

LAO PDR

“Sub-regional Mortality Level in Lao PDR”

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1. Introduction and overview

Lao PDR is a land lock country with a population of approximately 5.5 million people in 2002 and shares common boundary with China to the north, with Thailand to the west, with Myanmar to the north-west, with Vietnam to the east. The population of Lao PDR has a relatively young population with less than half of population under 15 years of age. The rural areas have a larger proportion of population included those who under the 15 year of age than urban areas. The average current size of the household is 5.9 persons with urban household size at 5.8 and the rural at 6.0 persons.

This report traces the mortality which including the Crude Death Rate (CDR), Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR) measures over the period of the 1985, 1995 and 2000 in Lao PDR. The primary source of data for the analysis has been the two Population Censuses; Lao Reproductive Health Survey (LRHS) conducted by the National Statistical Center in Lao PDR during 1980 -1990s. The main findings of this report are summarized below:

Mortality:

Overall health status in Lao PDR is poor. In 2000, the average life expectancy at births was 59 years old. Crude death rate (CDR) and maternal mortality ratio (MMR) declined from 15.1 to 6.3 per 1000 population in 2000. The maternal mortality rate decreased from 656 in 1995 to 530 per 100 000 live births in the year 2000. Infant mortality decreased from 104 in 1985 to 82 per 1000 live births in 2000. Under-5 mortality rate decreased

Mortality key determinants:

The mortality rates include IFR, MMR and U5MR in rural areas are higher than those in urban areas. At the provincial level infant mortality varies significantly by province, ranging from 18-125 per 1000 in some province.

At national level around 78 % of all women know at least one contraceptive method and 41% of the current married women had used a contraceptive at some points. At provincial level differentials in knowledge of contraceptive method vary widely among provinces.

The national median age at first marriage is 18 years old. It varies very slightly from province to province. It is rather low in some provinces with around 50 % of women married at adolescent below 17 years old.

At the national level, 76% of births born in the last 5 years are to women who received no antenatal care from any one. And only 24% of birth received first antenatal care visit at various stage of pregnancy. 86 % among the children born in the last 5 years were born at home, while 11 % were born in a general or provincial/ districts hospital and less than 1% in a health care center or clinics. Most births were delivered with assistance of relatives and friends and traditional birth attendants, while health professionals delivered only 17% of births. There are large variations between provinces. A small percentage of children are exclusively breastfed. Nearly all infants were breastfed with food supplementation, a practice is not recommended by the health authority or WHO. At the

provincial level, the proportion of children who are breastfed does not vary much by province to province.

The accessibility to safe water and the use of latrines are very important for human life. Although the improvement had been made compared to the 1995, however the proportion of population with no access to safe water as well as with the use of latrines still very high, especially in the rural areas. At the provincial the types of drinking water and use of latrines vary considerably from province to province.

Access to and use of public health services remains problematic in Lao PDR. At the national level more than half of population can reach hospital or health care facilities within one hour, while 44 % take more than one hour. At the provincial level, the time to reach the hospital or health care facilities varies considerably.

Mother's level of education directly affected the child under-5 mortality rate. Mortality rates of children of mothers with no education much higher than those with primary and secondary or higher education.

The report is organized as follows: section 2 looks at the data sources, the survey methodologies; section 2 described the concept, definition and compilation methodology; section 3 delineates the changes over time in reduction of mortality at the national and sub-regional level; section 4 analyses mortality causes or key determinants where discussion will focus on maternal factors (mother's age at marriage and first birth, birth spacing and maternal health) then following by some of environmental factors such as access to safe water and latrines and nutritional factors (breast feeding) and some of indirect factors regarding to social aspects like access to health care services and maternal education. Finally, section 5 concludes the paper/report

2. Data Sources

The main sources of data for mortality analysis in Lao PDR are the two population census and reproductive health surveys:

The population census 1985. Topics covered in the 1985 census: structure and size of population, distribution and migration, characteristics of households, education, health, labor force and housing. However the statistics on births, death and migration was not yet been developed and the Population Census could not provide such data. Consequently in 1986 a sample survey on births and deaths was organized by the National Statistical Center, involving 60-sample villages selected from over the country. This was the first survey of its kind to have been undertaken in the Lao PDR and the results were regarded as indicative, especially due to statistical issues of random village selection. After the 1986 investigation, the Multi-Round Survey from 1988 to the middle of 1991. This survey was designed to provide 6 monthly estimated of birth, death and migration. It involved 300-sample village's nation wide.

Report and compilation available only for national level but not sub-national (provinces). However some of compilation was available at province and district level in the report. The census was conducted by the National Statistical Center with the support of UNFPA.

