 67.7 percent of mother said that Health Center Personal had given information about false contraindication of immunization. There was association significance between completeness of vaccination and information of false contraindication, which they got . Some of the mother (19.4 percent) admitted that they had not received information about the true contraindication on immunization and completeness of vaccination (20)

The first appointment for giving the first dose of vaccine . Most of the mothers who have received appointment from Health Center personal , they had better percentage of complete vaccination if compare to another group . A significance association was not evident between completeness of vaccination and first appointment for giving the first dose of vaccine from Health Center Personal to mother (16)

The study was conducted in Kabinburi district, Prachinburi province, Thailand Ashraf UA.,(1989) show that 70.0 percent of mother who received advice from Doctors , Nurses , Health workers had their children completely immunized with higher rates than another group. There was no statistical significance for the relationship between advice from various personal and immunization receiveved (14)

The study was conducted in Nongbok district , Khammeuan province , Lao PDR Saleuamsak K.,(2002) The knowledge about vaccine preventable diseases, most

of them (more than 80 percent) had known how to protected their children from contracting those diseases.(17)

2.1.3.9 Misperceptions about communicable diseases and vaccines

Parents also had misperceptions about **immunizations.** Six mothers canceled appointments for **immunizations** because their child had a cold. “Children sick at all, shouldn't get shots,” noted one mother. One parent had heard, “You shouldn't let anyone kiss your child and you must be careful with dirty diapers after having the polio vaccine.” This belief led this mother to postpone her child's **immunizations** until he was“ out of diapers.”

A few parents questioned the safety of some vaccines. One stated, “I don't want my kids used as guinea pigs.” Another parent worried about what “they put in [the vaccine]” and commented that “the experts don't seem to all agree” on what is safe.

One mother expressed a philosophical belief that “God created the immune system, not vaccinations,” and therefore refused to vaccinate her children. The same mother also noted that when someone came in contact with a communicable disease, such as “hepatitis, that the body would be sick for three days and then build up an immunity to the disease.” (23)

2.1.3.10 Health care personnel

Of those with a primary health care provider, 70% stated that they relied on their primary health care provider for information and support. For example, one mother stated that “If my friends give me a bunch of papers about how bad immunizations are, I know I can call my nurse practitioner and find the truth.” Another noted that she “relied on her doctor to tell her when the shots were due. I trust her to stay on top of this.” Emotional support was also reported by one mother, who said, “I really dread having my child get shots, but the nurse practitioner always pats me on the back and helps me get through it.”

Seven mothers shared that the health care personnel, doctors and nurses, were kind and considerate and tried to make the experience as "painless as possible." Knowing that their child would be cared for in a professional manner provided a positive influence on the mothers. (22, 23, 24)

2.1.3.11 Health system

Health system factors included inconvenient clinic hours, dates or locations, waiting lines, minor illness, and conflicting information. The inconvenience of clinic hours, dates of **immunization** clinics, and locations of clinics were reported by 75% of the parents. One parent declared, "It's only in the mornings which does not fit my schedule." Another noted that "The **immunization** clinic is only on Tuesdays and Thursdays." Another mother complained that the clinic was only open during the days: "My husband and I work, so one of us has to take off. That makes it hard." Waiting lines were an issue mentioned by 3 parents, including one who said, "I have not had much trouble, except waiting in line at the clinic."

One provider excluded children from timely **immunization** on the basis of minor illnesses. This situation was believed by the parents to add difficulty in receiving **immunizations.** One parent stated, "It seemed every time I took her to the doctor, she was sick and he wouldn't give her shots." **(23)**

2.1.3.12 Need for reminders

Fifty-eight percent of the mothers expressed confusion about the **immunization** schedule. "As long as they send me reminders, I take my child in. Without reminders, I don't know when shots are due. It's too confusing," shared one mother. One parent's insight into this factor was that "The most important thing is to let the parents know what **immunizations** their child needs, when they should receive them, and what kind of reactions they can have. I can handle anything if I know what to expect." **(23)**

2.2 Health Belief Model

The major outlines of what later came to be known as the Health Belief Model are understandable in the light of the historical perspective provided. The implicit conception following Lewin was of an individual existing in a life space composed of regions some of which were positively valued (positive valence), others of which were negatively valued (negative valence), and still others of which were relatively neutral. Diseases, if they were represented in the life space at all, would be regions of negative valence which could be expected to exert a force moving the person away from that region, unless doing so would require him to enter the region of even greater negative valence. One's daily activities were thus conceived of as a process of being pulled by positive forces and repelled by negative forces. The earliest characteristics of the Model, as they were translated from the foregoing abstraction, were that in order for an individual to take action to avoid a disease he would need to believe that he was personally susceptible to it, That the occurrence of the disease would have at least moderate severity on some component of his life, and that taking a particular action would in fact be beneficial by reducing his susceptibility to the condition or, if the disease occurred, by reducing its severity, and that it would not entail overcoming important psychological barriers such as cost, convenience, pain, embarrassment. With respect to taking a test for the early detection of a disease, the same factors was deemed necessary, but in addition there was also the requirement that the individual believe he could have the disease even in the absence of symptoms (22)

Perceived susceptibility: individuals were believed to vary widely in their acceptance of personal susceptibility to a condition. At one extreme might be the individual who denies any possibility of his contracting a given condition. In a more moderate position is the person who may admit to the "statistical" possibility of a disease occurrence, but a possibility that is not likely to happen. Finally, a person may express a feeling that he is in real danger of contracting the condition. In short, as it has been measured, susceptibility refers to the subjective risks of contracting a condition.

Perceived Seriousness: Convictions concerning the seriousness of a given health problem may also vary from person-to-person. The degree of seriousness may be judged both by their degree of emotional arousal created by the thought of a disease as well as by the kinds of difficulties the individual believes a given health condition will create for him. A person may, of course, see a health problem in terms of its medical or clinical consequence. He would thus be concerned with such questions as whether a disease could lead to his death. Or reduce his physical or mental functioning for long periods of time, or disable him permanently. However, the perceived seriousness of a condition may, for a given individual. Include such broader and more complex implications as the effects of the disease on his job, on his family life, and on his social relations. Thus, a person may not believe that tuberculosis is medically serious, but may nevertheless believe that its occurrence would be serious if it created important psychological and economic tensions within his family.

Perceived susceptibility and severity having a strong cognitive component are at least partly dependent on knowledge.

Perceived Benefits of Taking Action and Barriers to Taking Action: The acceptance of one's susceptibility to a disease that is also believed to be serious was thought to provide a force leading to action, but not defining the particular course of action that was likely to be taken.

The direction that the action takes was thought to be influenced by beliefs regarding the relative effectiveness of known available alternatives in reducing the disease threat to which the individual feels subjected. His behavior was thus thought to depend on how beneficial he believed the various alternatives would be in his case. Of course, there must be available to him at least one action that is subjectively possible. An alternative is likely to be seen as beneficial if it relates subjectively to the reduction of one's susceptibility to or seriousness of an illness. Again, the person's beliefs about the availability and effectiveness of various courses of action, and not the objective facts about the effectiveness of action, determine what course he will

take. In turn, his beliefs in this area are undoubtedly influenced by the norms and pressures of his social group. The literature on delay in seeking diagnoses for cancer symptoms may reflect a conflict between a strong feeling of *susceptibility* to what is regarded as a most serious disease and a real conviction that there are no *efficacious* methods of prevention and/or control.

An individual may believe that a give action will be effective in reducing the threat of disease, but at the same time see that action itself as being inconvenient, expensive, unpleasant, painful or upsetting. These negative aspects of health action serve as *barriers* to action and arouse conflicting motives of avoidance. Several resolutions of the conflict were thought to be possible. If the readiness to act was high and the negative aspects were seen as relatively weak, the action in question was likely to be taken. If, on the other hand, the readiness to at was low while the potential negative aspects were seen as strong; the negative aspects functioned as barriers to prevent action. Where the readiness to act was great and the barriers to action were also great; the conflict was thought to be more difficult to resolve. The individual was highly oriented toward acting to reduce the likelihood or impact of the perceived health danger. He was equally highly motivated to avoid action since he saw it as highly unpleasant or even painful.

Sometimes, alternative actions of nearly equal efficacy might be available. For example, the person who feels threatened by tuberculosis but fears the potential hazards of x-rays may choose to obtain a tuberculin test for initial screening.

But what can he do if the situation dose not provides such alternative means to resolve his conflicts? Experimental evidence obtained outside the health area suggested that one of two reactions occur. First, the person might attempt to remove himself psychologically from the conflict situation by engaging in activities which did not really reduce the threat. Vacillating (without decision) between choices may be an example. Consider the individual who feels threatened by lung cancer, who believes quitting cigarette smoking will reduce the risk but for whom smoking serves important needs. He may constantly commit himself to give up smoking soon and

thereby relieve, if only momentarily, the pressure imposed by the discrepancy between the barriers and the perceived benefits.

A second possible reaction was a marked increase in fear or anxiety if the anxiety or fear became strong enough, the individual might be rendered incapable of thinking objectively and behaving rationally about the problem. Even if he were subsequently offered a more effective means of handing the situation, he might not accept it, simply because he could no longer think constructively about the matter.

Cues to Action: The variables which were originally described under the heading of perceived susceptibility and severity as well as the variables that defined perceived benefits and barriers to taking action have all been subjected to research which will be reviewed in subsequent chapters. However, one additional variable was believed to be necessary to complete the model, but it has not been subjected to careful study.

A factor that serves as cue, or a trigger, to appropriate action appeared to be necessary. The combined levels of susceptibility and severity provided the energy or force to act and the perception of benefits (less barriers) provided a preferred path of action. However, we believed the combination of these could reach quite considerable levels of intensity without resulting in overt action unless some instigating event occurred to set the process in motion. In the health area, such events or cues might be internal (e.g. perception of bodily states) or external (e.g. interpersonal interactions, the impact of media of communication, or receiving a postcard from the dentist).

The required intensity of a cue that was deemed sufficient to trigger behavior presumably varied with differences in the levels of susceptibility and severity. With relatively little acceptance of susceptibility to or severity of a disease, rather intense stimuli would be needed to trigger a response. On the other hand, with relatively high levels of perceived susceptibility and severity even slight stimuli may be adequate. For example, other things being equal, the person who barely accepts his susceptibility to tuberculosis will be unlikely to check upon his health until he

experiences rather intense cues. On the other hand, the person who readily accepts his constant susceptibility to the disease may be spurred into action by the mere sight of a mobile x-ray unit or a relevant poster.

Unfortunately, the settings for most of the research on the Model have precluded obtaining an adequate measure of the role of cues. Since the kinds of cues that have been hypothesized may be quite fleeting and of little intrinsic significance (e.g. a casual view of a poster urging chest x-ray), they may easily be forgotten with the passage of time. An interview taken months or years later could not adequately identify the cues. Since the kinds of little intrinsic significance (e.g. a casual view of a poster urging chest x-ray), they may easily be forgotten with the passage of time. An interview taken months or years later could not adequately identify the cues. Freidson has described the difficulties in attempting to assess interpersonal influences as cues. Furthermore, respondents who have taken a recommended action in the past will probably be more likely to remember preceding events as relevant than will respondents who were exposed to the same events but never took the action. These problems make testing the role of cues most difficult in any retrospective setting. A prospective design, perhaps a panel study, will probably be required to assess properly how various stimuli serve as cues to trigger action in an individual who is psychologically ready to act.

This study explored various factors related to compliance of taking iron tablets among pregnant women in Vientiane Municipality, Lao P.D.R. according to the Health Belief Model.

Individual perceptions modifying factors Likelihood

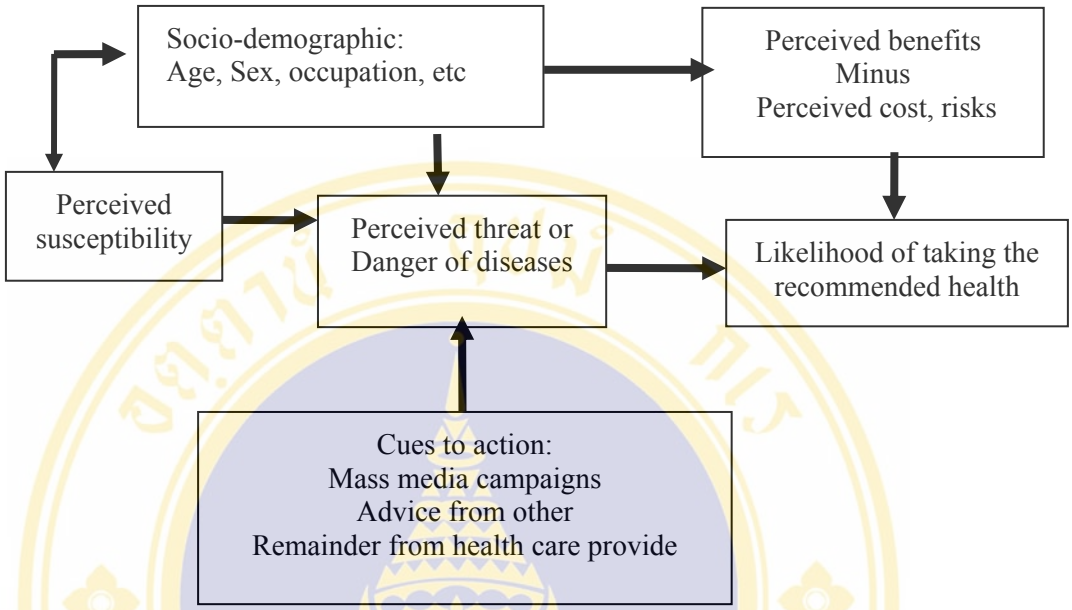

Figure 5 The" Health Believed Model" as predictor of preventive health behavior (After Becker et al)(24)

2.3 Conclusion:

From the above literature review related to the mother's knowledge and perception towards the immunization status of their children, it is evident that a lot of work has been done on immunization status of children. However, in most of these studies, there was more focus on relationship between socio-demographic, knowledge, perception and immunization status of mother and their children under two years of age. Hopefully, this information will provide some useful insights as to what could be contributing to failure to attain complete immunization coverage in Lao PDR. With this information, targets and focused program can be initiated to intervene and improve the situation of immunization activities.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research design

Cross-sectional study:

3.2 Study population

The target population: mother with children under three years of age, who are living in villages of Saythany district. The samples of this study were the mothers with completed

3.3 Sampling technique: stratified sampling

Saythany District was selected as the study area which catered to the population of one hundred and four villages with 149,507 of total population. Out of this total population, there were 2,879 of children under 3 years old. .And Out of 104 villages, only 10 villages were selected for this study. In each selected village, 5 mothers who had children under 3 years old with completed immunization and another 5 mothers with uncompleted immunization children were selected purposively for interviewing in order to get their opinion and information based on the questionnaire. The total of mothers 108 cases for inter viewing in this field study.

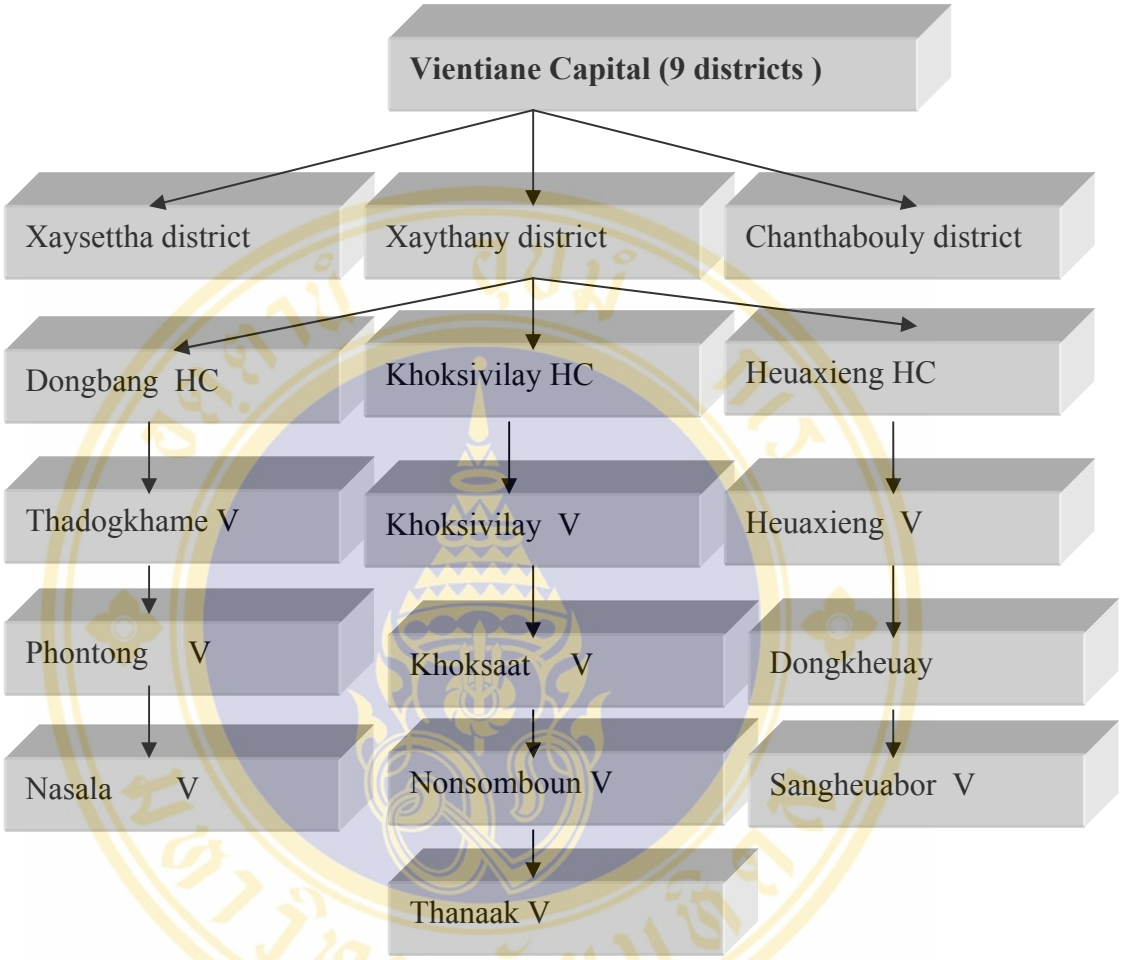

Figure 6 Diagrammatic of sampling technique

3.4 Research instrument

A structured questionnaire was designed by the researcher under the guidance of the advisors. The questionnaire was translated into Lao language which is used locally in the study area. The pre-test of this questionnaire was conducted, prior to the real collection of data, in Thadockham village with very similar background to that of the actual data collection for its reliability and the questionnaire was also tested for its content validity by the experts who have expertise in such a research area. In pretest, the value of KR20 for mother's knowledge part was 0.58 and the value of Cronbach's

alpha coefficient for mother's perception part was 0.72. As the alpha coefficient for mother's knowledge part was low, the questionnaire was modified in the knowledge part, particularly question number 11, 12 and 17 in order to increase the level of reliability test.

This questionnaire was divided into 4 parts focusing on the followings:

- Socio-demographic characteristics of the study mothers:
- Mother knowledge about immunization
- Mothers perception about immunization
- Source of information on immunization program/activities

3.5 Method for data collection

Regarding the method for data collection, this study had the following steps:

First, the researcher contacted the provincial health office and district health office to introduce the concept of this study and to get their permission and collaboration as well. Then the village commission for mother and child at the study village were also explained about the concept of this study and asked for their help in order to facilitate the visit mother house by house in each selected village.

Four staffs working for Mother and Child Health Center were recruited as interviewers. They were trained by the researcher in order to have the clear understanding on the language and the concept of the questionnaire as well as the data collection process.

The selected mothers from each village in the study site were requested by the interviewers to provide general and specific information according to the questionnaire.

3.6 Data analysis

Epidata was used for data entry while Minitab 13 version program used to analyze the data.

Frequency and percentage were calculated for predisposing characteristics (age, education, occupation number of alive children income, mothers' knowledge, perception, sources of information groups. Minima, Maxima, mean, and standard deviation were also calculated for quantitative data.

Chi-square test was performed to determine relationship between the knowledge, perception, sources information, age group, education, occupation, number of alive children, and income of immunization status of children.

3.7 Measurement of variables

1.Age (Years) was classified in to a three years age groups. To simplify the presentation of tubular form, age was presented in 3 groups.

2. Education attainment level was categorize into 4 group
   1) Illiterate.
   2) School.
   3) Primary school.
   4) Secondary school.

3 Occupation of mothers was categorize into 5 group.
   1) Farmer.
   2) Trade.
   3) Labor.
   4) Government employee.
   5) Housewife.

4 Number of alive children was categorize into 3 group

1/ 1-2 persons

2/ 3-4 persons.

3/ >4 persons.

5 Income was categorize into three group

1/ <399,000 kip/month.

2/ 400,000-699,000 kip/month.

3/ >700,000 kip/month

6 Perception of mothers

Perception: mothers asked about their perception on immunization by a set of question. The perception classified in to three level: low, moderate, high level based on real data collection (Mean & Rang).

7.Knowledge of mothers

Knowledge: mother asked about their knowledge on immunization by a set up the question. The knowledge classified into three level: good, fair and poor knowledge based on mean cutting point (≥mean: high, mean: <low)

8 Sources of information

1/ From health volunteer of village.

2/ Family member.

3/ Head of village.

4/ Health center staff.

CHAPTER 4
RESULTS

This study is aimed to investigate factors and conditions related to immunization and immunization status of children under three years. This study was conducted from 8th to 25th of January, 2007 and the target population covered were mothers with children under 3 years of age. Sample group were selected by using stratified sampling, consisting of 10 villages in Xaythany district, Vientiane capital Lao PDR. There were 108 mothers with children under 3 years of age were included in this study. The mothers were interviewed using structured questionnaire and the card of the children were examined to determine the immunization status of their children.

4. 1 Socio-demographic characteristics of respondent

The socio-demographic characteristics of respondents investigated were their age, education, occupation, number of children alive and place of resident and the respondents were divided into two groups (completed immunization and incomplete immunization), as shown in the Table 8.