The population census 1995. Topics covered in the 1995 census: structure and size of population, distribution and Migration, characteristics of households, education, health, labor force, and housing. Report and compilation available not only for national but also for sub regional and province. The census was conducted by the National Statistical Center with the support of Sida through Statistics Sweden

The Lao Fertility and Birth Spacing Survey, 1994 was undertaken which funded by UNFPA and implemented by Lao Women Union (LWU) and National Statistical Center (NSC), covering a sample of 6000 households and 5700 ever married women between 15-49 years of aged were interviewed. Topics covered in the survey: education, immunization-health, reproduction, contraception, pregnancy and breast-feeding, marriage, fertility preferences. The sample of LFBSS was a national probability sample covering each of national 17 provinces and one special region. The design was a two stages stratified cluster sample.

In the year 2000, the Lao Reproductive Health Survey (LRHS) was undertaken. It has been a collaborative effort of NSC and Ministry of Health. The LRHS 2000 was funded by UNFPA. Topics covered in the survey: respondent's background, reproduction, pregnancy and breast-feeding, marriage, fertility preferences, RTI/STDs and HIV/AIDS. The survey was conducted using two stage stratified cluster sample methods that covered 17 provinces and 1 special region. Forty villages in each province were selected by applying systematic probability proportionate to size sampling. Within each sample village, a fixed number of 30 households were selected using systematic sampling. The surveyed covered 21067 households interviewing 12597 women (aged 15-49 years old) and 3060 men.

Other sources of information:

The Lao National Health Survey 2000, is a cross-sectional national sample survey. The sample size was 6600 households with 2200 households in each of three regions (North, South and Center). 264 villages and 128 districts were included in the sample, with average 25 randomly selected households in each village. This survey –in conjunction with the Multiple Indicator Cluster Survey (MICS)

The Multiple Indicator Cluster Survey (MICS) conducted in 2000 with the support of UNICEF. Topics covered: education, water and sanitation, child malnutrition, child health, reproductive health, child right. Two stages sampling scheme was used for sample design. At first stage, 264 clusters were selected with probability proportional to size. A cluster represents a village in each stratum. At second stage, 25 household were selected form each cluster by systematic sampling. In this way, a sample 6600 households was draw from whole country.

Lao Expenditure and Consumption Survey 1 implemented by the National Statistics Center in 1992/93 with the support of Sida through Statistics Sweden and covering a sample of 2937 households (LECS1). The survey did not collect data on income.

Lao Expenditure and Consumption Survey 2 implemented by the National Statistics Center in 1997/98 with the support of Sida through Statistics Sweden and covering a sample of 8882 households (LECS2).

3. Concept/ Definition and Compilation Methodology

3.1 Concept and definition

Mortality Rate is manifested in the form of Crude Death Rate (CDR) which is defined as the number of people dying in a given year divided by the number of people in the population in the year. It is calculated by the following formula:

$CDR = D/P * 1000$, where:

D is number of death during certain period of time

P is total mid year population of the same period of time

Infant Mortality Rate: is death rate of live births that shows in number of infant deaths (deaths of children under one year of age) per thousand live births. It is calculated by the following formula:

$IMR = d/B * 1000$

d is number of infant deaths (deaths of children under one year of age) during certain period of time

B number of live births in the same period of time

Under five Mortality Rate: is death rate of children under five years old per thousand live births in the same period of time.

Maternal Mortality Rate: The number maternal death per 100 000 live births. A maternal death of a women while pregnant or 42 days of termination of pregnancy irrespective of duration and the site of pregnancy from any causes related to or aggravated by the pregnancy.

3.2 Estimation Methodology

Estimated Mortality in 1985: (Not available)

Estimated Mortality in 1995: Infant and child mortality rate: Mortality was estimated in two different ways. First, the parameters in a fitted stable population give estimated survival rates for population. Second, using the proportions of deceased children report by women in the Census. However, it is recommended to use the first method¹. As in the case of Lao PDR data are affected by age –heaping so rudimentary methods was applied. The basic principle that the average of the proportion of deceased children reported by mothers aged 15-19 and 20-24 very near equal to infant mortality qo.

Estimated Mortality 2000: (detail not available)

Mortality data are mainly obtained from the pregnancy history section of the female respondent questionnaire and are supplemented by information from the household

¹ Hartmann, M (1996): Analysis of fertility, mortality and population growth in Lao PDR. LAOSTAT 1996:7. Statistics Sweden, International consulting office

questionnaire. Data on living and dead children are used to directly compute mortality rates. In the Reproductive health Survey 2000 in Lao PDR the infant and under five mortality rates are based on the direct estimation technique.