With respect to age, about the mothers group with completed immunization status of their children was (50.00 percent) between the age groups of 19-24 years, and the mothers group with incomplete immunization status of their children was (12.9 percent). The group of mothers with completed immunization status of their children between the age group of 25-31 years was (29.63 percent) and incomplete immunization group was (46.30 percent), age group between 32-38 years old completed their immunization was (12.96 percent) and the last age group more than 39 years old was (7.41 percent) completed their immunization and incomplete (1.85 percent). The youngest, oldest and average age of mothers were 24.06 and 27 years old (SD=6.75), respectively.

Regarding the educational status, this study found that, the group of mothers with completed their children's immunization, the illiteracy was only (7.41 percent), school, primary school, secondary school (92.59 percent), and group of mothers with incomplete immunization of their children, the level of their education was (24.07 percent) and literacy (75.93 percent).

From the results, the predominant occupation of mothers group of their children who completed immunization (50.00 percent), this group especially produced rice, and housewife (40.74 percent). Only few of them with the similar percentage (1.85, 1.85, and 5.56 percent) were trade, labor and government employees. Incomplete immunization of their children was farmer (61.11 percent) trader (11.11 percent), laborer (1.85 percent), and government employees (25.93 percent).

Number of children alive with mothers group of children with completed immunization of their children were 1-2 persons (73.54 percent), 3-4 persons (24.07 percent) and more than 4 persons only (1.85 percent) and group with incomplete immunization of their children, the number of children were 1-2 persons (65.02 percent), 3-4 persons (24.07) and more than 4 persons (3.70 percent)

About family income of the respondents, the group of mothers with completed immunization of their children, income less then 399,000kips per month (40.47 percent) and between 400,000-699,000kips per month was (31.48 percent) and more than 700,000 kips per month (27.77 percent), and the group with incomplete immunization income per month less than 399.000 kips (62.96), 400,000-699,000 kips (18.52 percent) and more than 700.000 kips (18.52 percent)

Table 8 Number and percentage of respondents by socio-demographic Characteristics (Incomplete immunization)

Socio-demographic characteristics	Completed		Incomplete	
	N=54	%	N=54	%
Age group(Years)				
<24	27	50.00	7	12.9
25-31	16	29.62	25	46.29
32-38	7	12.96	21	38.88
>39	4	7.41	1	1.85
Mean=27.06, SD=6.75, Min=19, Max=45, Median=24.5.				
Education level				
Illiterate	4	7.41	34	24.07
School	23	42.59	29	53.70
Primary school	19	35.19	9	16.67
Secondary school	8	14.81	3	5.56
Occupation				
Farmer	23	49.59	33	62.96
Labor + Trade	6	11.11	3	5.56
Government employee	2	3.70	2	3.70
Housewife	23	42.59	14	27.78

*10.000 Kip(Lao currency)= 1$ USD, Feb 03,2

4.2 Immunization status of children

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The immunization status of children was accessed using the questionnaire, observation of the children's card and examination of the BCG scar on the children. The questionnaire comprised of receiving immunization of children, the place for vaccination and the immunization card. The completed and incomplete immunization status of children was referred by using the immunization card.

With regarding to the immunization status of children, the results showed that out of 108 mothers interviewed, majority of the mothers (96.7 percent) said that their children ever received vaccination and only few of them (3.3 percent) said that their children never got vaccination before. About place for getting the vaccination, most of the mothers who completed immunization of their children (68.52 percent) took their children to get vaccination from mobile team, and (31.41percent) took their children to get vaccination from fixed centers. The mothers group with incomplete immunization of their children received vaccination from mobile team services (46.3 percent), and those who received vaccination from fixed centre services were (53.7 percent) as shown in the table 9

Table:9 Number and percentage of respondent classified by children' Immunization status

Place for get vaccination	**Immunization status**			
	Complete		**Incomplete**	
	Number (N=54)	Percent	Number (N=54)	Percent
Mobile team service	37	68.52	25	46.3
Fix center service	27	31.48	29	53.7

Table 9 Number and percentage of respondents by socio-demographic Characteristics (Incomplete immunization) (cont.).

Socio-demographic characteristics	Completed		Incomplete	
	N=54	%	N=54	%
Number of a live children				
1-2	40	73.54	37	65.02
3-4	13	24.07	13	24.08
4-7	1	1.85	4	3.7
Mean=1.90, SD=1.08, Mini=1,				
Mean=1.90, SD=1.08, Mini=1,				
Max=5, Median=2.00,				
Average family income				
<399,000kip/month	22	40.47	34	62.96
400,000-699,000kip/mont	17	31.48	10	18.52
>700,000kip/month	15	27.77	10	18.52

4.3 Knowledge of respondents toward immunization

Maternal knowledge about immunization was assessed based on the mode of diseases transmission, diseases prevention and immunization schedule, as shown in table: 10

There were 23 questionnaires for knowledge scores. The knowledge scores for correct answer were given one mark, and zero mark for wrong answers. The scores of knowledge ranged from 1-23 points.

The criterion of knowledge level was made based on percentage of knowledge scores. The knowledge divided for two groups (group completed immunization and incomplete immunization), the poor knowledge was ≤14,81% or ≤8 of total scores, fair knowledge was between 14.81%-65.21% or 8-15 and good knowledge was ≥15.21%

or ≥15, for the group completed immunization and for the group incomplete immunization, the poor knowledge was ≤14.81 or ≤8, of total scores, fair knowledge was between 143.81%-65.21.91% or 8-15 and good knowledge was ≥65.21% or ≥15, for the group incomplete immunization. Based on this criterion, those with poor, fair and good knowledge of two groups were accounted for good=18(33.33 percent), fair=28(51.85 percent), poor=8 (14.81percent) and (20.31 percent=11), (57.41 percent=31), (22.22 percent=12) respectively, as shown in table 10.

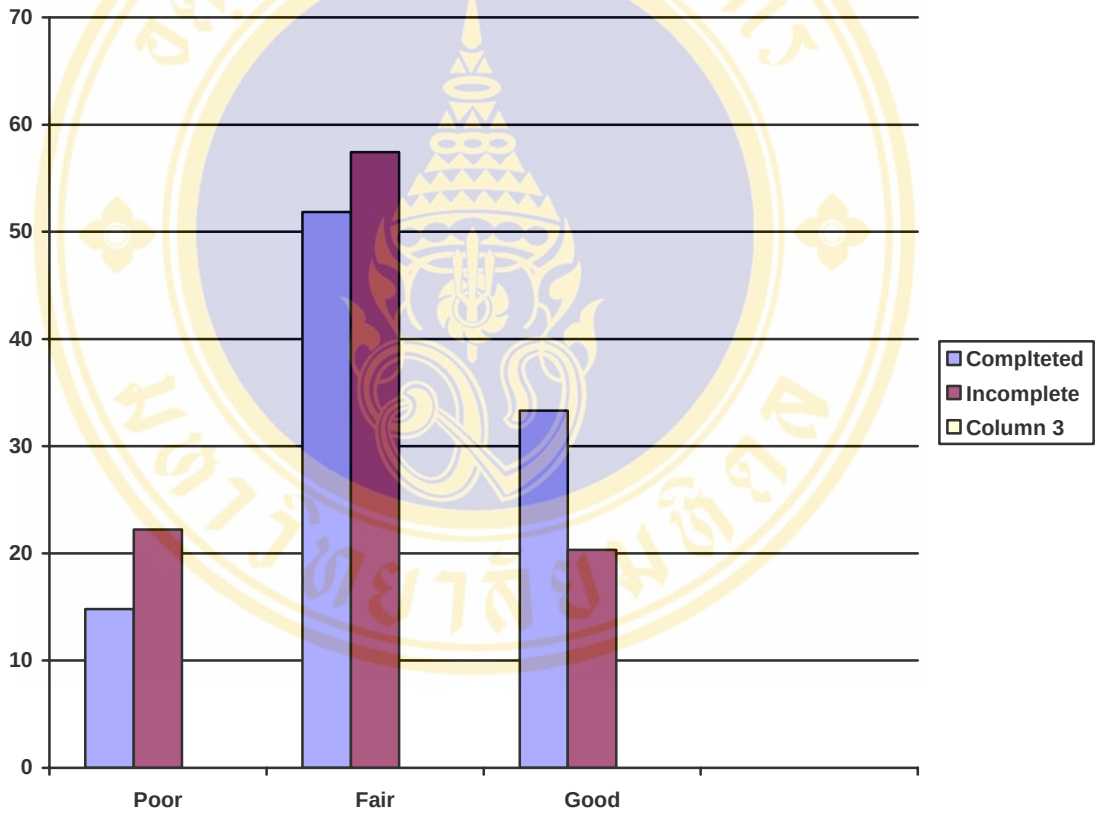

Figure 7 Level of knowledge of respondents toward immunization

Table10 Number and percentage of respondents classified by correct answers related to knowledge toward EPI with group mother whom children got completed and incomplete immunization

No	Statement	Correct answer			
		Complete (N=54)	%	Incomplete (N=54)	%
1	Can poliomyelitis be transmitted by Living in the same room	8	14.81	23	42.59
2	Can poliomyelitis be transmitted by Drinking water the same glass	25	46.30	20	37.04
3	Can poliomyelitis be transmitted by Eating contaminate food with germs	16	29.36	34	62.96
4	Can poliomyelitis be transmitted by Contracting poliomyelitis by injection	12	22.22	8	14.81
5	What do you think you can do to prevent poliomyelitis by vaccine polio oral	35	64.81	33	61.11
6	What do you think you can do to prevent poliomyelitis by Traditional herb	19	35.19	18	33.33
7	What do you think you can do to prevent poliomyelitis by Injecting Antibiotic	25	46.30	28	51.85
8	What do you think you can not prevent poliomyelitis by vaccine	44	81.48	47	87.04
9	What do you think the causes of measles Contracting measles by eating dirty food	00	00	00	
10	What do you think the causes of measles contracting measles by breathing the germs in the air	00	00	00	

Table10 Number and percentage of respondents classified by correct answers, related to knowledge toward EPI with group mother whom children got completed and incomplete immunization (cont.)

No	Statement	Correct answer			
		Complete		Incomplete	
		N=54	%	N=54	%
11	What do you think the causes of measles Transmission by gene	3	5.56	00	00
12	What do you think the causes of measles Contracting measles by Food poisoning	54	100	00	00
13	What do you think the causes of Hepatitis B transmitting from unsafely injection	3	5.56	16	29.62
14	What do you think the causes of Hepatitis B transmitting by Air polluted	2	3.70	00	00
15	What do you think the causes of Hepatitis B transmitting eating draw fish	00	00	00	00
16	Do you know how many times your children should be given OPV?	00	00	00	00
17	Do you know when your children should be given measles vaccination?	14	25.93	15	27.78
18	Do you know when your children should be given BCG?	14	25.93	3	5.56
19	Do you know when your children should be given DPT-HepB?	13	24.07	00	00

Table10 Number and percentage of respondents classified by correct answers related to knowledge toward EPI with group mother whom children got completed and incomplete immunization (cont.)

No	Statement	Correct answer			
		Complete		Incomplete	
		N=54	%	N=54	%
20	Do you know how many doses your children will receive immunize DTP-HepB?	6	11.11	00	00
21	How much time you should carrier your children goes to immunize by schedule of national EPI program?	00	00	00	00
22	Do you know name of EPI diseases	00	00	00	00
23	How many doses your children should be get measles vaccine	32	59.26	9	16.67

Table 11 Comparison of level of knowledge mothers completed and incomplete Immunization

Level of knowledge	Completed		Incomplete		
	N=54	%		N=54	%
Poor (≤8.6)	8	14.81	Poor(≤8)	12	22.22
Fair (8.6-15.6)	28	51.85	Fair (8.6-15.6)	31	57.41
Good(≥15.6)	18	33.33	Good (≥15.6)	11	20,31
Mean=12.66, ±SD=4.98, Median=12, Min=2, Max=22,			Mean=13.72,±SD=4.93, Median=14, Min=2, Max=26,		
Total	54	100		54	100

4.4 Perception toward EPI program

The perception of the mothers towards immunization was evaluated by using questionnaires related to caption of susceptibility and severity of vaccine preventable diseases, perception of benefit for immunization and perception of barrier to immunization, as shown in table 12.

The table shows the perception of susceptibility and majority of them (81.48 percent) agree that it is necessary to vaccinate a child, who is breasts-feeding, while the remaining disagreed (11.11percent) and not sure (7.41 percent), it is just opposite in the group of completed immunization and in the group of incomplete immunization, only (3.70 percent) agreed, not sure (5.56 percent), but disagreed 90.79 percent). 55.6 percent agreed that if any case of Diphtheria occurs in the village and 11.11 not sure, 33.33 disagreed and the group incomplete immunization 55.56 percent agreed not sure 25.93 percent and disagreed 18.52 percent. If any family member has Measles infected, it will easily transmit to other children, 53.70 percent agreed, not sure 11.11 percent and 35.19 percent disagreed. For group with completed immunized, 77.08 percent agreed, not sure 14.81 percent and 7.14 disagreed. If some case of Pertussis occurs in the village it will easily transmit to other children , 83.33 percent agreed, 9.26 percent not sure and disagreed 7.41 percent and the group with incomplete immunization, agreed 37.04 percent, not sure 31.48 percent and 31.48 disagreed on this aspect respectively.

Regarding the the perception towards severity of vaccine preventable diseases is as shown in table 12 & 13, the poliomyelitis causes permanent paralysis resulting to death in some cases, the group with complete immunization 31.48 percent agreed. Not sure 35.19 percent and disagreed 33.13 percent and in the group of incomplete immunization 37.40 percent agreed, not sure 31.48 percent and 31.48 percent disagreed. All of seventh targets diseases of EPI program, if some child got infected and didn't have medicine for curative, 42.59 percent agreed, not sure 27.78 and 29.63 percent disagreed & in the group incomplete immunization 38.89 percent agreed, not sure 24.07 percent and disagreed 37.04 percent. And Measles can cause severe

pneumonia and diarrhea in the group of mothers with completed immunization of their children 50.00 agreed, not sure 29.63 percent and 20.37 percent disagreed for this case. In the group with incomplete immunization 50.00 percent agreed, not sure 27.78 percent and 22.22 percent disagreed.

Concerning the perception of benefits for immunization, it is as shown in the table 12 & 13, majority of respondents (88.89percent) the mother would like to follow immunization of the EPI program, and disagreed 11.11 percent by group completed immunization and group of incomplete immunization 90.74 percent agreed and not sure 1.85 percent and disagreed 7.41percent. The children got only two of vaccines DPT-He.B can prevent the diseases, (27.78 percent) agreed, not sure (11.11 percent) and (61.11) disagreed and group of mothers with incomplete immunization of their children answered agreed (11.11 percent), not sure or didn't have and disagreed (88.89 percent). The question, if your child gets healthy you need to vaccinate them, they answered (85.19 percent) the need of their children to get vaccinated and (5.56 percent) not sure but (9.26 percent) they said no need vaccination and group with incomplete immunization (77.80 percent) need to get their children vaccinated, not sure (3.70 percent) no need (18.52 percent). Completed vaccination will resistant diseases compared to the child with incomplete vaccination (66.67 percent) answer yes, while (24,70 percent) they were not sure and only (9.26 percent) disagreed, the mother group with incomplete vaccination of their children (83.33 percent) agreed, while few of them (9.26 percent) were not sure and (7.41 percent) disagreed.

Regarding the perception towards barrier for immunization, as shown in the table 12 & 13, if they should pay money for vaccination, it was (100 percent) agreed by the mothers with completed immunization and (90.74 percent) for the incomplete group and only (9.29 percent) disagreed. When they had appointment to take their children for immunization, but that day their children got sick (96.30 percent) they said should go and wait for next season only (3.70 percent), and the group with incomplete immunization (64.81 percent) should go and (35.19) they said waiting next season. After getting some vaccine they said (85.19 percent) their children got fever and (14.81 percent) never got fever in the completed group, but in the incomplete group (83.33 percent) got fever and (16.6 percent) never got.

As well as knowledge measurement, perception of mothers was measured by using scoring method. Twenty-one questions for measuring the perception were carried out and the respondents were asked to agree or disagree with the perception expressed in each question. For positive perception, question was graded as follows: Agree=3, not sure=2, disagree=1. While in the negative perception, they were in contrast way as 1, 2, 3 for agree, not sure and disagree, respectively. The mean scores for the mother were 38.99, and standard deviation ± 3.14. The perception scores ranged from 39-62, and were categorized to high (≥54), moderate (46-54) and low (≤39) perception using mean score and standard deviation, and the mean scores for the mother group with incomplete immunization was 51.05, and standard deviation ± 4.15. The perception scores ranged from 31-47, and were categorized to high (≥41), moderate (36-41) and low (≤36) perception using mean score and standard deviation.

Regarding the level of perception, for mothers group of completed immunization of their children and incomplete immunization were difference, high level (22.22 percent, and 20.37 percent) and moderate level's difference for group completed (66.67 percent) and group incomplete (55.56 percent), for the low level for the group completed immunization (11.11 percent), but group incomplete only (24.07 percent) shown in the table 13.

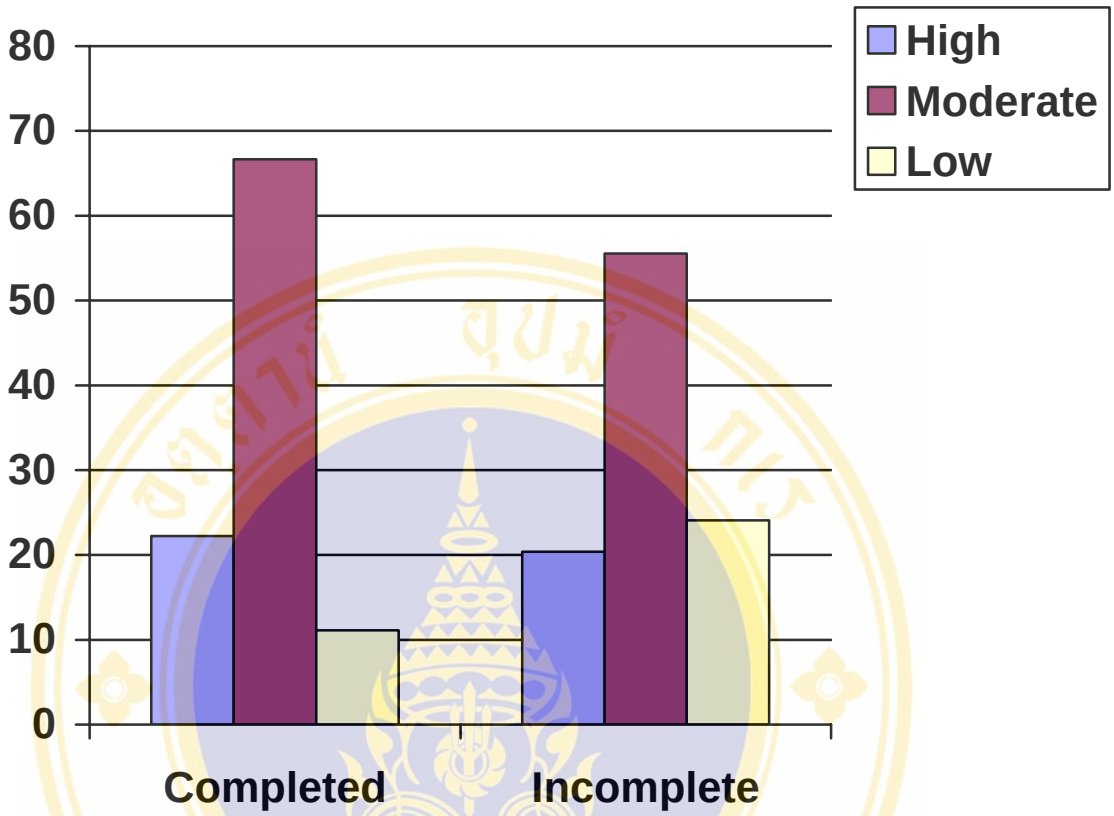

Figure 8 Comparison of level of knowledge mothers completed and incomplete Immunization their children

Table 12 Number and percentage of respondents classified by perception Toward EPI (Group completed)

No	Statement	Level of agreement			Mean	±SD
		Agree	Not sure	Disagree		
	Susceptibility					
1	It is necessary to vaccinate children who are breast-feeding?	81.48	7.41	11.11	1.29	0.66
2	If some case of Diphtheria appeared in your village, children in your village will be get it?	55.6	11.11	33.33	1.29	0.66
3	If any family member has measles, it will be easy get infected by other children in your family?	53.70	11.11	35.19	1.29	0.66
4	Children under three years of age will be get infected easy, if there if an occurrence pertussis case in Your village?	83,33	9.26	7.41	1.29	0.66
	Severity					
5	How severity of poliomyelitis causes, permanent paralysis resulting to death of some cases?	31.48	35.19	33.13	1.29	0.66
6	All of seventh target diseases of EPI program are severity if the child get infected, and there are no drug for treatment?	42.59	27.78	29.63	1.29	0.66
7	Measles can cause severe pneumonia, and acute diarrhea?	50.00	29.63	20.39	1.29	0.66

Table 12 Number and percentage of respondents classified by perception Toward EPI (Group completed) (cont.)

No	Statement	Level of agreement			Mean	±SD
		Agree	Not sure	Disagree		
	Benefit					
8	What do you think about each of the following immunization for your children?	88.89	00	11.11	1.29	0.66
9	If your children immunized only two doses can prevented diphtheria, Pertussis, tetanus, hepatitis B?	27.78	11.11	61.11	1.29	0.66
10	If your children get the healthy, they should go to the immunize?	85.19	5.56	9.26	1.29	0.66
11	If your children completed immunization (by national schedule)can prevented seventh target diseases of EPI program?	66.67	24.07	9.26	1.29	0.66
	Barrier					
12	If you should play for immunization, you get your children go to immunize?	100	00	00	1.29	0.66
13	Do you have appointment by health worker, you should get your children go to immunize, but that day your children got sick, you will getting your children going to immunize?	96.30	00	3.70	1.29	0.66

Table 12 Number and percentage of respondents classified by perception Toward EPI (Group completed) (cont.)

No	Statement	Level of agreement			Mean	±SD
		Agree	Not sure	Disagree		
14	Health worker inform you about sign effect of immunization	75.93	14.81	9.26	1.26	0.66
15	Your child get some sign effect when get some vaccine injection?					
16	What type of vaccine gets the side effect?					
	-DTP-HepB	05	00	49		
	-Measles	00	00	00		
	-Don't know	00	00	00		
17	When your children got immunized they get some fever	49	00	05		

Table13 Number and percentage of respondents classified by perception toward EPI (Group incomplete)

No	Statement	Level of agreement			Mean	±SD
		Agree	Not sure	Disagree		
	Susceptibility					
1	It is necessary to vaccinate a children who is breast-feeding ?	3.70	5.56	90.79	1.12	0.00
2	If some case of Diphtheria appeared in your village, children in your village will be get it?	55.56	25.93	18.52	1.12	0.43
3	If any family member has measles, it will be easy get infected by other children in your family?	77.08	14.81	7.41	1.12	0.43
4	Children under three years of age will be get infected easy, if there occurrence pertussis case in Your village?	37.04	31.48	31.48	1.12	0.43
	Severity					
5	How severity of poliomyelitis causes , permanent paralysis resulting to death of some cases?	37.40	31.48	31.48	1.12	0.43
6	All of seventh target diseases of EPI program are severity if the child get infected, and there are no drug for treatment?	38.89	24.07	37.04	1.12	0.43
7	Measles can cause severe pneumonia, and acute diarrhea?	50.00	27.78	22.22	1.12	0.43

Table13 Number and percentage of respondents classified by perception toward EPI (Group incomplete) (cont.)

No	Statement	Level of agreement			Mean	±SD
		Agree	Not sure	Disagree		
	Benefit					
8	What do you think about each of the following immunization for your children?	90.74	1.85	7.41	1.12	0.43
9	If your children immunized only two doses can prevented diphtheria, Pertussis, tetanus, hepatitis B?	11.11	00	88.89	1.12	0.43
10	If your children get the healthy, you should go to the immunize?	77.80	3.70	18.52	1.12	0.43
11	If your children completed immunization (by national schedule)can prevented seventh target diseases of EPI program?	83.33	9.26	7.41	1.12	0.43
	Barrier					
12	If you should play for immunization, you get your children go to immunize?	90.74	00	9.29	1.12	0.43
13	Do you have appointment by health worker, you should get your children go to immunize, but that day your children got sick, you will getting your children going to immunize?	74.07	12.96	12.96	1.12	0.43

Table13 Number and percentage of respondents classified by perception toward EPI (Group incomplete) (cont.)

No	Statement	Level of agreement			Mean	±SD
		Agree	Not sure	Disagree		
14	Health worker inform you about sign effect of immunization	74.07	12.96	12.96	1.12	0.43
15	Your child get some sign effect when get some vaccine injection?	100	00	00	1.12	0.43
16	What type of vaccine get the side effect when your children got ?					
	-DTP-HepB	5.56	00	00	1.12	0.43
	-Measles	1.85	00	00	1.12	0.43
	-don’t know	92.59	00	00	1.12	0.43
17	When your children got immunized they get some fever	83.33	1.85	14.81	1.12	0.43

Table 14 Number and percentage of respondent by perception level

Perception level	Completed		Perception level	Incomplete	
	N	%		N	%
High(≥54.32)	12	22.22	High (≥41.6)	11	20.37
Moderate(46.6-54.3)	36	66.67	Moderate(35,341.6)	30	55.56
Low(≤36)	6	11.11	Low (≤31)	13	24.07
(Incomplete) Mean=38.77, ±SD=3.14, Median=39, Min=31, Max=47,			Mean=51.05, ±SD=4.15, Median=50.5, Min=39, Max=62,		
Total	54	100		54	100

4.5 Source of education on immunization program.

As for sources of education on immunization program, these questions were asked to the mothers about, how they get education from health workers when mother bring their children to get immunization, didn't you remember what health worker inform you (46.3 percent) and (53.7 percent) they can't remember, for group incomplete immunization (44.4 percent) mother can remember and (55.6 percent) can't recognized. Before getting your child vaccinated on that day did health worker inform you about, what type of vaccine your child should get in this day (59.2) mother said, they inform every time, (7.4 percent) some time and some once said never (33.3percent), and group with incomplete immunization said (53.7 percent) every time and (5.5 percent) some time and never (40.7percent). Health workers inform them about diseases can be prevented by vaccine of EPI program, (61.1 percent) they said every time, (12.9 percent) said some time and (25.9 percent) they said no never informed and group incomplete immunization (48.1 percent) said every time they informed and (9.5 percent said) some time, (42.5 percent) said never informed. About time and place for getting immunization in next season (85.1 percent) mothers answered, yes and (5.56 percent) said only some time, (9.26 percent) said never, for the group of mothers with incomplete immunization of their children said (87 percent)

every time, some time (1.8 percent) and never got inform (11.1 percent) form health workers. About quantity of vaccine, health worker inform you how many doses your child should get immunize in that day, (85.1 percent) every time, some time (9.26 percent) and never (9.26 percent). But in group of mothers with incomplete immunization of their children got answer (72.2 percent) mother said yes every time, (5.5 percent) said some time and never got (22.2 percent), as shown in table: 15.

Table 15 Number and perception of respondent classified by of EPI information.

Source information on education	Immunization status					
	Completed		Incomplete			
	N	%	N	%	Chi-square	P-value
1/ Did you remember what information health worker inform you about immunization?	25	46.3	24	44.4	0.37	0.84
2/ Actually health worker inform you what type of vaccine for your children should be immunize in that day	34	59.2	18	33.3	0.69	0.70
3/ Health worker inform you about diseases can prevented by vaccine	33	61.1	26	48.1	3.35	0.18
4/ Health worker inform you?, about time, place you should get your children go to immunize next season .	50	94.4	46	87	4.06	0.13
5/ Health worker inform you about quantity of doses for each vaccine should immunized?.	45	85.1	39	72.2	3,45	0.17

4.6 Source of information on immunization program

As for sources of information on immunization program, about source of immunization day, (100 percent) got from health volunteer in the village, member of my family (27.78 percent), head of villager (42.59 percent), from health centre staff (20.37 percent), only few mother whom just follow by immunization card indication, and mother group incomplete their immunization got information about immunization day, from health volunteer in the village (5.56 percent), from member of family (40,74 percent), from head of village (37.04 percent), from health centre staff (11.11 percent)

About the place can get immunization for their children, in the group of mother whom completed their immunization respondent (53.37 percent) at provincial hospital, district hospital (81.48 percent), health center (94.44 percent), from mobile team services (68.52 percent) and don't know (3.70 percent) and group mother incomplete their children immunization, (38.89 percent) at provincial hospital, (50 percent) at district hospital, at health center (70.37 percent), by mobile team (70.37 percent) and (9.26 percent) they don't know where can they should get immunization for their children, as shown in the table: 16.

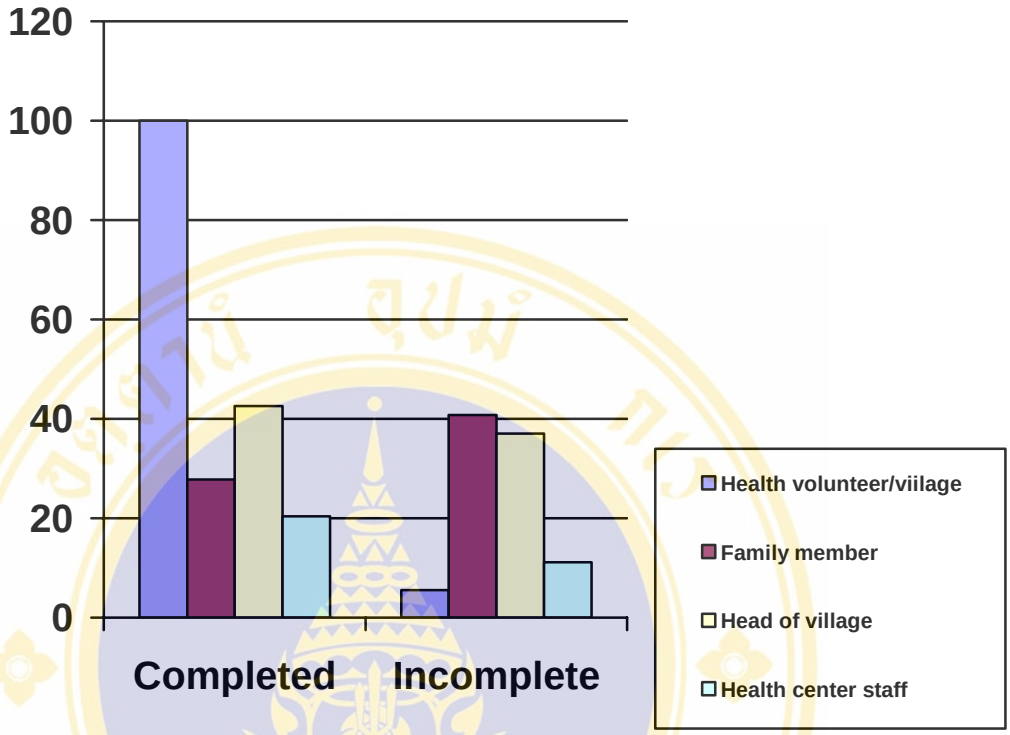

Figure 9 Source of information on education

Table 16 Number and percentage of respondents classified by source of EPI information

Source of information	Immunization status			
	Competed		Incomplete	
	N	%	N	%
From whom do you know of immunization days?				
-From Health volunteer in the	54	100	3	5.56
village -Member of my family	15	27.78	22	40.74
-Head of villager	23	42.59	20	37.04
-Health fix center staff	11	20.37	6	11.11
-I follow from immunize card indication				
Besides NIDs, do you know where you can receive the immunization for your children?				
At the province	29	53.37	21	38.89
districts hospital	44	81.48	27	50.00
Health center	51	94.44	38	70.37
Mobile team	37	68.52	38	70.37
Don’t know	2	3.70	5	9.26

4.6.1 Relation between children's immunization status and socio-demographic characteristics of their mothers

This This section had shown the relationship between socio-demographic characteristics mother with their children's immunization status. Exploratory factors in this analysis included: Age, education level, occupation, number of children alive, family income and residence. The purpose of analysis was to identify the correlation of these factors with the children immunization status.

From the table 16, the mother who had literacy had their children completely immunization at 92.59 percent. This proportion was higher than those mothers group incomplete immunization. These differently related with the children's immunization status (P-value <0.010).

The proportion of fully immunized children was higher (50.00 percent) among mothers who where farmer than the children whose mother were trade, labor, but not big difference between group mothers housewife. This difference in the mothers' occupation wasn't significantly related with the children's immunization status (P-value > 0.186).

The results also showed that more than half of mothers (74.08 percent) who wad 1-2 children were completely immunization. This proportion higher than for mother who had three or four and more than four children. There not significantly relationship between number of children alive and children's immunization status (P-value >0.580)

Moreover, about half of the respondent (53.70 percent) those were used fix centre service their children completely immunized, The proportion not so high than for the mother who were use immunization service at the outreach team, This not relationship between resident of mothers and children's completeness immunization was not significant (P-value > 0.687)

Table 17 Number and percentage of mother receiving immunization for their children by socio-demographic characteristics

Immunization status						
Socio-demographic characteristics	**Completed**		**Incomplete**		**Chi-square**	**P-value**
	N=54	**%**	**N=54**	**%**		
Mother's education						
Illiterate	4	7.41	13	24.07		
School	23	42.59	29	53.70	11.301	0.010
Primary school	19	35.19	9	16.67		
Secondary school	8	14.81	3	5.56		
Occupation of mother						
Farmer	23	42.59	34	62.96		
Labor + Trade	6	11.11	3	5.56		
Government employee	2	3.70	2	3.70	3	0.186
Housewife	23	42.59	15	27.78		
Number of children						
1-2	40	74.08	37	68.52		
3-4	13	24.07	23	24.08	1	0.580
<4	1	1.85	4	7.40		
Strategy zone						
Fix center	29	53.70	17	31.48	1	0.687
Outreach	25	46.30	37	68.52		

Table 18 show the comparison between the mothers' age, total family income per month and children's immunization status. The results showed that the median age of mothers who had children with incomplete immunization was 27 years old and this was equal compared to the group of mothers who had their children completely immunized. The comparison of mother' age with their children immunization status was not significant difference (P-value> 0.416).

Regarding to the percentage of family income both of these groups was different their income of group <399.000 kip per month(40.47 percent, 62.96 percent). The comparison of family incomes with their children immunization status was not significant different (p-value>0.068).

Table 18 Comparison of socio-demographic characteristics of respondent by children immunize status

Characteristics	**Immunization status**	**Number**	**Chi-square**	**P-value (2-Sided)**
Age(Years)	Completed	Mea=27		
	Incomplete	Mean=27	2	0.416
Family in come	Completed			
	100,000-399,000	22		
	400,000-699.000	17	2	0.068
	>700,000	15		
	Incomplete			
	100,000-399,000	34		
	400,000-699.000	10		
	>700,000	10		

4.6.2 Relation between children's immunization status and mother' knowledge toward immunization for each type of knowledge.

Regarding the comparison between the percentage of mother' knowledge about diseases transmission with their children immunization status, the result in table 19 shows that the percentage of good level of mothers' knowledge in the completely immunized group was higher (60.78 percent) than the incompletely immunized group (60.42 percent). Thus, it indicates that the difference in maternal knowledge was significantly associated to the immunization status of their children (P-value<0.035).

With regard to the mothers' knowledge about diseases prevention with their children immunization status, the results in (table 11) shows that the level of percentage of mothers' knowledge in the completely immunized group was slightly low (50.00 percent) than the incompletely immunized group (33.33 percent). This difference in maternal knowledge was not significantly associated to the immunization status of their children (P-value>0.07).

At the table 19 shows the comparison between the percentage level of mothers' knowledge about vaccine schedule and their children immunization status. The results showed that the percentage of good level of mothers' knowledge in the completely immunized group was higher (35.19 percent) than the incompletely immunized group (16.67 percent). This difference in maternal knowledge was significantly associated to the immunization status of their children (P-value>0.028).

Table 19 Comparisons between Knowledge of respondents for each type and their children's immunization status

Knowledge	Immunization status				Z*	P-value
	Completed	%	Incomplete	%		
Knowledge about	Good 31	60.78	Good 29	60.42	1	
diseases transmission	Fair 20	39.22	Fair 19	39.58	4.44	0.035
Knowledge about	Good 18	33.33	Good 27	50.00	1	
diseases prevention	Fair 36	66.67	Fair 27	50.00	3.08	0.07
Knowledge about	Good 19	35.19	Good 9	16.67	1	
Vaccine schedule	Fair 35	64.81	Fair 45	83.33	4.82	0.028

4.6.3 Relationship between children's immunization status and mothers' Perception toward immunization for each type perception.

The figure in table 20 shows the comparison between the percentages of the mother's perception on susceptibility with their children immunization status. It was found that the percentage level for mother's perception in the completely immunized group was lower (40.70 percent) than incompletely immunized group (51.81 percent). This means that there was association between mothers' perception and immunization received (P-value 0.02).

With regard to the comparison of percentages of mothers' perception on the severity with their children immunization status, the percentage of high level of mothers' perception in the completely immunized group was slightly higher than (46.30 percent) the incompletely immunized group (44.44 percent), and it is statistically not significant, refer to statistical (P-value 0.847).

However, on the perception of benefits when compared with the children's immunization status of completely immunized and incomplete immunized groups by using the Chi-square test, it has been found that it is higher (59.26 percent) in the completely immunized group, whereas in incomplete group it is (53.70 percent), P-value 0.56. It means that there was no significant correlation between mothers' perception on benefit with the children's immunization status.

Moreover, the percentage for mothers' perception on barriers to immunization in the completely immunized group was higher (68.52 percent) than the incompletely immunized group (64.81 percent). It was found to be statistically not significance at P-value 0.56 level for correlation between mothers' perception and immunization status of their children.

Table 20 Comparison between perception of respondents for each type and their children's immunization status

Variable	Immunization status				Chi-square	P-Value
	Completed		Incomplete			
	N	%	N	%		
Perception of Susceptibility						
High	22	(40.70)	28	(51.81)	1.34	0.247
Low	32	(59.26)	26	(48.15)		
Perception of Severity						
High	25	(46.30)	24	(44.44)	0.037	0.847
Low	29	(53.70)	30	(55.56)		
Perception of benefit						
High	32	(59.26)	29	(53.70)	0.33	0.56
Low	22	(40.70)	25	(46.30)		
Perception of barrier						
High	37	(68.52)	35	(64.81)	0.16	0.63
Low	17	(31.48)	19	(35.19)		

4.6.4 Relationship between children immunization status and place for get vaccination.

The result in table: 21 show the relationship between the children's immunization status and place for vaccination. The entire respondent used only mobile services and health centre for receiving their child's vaccination. The mothers group with completed immunization of their children received vaccination from mobile team services 68.52 percent and the use of fixed centre services was only 31.48 percent. The group of mothers with incomplete immunization of their children received vaccination from mobile team services was 46.3 percent and fixed centre services 53.7 percent

respectively. This study found that there was association between the place of immunization that their child has received immunization and the status of the children's immunization.(P-vau=0.001)

Table 21 Number and percentage of mothers receiving immunization for their children by place for get vaccination.

Place for get vaccination	Immunization status					
	Complete		**Incomplete**			
	Number (N=54)	Percent	Number (N=54)	Percent	$(X)^2$	P-value
Mobile team service	37	68.52	25	46.3	11.88	0.001
Fix center service	27	31.48	29	53.7	10.79	0.001

CHAPTER 5
DISCUSSION

The preliminary concern of this study was to describe under three years' children immunization status, socio-demographic characteristics, knowledge, perception and sources of information of mothers' towards immunization program. A cross sectional study was therefore conducted in this regard in order to identify the relationship between the immunization status and variables mentioned above. Immunization is very important in protecting the children from seven target diseases that can be prevented by vaccination. So in the light of this, the basic questions were about the children whoever got vaccination before or not, the place for vaccination and checking of their immunization cards. Other related factors of this study included were socio-demographic of each respondent in respect of resident, age, education level, occupation, number of alive children and total family income. Mothers' knowledge and perception towards immunization was also examined. Sources of information of mothers' about immunization program had also been included as one interesting factor. In terms of the sources of information, it was mainly focused on the knowledge about immunization program, side effects of vaccination (DPT-Hep.B and Measles) and the person who informed them to take their children for vaccination. In this regard, socio-demographic characteristics of the mothers, their knowledge and perception as shown in the preceding chapter are discussed herein.

5.1 Socio-demographic characteristics.

5.1.1 Age

The General characteristics of the respondents in this study were mothers who had children under three years of age. The youngest age group of the mother's were19 years and the highest percentage of age group were those of 19-27 years of age. The comparisons between the complete and incomplete immunizations were made by using the Chi-square test and the percentage distribution by age group was used from

appendix table 8. Due to normal distribution in percentage of each age groups, the data analysis for correlation was found significance relationship between children's immunization status and mothers age (P-value=0.05). The results mentioned in table 10 reveals that about (67.77 percent) of those who were less than 27 years old had completed their child's immunization, which means that this proportion was higher than those who were 28-45 years old. The findings of this study compares well with previous research which was conducted in Vongkhamdy K., in 1999 at Pakse district, Champasak province Lao PDR and Saleumsak K., in Khammuane province Lao PDR 2002.

5.1.2 Education status

Regarding. the education status of the respondents, this study found out that the group of illiterate mothers was (30.55 percent) and literate mothers with (69.45 percent). It could be regarded that those mothers who were literate had more of their children completely immunized than those who were illiterate. There was also a significance relationship between children's immunization status and mothers' education. It was similar to the study of Vongkhamdy K., in 1999 at Pakse district, Champasak province, and Sleumsak K., in Khamuan province in the Lao PDR 2002.

5.1.3 Occupation

According to the findings of this study, there was no correlation between the children's immunization status and the mothers occupation. The result found that, most of respondents (55.50 percent) were agriculturalists, especially rice farmer. Data analysis showed less than half of mothers (45.00 percent) who were agriculturalists had completed the immunization of their children, and the mothers of housewife group (40.74 percent) had their children's completely immunized, and other occupation groups only (25.92 percent) had their child completely immunized, (74.08 percent) had their children incompletely immunized. The study findings of immunization status and their mothers occupation was not significance. It differs from the previous study Vongkhamdy K., in Champasak province in 1999 and Sleumsak K., 2002 in the Khamuan province in Lao PDR.

5.1.4 Number of children

Regarding the number of children of respondents that were alive, almost more than half of mothers (71.29 percent) had one or two children, (28.71 percent) had three or four and more than four. Data analysis for correlation showed that, less than half of them (37.00 percent) among those who had only one or two children had their children completely immunized and this proportion was slightly higher than other who had three or more than four children. There was no significance correlation between number of children alive by the mothers and the children who received vaccination. The result is similar to that of Vongkhamdy K., and Sleumsack K., study in the Lao PDR 1999, 2002.

5.1.5 Total family income

The economic status of respondents was classified in terms of their family income in Lao's currency Kip. The monthly family income of the respondents ranged from 100,000 kip to 700,000 kip per month. The respondents of family income of <399,000 kip per month showed that about 51.85 percent of their children have completed immunization and the family income of respondents of >400,000-699,000 kip per month showed 15.74 percent have completed their child's immunization status. When comparing the respondents with the family income of <399,000 kip per month showed 23 percent have incomplete immunization status, 28 percent of respondents with family income of >400,000-699,000 kip per month and 13.88% of respondents with family income of more than 700,000 kip per month is incomplete immunization status. The result of the family income of this study and immunization children's status was statistically not significant. This study is similar to that of the study conducted by Saleumsak K., at Khamaun province in 2002 in Lao PDR.

5.1.6 Resident

In regards to residence of the respondents in this study, it was stratified by strategic zone for Mother and Child Health Center, Expanded Program on Immunization. There were fixed centre and outreach programs. The distribution of people in outreach programs showed higher than compared to fixed centers. The result of data correlation analysis also showed that (42.59 percent) of mothers used

fixed center services with 26.85 percent of their children being immunized. The mothers group who used mobile team services was (Outreach) 57.40 percent with 23.14% of their children being completely immunized. This study finding shows that there was significance between the fixed health center services and mobile team services and the outreach. (P-value<0.001)

5.2 Immunization status of children

The immunization status of the child was measured in terms of place of vaccination by examining the immunization card of the child and BCG scar. The results showed that most of the respondents' can easily access the mobile team services and were more convenient than that of the health center and district hospital. The result for mobile services was (57.41percent), and for the health center services was (42.59 percent) respectively. The children who had completed vaccination, the mothers to used (68.52 percent) by mobile serviced and health center serviced only (31.48 percent) and the mothers group incompletely immunized to used mobile serviced (46.3 percent) and health center serviced (53.7 percent). The correlation between immunization services and children immunization status was also significantly related. These findings are the concern to the implementation's strategy of Mother and Child Health Center (EPI program), which consists of two strategies, namely fixed center services (hospital, health center) and outreach services (mobile team) table: 8.

The main reasons for the difference between mobile services and health center based were due to their convenience, where they could actively go to the communities than passively as center based. However the center based, even though it is very near to the communities for the mothers to take their children for vaccination by themselves, it has limited them to go due to some difficulty of being absent from their work.

5.3 Knowledge of the mothers towards immunization program.

In the assessment of mothers' knowledge towards the immunization program were divided into two groups with group of mothers with complete and incomplete immunization of their children respectively. The result of this study showed that 14.81 percent is poor, 51.85 percent is fair, and 33.33 percent of mothers have good knowledge about the complete immunization of their children and 22.22 percent is poor, 57.41 is fair and only 20.31 percent among the group of mothers with incomplete immunization of their children.

With regard to the type of knowledge, this study found a majority (about 60.78 percent) had good knowledge about diseases transmission among mothers group with complete immunization of their children and (60.42 percent) among the group of mothers with incomplete immunization of their children. About 40 percent of both the groups got confused about negative question, especially they thought that the children who are infected by measles can not transmit the disease to other children. Knowledge about vaccine preventable diseases among the mothers group with complete immunization of their children was 33.33 percent and they know how to protect their children from contracting those diseases. Knowledge about vaccine schedule was very low in both the groups which were 25.92 percent and they can write answers about vaccine schedule.

The result of the analysis in this study findings were that the median score for the mothers' knowledge in the completed immunization group (12 scores) was different from group incompletely immunized (14 scores). There was significance correlation between mother's knowledge and their children immunization status. It was similar with the previous studies conducted by Vongkhamedy K., 1999 in Champasak province and Sleumsak K., 2002 in Khamaun province in Lao PDR.

5.4 Perception towards immunization program

The perception mother towards immunization program was assessed by using questionnaires related to vaccine preventable diseases. Susceptibility, vaccine preventable diseases severity, immunization benefit and barrier for immunization were some them taken into consideration. The result of this study showed the mothers group with complete immunization of their children had high perception with 22.22 percent, moderate 66.67 percent and low level 11.11 percent respectively. Among the mothers whose children were incomplete of immunization had the low level of perception of 20.37 percent, moderate and low higher than good level (55.56 percent and 24.07 percent), and the details are shown in table 6. For perception susceptibility, it was found that the majority of respondents agree that it is necessary to vaccinate a child who is breast-feeding. The mothers group with complete immunization showed that the perception susceptibility is 81.48 percent and the mothers group with incomplete immunization is 3.70 percent. (If there is occurrence of some disease outbreaks like measles in their village, the children in their village will get the infections) and both the groups had shown 55.6 percent as agreed. For perception of severity, Measles can cause severe pneumonia and acute diarrhea 42.59 percent for group of mothers with complete immunization of their children and 55.6 for group of mothers with incomplete immunization of their children. With regards to the perception of benefits of immunization, if children have received only two doses of DPT-Hep.B, the mothers group with complete immunization of their children responded 55.56 percent and the mothers group with incomplete immunization of their children is 27.78 percent. So, when comparing this two groups, mothers with complete immunization is good than the group of mothers with incomplete immunization of their children that the diseases can be prevented. And perception of barrier for immunization, do you have appointment from health worker or health center to take your children for the immunization, but on that day your child got sick not so severe, you should go? 96.30 percent among the mothers group with complete immunization of their children agreed, where as the mothers group with incomplete immunization of their children was only 74 percent. Their perception was that if their

child is taken for vaccination during the time of child's sickness, there will be increase in fever.

Further, the the analysis revealed that the median score of mothers' perception among the complete immunization group of mothers was (39 scores) which is slightly lower than the median scores among incomplete immunization group (50.5 scores). It was found that there was significant difference between mothers' perception and immunization status of children, P-value<0.05.

5.5 Sources of information.

The result. of this study found that most of the respondents on the sources of information on immunization program and source of immunization day were (100 percent) received from the health volunteers of the village, members of my family (27.78 percent), and head of village (42.59 percent), from health centre staff (20.37 percent). Only few mothers just followed the immunization card indication, and mothers group with incomplete immunization of their children received information about immunization day from the health volunteers of their village (5.56 percent), from members of family (40,74 percent), from head of village (37.04 percent), from health centre staff (11.11 percent).

About the place where to get the immunization of their children, in the group of mothers who completed their immunization responded (53.37 percent) at provincial hospital, district hospital (81.48 percent), health center (94.44 percent), from mobile team services (68.52 percent) and don't know (3.70 percent) and group of mothers with incomplete immunization of their children responded (38.89 percent) at provincial hospital, (50 percent) at district hospital, at health center (70.37 percent), from mobile team services (70.37 percent) and (9.26 percent) were don't know where they can get the immunization for their children.

This study finding indicates that the source of information and Immunization status of children was not significant and this study differs from the study conducted by Sleumsak K.,in Khamuan province in Lao PDR in 2002.(P-valeu>0.05).

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This cross-sectional study was aimed to consider knowledge, perception, sources of information of mothers with children under three years of age on immunization status, in Xaythany district, Vientiane capital, Lao PDR. The villages in this district were stratified on the basis of Mother and Child Health Centre (Lao National EPI program). They were grouped into two zones, namely - Fixed center and outreach services, and selected 10 villages for this study. The study selected 108 respondents who had children under three years old. The data was collected by interviewing mothers at the villages and 10 mothers from each village were selected, and divided into two groups, that is complete and incomplete immunization of their children.

The following are the conclusions based on the findings of this study results:

The result of this study showed that the mothers using mobile team services was (57.41percent) who received the vaccination of their child, and for the health center services was (42.59 percent). The children who had completed vaccination through mobile team services were (68.52 percent) and from the health center services were only (31.48 percent). The group of mothers with their children whose immunization status was incomplete by using the services of mobile team was (46.3 percent) and health center services were (53.7 percent) respectively. The study found out that there is correlation between the place of immunization services received and immunization status of the children.

The result also indicated that there was an association between those children who had completed immunization status and education of mothers', age and number

of children living and resident of mothers. But, there was no association between the occupation of mother and family income with the immunization status of their children.

Regarding the mothers' knowledge about vaccine preventable diseases and immunization program, it has been found out that there was not much of a difference of knowledge between the mothers of children with complete immunized group and incomplete immunized group. The level of mother's knowledge whose scores were poor, fair and good with regard to diseases transmission, the mothers did not know much about it. On the knowledge about diseases prevention, majority of the mothers knew how to prevent their children from infections, but few mothers were confused because they believe that the traditional medicines or injecting antibiotics will protect their children from vaccine preventable diseases like Pertussis, Diphtheria, Tetanus and so on. With regard to the knowledge about immunization schedule, mothers did not know how many doses of vaccines their children should be receiving, at what interval their child should be receiving the remaining doses of vaccines and when should the child be receiving measles vaccine. This study reveals that there is strong association between the mother's knowledge and children's immunization status. The mothers take their children to get vaccination not understanding by themselves, but they have been forced by some local leaders of people and village volunteers..

Regarding the mother's perception about vaccine preventable diseases and immunization program, this study showed that majority of the mothers had moderate level of perception (61.11 percent). But the mothers with high and low level of perception were few (N=12/22%, N=6/11%) With regard to mother's perception on each type of independent variables like perceived susceptibility, severity, benefits and barriers for immunization, most of the mothers could perceive it positively. But, some of the mothers still had negative perception about vaccine preventable diseases and immunization program. The result of this study indicated that there was some type of variable association between the mothers' perception and children's immunization status, wherein there is not much difference in percentage for above mentioned four perceptions between the complete and incomplete group of mothers for immunization of their children

With regard to sources of information on immunization program, the result showed that (100 percent)of the respondents with mothers of completely immunized children received information from the health volunteers of the village, 27 percent received from family member, 42 percent received from head of village and 20 percent received from health centers or health workers. About group of mothers with incomplete immunized children received information from health volunteers of the village 5.56 percent, 40.74 percent received from family members, 37 percent received from head of village, 11 percent received from health workers or health centers. So, the study result showed that there was no association between the sources of information of mothers and immunization status of children.

6.2 Recommendation

6.2.1 For implementation

1. From the result of this study, it is obvious that the immunization coverage is still low, because the children received only 1st and 2nd doses of DTP-Hep.B and were left without the 3rd dose. Some of the children didn't receive measles vaccine also. Therefore, it's necessary to strengthen EPI program to increase immunization coverage of this district. The health centers should have the actual number of target population to be immunized, thereby making it easy for follow up of the children. Proper recording of births and those transferred in and out should be recorded up to date throughout the season to ensure all children are covered for immunization and maintain proper data. The health center should also report every moth on the coverage of immunization and situation of catchments areas to district health office. The performance of village health volunteers should be monitored, supervised and followed up and their performance should be strengthened to have better coverage.

2. The result of this study also showed that knowledge and perception of mothers was the main causes of children' immunization status because many variables of knowledge and perception were significantly correlated to children's completeness of immunization. Therefore, every health workers should work closely together and educate mothers for improvement of their knowledge and get their vision

perception about health promotion and health prevention, especially for diseases prevention by vaccines, it's cost effectiveness and benefits. Knowledge and perception of mothers are very important to their children's immunization status, the government has to emphasize on health education, especially for IEC material it's very important for educating people.

3. Strengthen the community participation and multi-sectoral approach on immunization program including the private sectors such, clinics, drug store and etc. Because they have more opportunity and is convenient than the public sector to contact with mother and child. Therefore, health education on EPI program should be supported by using them as the key performance.

6.2.2 For the future research

This research did not study in depth the factors, and it's necessary to study about the activities of fixed center services and outreach services, staff on EPI in order to improve their abilities and influence the mother to utilize the immunization services, and how they educate mothers about immunization activities.

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APPENDIX

APPENDIX A

ID number:_____ Date of interview:

Interviewer's name:

KAP survey on the immunization and vaccine-preventable diseases

This questionnaire will be finalized, based on the findings of focus group discussion)

Province……District…….Village:……..
Zone:…….

Part I: Socio-demographic of mother

1/Household information

1. Respondent

. Father Mother others (……..)

2. Ethnicity

Lao Loum Lao Thung Lao Soung

3. Age:

Father…..…….years Mother……..years Other:( )

4. Number of children do you have?…… Children: Boy…… girl…….

5. Education

☐ 1.) No education ☐ 2.) Primary school

☐ 3.) Secondary school ☐ 4.) High school

☐ 5.) College/University

6. Occupation:

☐ 1.) Farmer ☐ 2.) Trader

☐ 3.) Laborer ☐ 4.) Government employee

☐ 5.) House wife ☐ 6.) Other

7. Average income :

i. 100.000 – 399.000 keep/Month ☐

ii. 400.000-699.000 keep/Month ☐

iii. More than 700.000 keep/Month ☐

8. What type of vehicle you used go to immunization post(example: hospital, Health center, mobile team shoot

Only one answer

	Dry season	Raining season
1 Walk	time……..minus	time……minus
6 Bicycle	time……..minus	time…….minus
3 Motorcycle	time……minus	time……minus
5 Tuk-tuk	time……minus	time……minus
6 Other(justify)	time……minus	time……..minus

9. What type of equipment and vehicle do you have?

How many unit do you have radio?,……

How many unit TV do you have?,…….

How many Bicycle do you have?,…….

How many do you have vehicle?,…….

Part II Knowledge **of mothers towards immunization**

10. Have you heard of the EPI target diseases?

☐ No

☐ Yes

11. If yes, what type of diseases(mutely choice answer)

(don't show the answer)

☐ Pertussis ☐ Tetanus

☐ Measles ☐ Polio

☐ Tuberculosis ☐ Hepatitis type B

12. Can poliomyelitis be transmit by Yes No

Living in the same room	☐	☐
Drinking water the same glass	☐	☐
Eating contaminate food with germs	☐	☐
Contracting poliomyelitis by injection	☐	☐

13. What do you think you can do to prevent poliomyelitis by

	Yes	No
vaccine oral	☐	☐
Traditional herb	☐	☐
Injecting Antibiotic	☐	☐
Can't prevent	☐	☐

14. Have you ever seen got the measles diseases?

☐Yes ☐No

15. Have any of your children been diagnosed as measles? (How many of them)

☐Yes ☐No

Yes(when?: how old of age ……..year,…….month

16. what do you thinking about the symptoms of measles?

(Definition of measles symptom by clinical: Fever, rat, cough, Sneeze, conjunctivitis)

☐ Fever ☐ Rash

☐ Cough ☐ Running nose

☐ Conjunctivitis ☐ Don't know

17. What do you think the causes of measles?

☐ Contracting measles by eating dirty food ☐ Breathing the germs in the air pollution

☐ Infected by virus ☐ Transmission by gene

☐ Food poisoning ☐ Don't know

18. What do you think the causes of Hepatitis B transmitting

☐ Eating some food with the patient get Hepatitis B ☐ From injection unsafely

☐ Air polluted ☐ Eating draw fish

19. Do you know when and how many times your children should be given OPV?

☐ Yes(if yes ☐ one time, ☐ two times , ☐ Three times , ☐ Four time)

☐ No

20. (If any of them have never received or did not receive OPV at appropriate timing) Why?

☐ I don't know ☐ I don't have time ☐ I don't want

21. Do you know when your children should be given measles vaccination?

☐ 6 -8 months ☐ 9-11 months

☐ More then 12 months ☐ I don't known

22. Have your children receive measles vaccination?

☐ Yes (how many of them?) ☐ (if yes one time, ☐ two times , ☐ Three times)

☐ No

23. Do you know when your children should be given BCG? Yes (by months) No ☐

24. Have your children received BCG? ☐ Yes (how many of them?) No ☐

25. Do you know when your children should be given DPT-HepB? Yes (by months) No ☐

26. Do you know how many doses your children will receive immunize DTP-HepB?

☐ One dose ☐ Two doses

☐ Tree dose ☐ Less than four

☐ Don't know

27. Do you know name of vaccine prevention Pertussis, Tetanus, Diphtheria, Hepatitis B?

☐ ☐

1 BCG 2 DPT-HepB

☐ 3 OPV 4 Measles

☐ 6 Don't know

28. How many time you should carrier your children go to immunize by schedule of national EPI program?

1 Three times ☐ 2 Four times ☐

3 Five times ☐ 4 Less than six times ☐

5 Don't know ☐

Part III :Perception of mothers towards immunization-Susceptibility

29. It is necessary to vaccinate a child who is breast-fed ?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree.

30. If some case of Diphtheria appeared in your village, will children in your village get it?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree

31. If any family member has measles, it will be easy get infected by other children in your family?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree

32. Children under three years of age will be get infected easy, if there if an occurrence pertussis

case in Your village?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree

SEVERITY

33. How severity of poliomyelitis causes , permanent paralysis resulting to death of some cases?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree

34. All of seventh target diseases of EPI program are severity if the child get infected, and there are no drug for treatment?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree

35. Measles can cause severe pneumonia, and acute diarrhea?

☐ a. Agree.
☐ b. Not sure.
☐ c. Disagree

Benefit

36. What do you think about each of the following immunization for your children?

1) ☐ a. Yes, I want to have my children immunized.
☐ b. I don' want to have my children immunized.
☐ c. I don't know

37. If your children immunized only two doses can prevented diphtheria, Pertussis, tetanus, hepatitis B?

1 Can prevented ☐ 3 I don't know ☐
2 Can't prevented ☐

38. If your children get the healthy, they should go to the immunize?

☐ 1 Should immunize ☐ 3 I don't know

☐ 2 No need

39. If your children completed immunization (by national schedule)can prevented seventh target diseases of EPI program?

☐ 1 Can prevented ☐ 3 I don't know

☐ 2 Can't prevented

40. What do you think you can do to prevent measles by

☐ Drinking clean water ☐ Injecting Antibiotic

☐ Injecting vaccine ☐ Traditional medicine

☐ Don't know

41. what do you think you can do to prevent Hepatitis B?

☐ Get some medicine Injecting vaccine ☐

☐ Traditional medicine Don't get anything ☐

42. To immunize the child completely is better than incomplete immunization(Three doses)

Yes ☐ No ☐

Barrier

43. If you should play some money for your child get vaccine injection, you get your children go to immunize?

☐ 1 Yes, I should go

☐ 2 No

44. Do you have appointment with health worker, you should get your children go to immunize, but that day your children got sick, you will getting your children going to immunize?

☐ 1 I should do

☐ 2 No

45. Health worker inform you about side effect of immunization

☐ 1 Every time ☐ 2 Some time

☐

3 Never

46. Your child get some side effect when get some vaccine injection?

☐ 1 Ever (Jump to)

☐ 2 Never(Jump to)

47. What type of vaccine get the side effect?

☐ 1 BCG ☐ 2 DTP-HepB

☐ 3 OPV ☐ 4 Measles

☐ 5 Don't know

48. What side-effect occur then?

☐ 1 Fever ☐ 2 Abscess

☐ 3 Rash ☐ 4 Other(justify……)

☐ 5 Don't know

49. If get the side-effected, what do you do?

☐ 1 Go to the hospital ☐ 2 Go to the traditional hillers

☐ 3 Go to the drug store ☐ 4 Stay at home

☐ 5 Other(justify……) ☐ 6 Don't know

Part IV Immunization education

50. Did you remember what information health worker inform you about immunization?

☐ 1 Remember

☐ 2 Can't remember

51. Actually health worker inform you what type of vaccine your children should immunized

☐ 1 Every time ☐ 2 Some time

☐ 3 Never

52. Health worker inform you about diseases can prevented by vaccine

☐ 1 Every time ☐ 2 Some time

☐ 3 Never

53. Health worker inform you?, about time, place you should get your children go to immunize next session

☐ 1 Every time ☐ 2 Some time

☐ 2 Never

54. Health worker inform you about quantity of doses for each vaccine should immunized?

☐ 1 Every ☐ 2 Some time

☐ 3 Never

Part V: Source information

55. From whom do you know of immunization days

☐ From Health volunteer in the village ☐ Member of my family

☐ Head of villager ☐ Health fix center staff

☐ I follow from immunize card indication

56. Besides NIDs, do you know where you can receive the immunization for your children?

☐ At the province ☐ districts hospital

☐ Health center ☐ Mobile team

☐ Don't know

57. Do you have the vaccination card for your children?

☐ Yes how many of them? ☐ No

Part VI Immunization status

Examine and record immunization status card?

	Child No: 1	Child No: 2	Child No: 3
Immunization card	Yes No	Yes No	Yes No
Date of birth	…../……/……	…../……/……	…../……/…… ….
Sex	Male Female	Male Female	Male Female
BCG			
DPT-HepB1			
DPT-HepB2			
DPT-HepB3			
OPV1			
OPV2			
OPV3			
Measles			
Immunization status	Completed		
	Incomplete		
	No immunize		

Thank you

APPENDIX B
FACTOR RELATED BETWEEN BIVARIATE

Table: B1 Number and percentage of mothers receiving immunization for their children by socio-demographics characteristics

Socio-demographic Characteristics	Immunization status				X^2 (df)	P-value
	Complete		Incomplete			
	Number (N=54)	%	Number (N=54)	%		
Age group (Years)						
<24	27	50.00	7	12.9	2	0.41
25-31	16	29.63	25	46.30		
32-38	7	12.96	21	38.89		
>39	4	7.41	1	1.85		
Family income kip/month						
<399,000	22	40.47	34	62.96	2	0.06
400,000-699,000	17	31.48	10	18.52		
>700,000	15	27.77	10	3.7		

Table: B2 Relationship between residence and occupation of respondent

Zone	Occupation status						X^2 (df)	P-value
	Farmer		Housewife		Other			
	N	%	N	%	N	%		
Fix center	26	45.61	10	26.32	2	15.38	6.24	0.044
Outreach	31	54.39	28	73.68	11	84.62	(2)	

Table: B3 Relationship between residence and education status of respondent

Zone	Education status				X^2 (df)	P-value
	Literacy		Illiteracy			
	N=	%	N=	%		
Fix center	28	40.66	10	58.82	14.60	0.002
Outreach	63	59.23	7	41.18	3	

Table: B4 Relationship between residence and knowledge level of respondents

Zone	Knowledge level						X^2 (df)	P-value
	Good		Fair		Poor			
	N=	%	N=	%	N=	%		
Fix center	3	21.43	20	30.77	15	35.19	5.19	0.074
Outreach	11	78.57	45	69.23	14	64.81	2	

Table: B5 Relationship between occupation and education of respondent

Occupation	Education status				X^2 (df)	P-value
	Literacy		Illiteracy			
	N=	%	N=	%		
Farmer	45	78.95	12	21.05	2.62	0.26
Housewife	34	89.47	4	10.53	2	
Other	12	92.31	1	7.69		

Table: B6 Relationship between knowledge and occupation of respondent

Occupation	Knowledge						X^2 (df)	P-value
	Good		Fair		Poor			
	N=14	%	N=65	%	N=29	%		
Farmer	9	7.39	31	34.31	17	15.31	4.43	0.35
Housewife	4	4.93	23	22.87	11	10.20		
Other	1	1.69	11	7.82	1	3.49		

Table: B7 Relationship between DPT-HepB knowledge on schedule and complete DPT-HepB vaccination

Knowledge	DPT-HepB vaccination				X^2 (df)	P-value
	Complete		Incomplete			
DPT-HepB schedule	**N=54**	**%**	**N=54**	**%**		
Correct answer	4	7.41	00	00	4.15	0.04
Wrong answer	50	92.59	54	100		

BIOGRAPHY

NAME	Kongxay PHOUNPHENGHACK
DATE OF BIRTH	January1, 1967
PLACE OF BIRTH	Outhumphone district, of Savannakhet Province, Lao PDR.
INSTITUTIONS ATTENDED	Lao National University in Vientiane Faculty of Medicine Lao PDR, 1992-1998 Medical doctor. Master of Primary Health Care Management, ASEAN Institute for Health Development Mahidol University, 2006-2007
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