Provincial analysis: Self weighting sampling was carried out in each of the 18 provinces, making the provincial data representative of each province. But the LRHS 2000 did not self-weighting at the national level. So weighting factor was applied to the data so that weighted national data and statistics can be compared with unweighted data that are self weighted at the provincial level. So all the compilation results in the provincial report are unweighted while the national figures were weighted.

4. Mortality in Lao PDR

Lao PDR is among the world's least developed countries. According to the Global Human Development Report, UN, 2001, forty-nine countries are currently designated by United Nations as Least Developed Countries (LDCs). Lao PDR's per capita GDP in the year 2001 was US\$ 331, while the current basis for inclusion in the list is based on a per capita GDP of less than US\$ 800. In 1999, the Human Development Index was 0.476, an increase from 0.402 in 1990. Nevertheless, the Lao PDR is still ranked 131 out of 162 countries. Of all the Asian countries, currently only Bangladesh have a lower HDI than the Lao PDR.

An annual Population growth rate of 2.8 percent was indicated in the Lao Reproductive Health Survey Report 2000 (UNFPA and State Planning Committee). The majority of population resides in rural areas where subsistence agricultural practices prevail with 22 percent living in urban areas. The National Reproductive Health Survey 2000 data indicated that only 6 out of 10 households have flush toilet and almost 3 of 10 use normal latrines. Almost 4 out of 10 household drink water from local natural resources that are often far from clean rivers, streams and ponds. The overall status of health in Lao PDR is poor. In 2000, the average life expectancy at birth was 59² (61 for female and 57 for male). Infant, Child under 5 and maternal rate were high. However it has been decreased compare to period during 1990s.

4.1 Reduction in Mortality:

Table 1 presents estimates of mortality overtime. As shown in table, Crude Death Rate declined from 17 per 1000 population to 15.1 and nearly half in 2000 (6.3 per 1000 population)³. The maternal mortality rate decreased from 656 in 1995 to 530 per 100 000 live births in the year 2000. With a 95 confidence limits, the true maternal mortality ratio (of 530 per 100000 live births) is estimated to be between 480 and 580 (i.e. 530-

² It is increased from 52 in 1995.

³ Through the sample size of the LRHS 2000 survey is sufficient for fertility and contraceptive use estimates, it is inadequate for mortality estimates, particularly maternal mortality measures. Thus, the estimated IMR U5MR and MMR have to interpret with great caution. Since number of cases of these indicators is relatively small, each indicator (statistic r) will be interpreted with 95 percent confidence limits (r-2se, r+2se) where **se –is its standard error or sampling error.** Furthermore, household's surveys often suffer from non sampling error such as under reporting due mainly to poor recall and misclassification of age specific deaths, especially maternal deaths.

53, 530+53). Infant mortality decreased from 118 in 1985 to 82 per 1000 live births in 2000.

Table 1: Mortality at National level in Lao PDR, 1985-2000

Indicators	1985	1995	2000
Lao PDR			
Crude Death Rate (CDR)	17	15,1	6,3
Infant Mortality Rate (IMR)	118	104	82
Under five Mortality (U5 MR)	na	170	106,9
Maternal Mortality Rate(MMR)	na	656	530
Urban			
Crude Death Rate (CDR)	na	na	3,9
Infant Mortality Rate (IMR)	na	na	41,7
Under five Mortality (U5 MR)	na	na	48,6
Maternal Mortality Rate(MMR)	na	na	170
Rural			
Crude Death Rate (CDR)	na	na	6,9
Infant Mortality Rate (IMR)	na	na	87,2
Under five Mortality (U5 MR)	na	na	114,2
Maternal Mortality Rate(MMR)	na	na	580

Sources: National Statistical Center: Population census 1985 and 1995 reports and Lao reproductive health Survey 2000

4.2 Regional /provincial Mortality differentials:

Lao PDR divided into 3 regions: North, South, Center and comprises of 16 provinces, a special region and one Municipality. *Northern Region*: Phongsaly, Luang Numtha, Oudomxay, Bokeo, Luang phrabang, Huaphan, Xayabury and Xaysomboon Special region; *Central Region*: Xiengkhuang, Vientiane province, Vientiane Municipality, Borikhamxay, Khammuane and Savanakhet; *Southern region*: Saravan, Sekong, Champasack and Attapeu.

The mortality rate estimates for rural and urban was not available for both 1985 and 1995. There are relatively large differences between urban and rural areas, much lower rate of IMR and U5MR were observed in urban areas 41.7 and 48.6 per 1000. Nearly twice lower in rural areas 87.2 and 114.2 per 1000 IMR.

Given the variety regarding to natural, culture, socio-economic characteristics and other in each regional/province location, the CDR, IMR, U5MR and MRR are varied among provinces for both periods (1995 and 2000).

In 1995, the highest rate of IMR in Xaysomboon Special Region (138) and followed by Borikhamxay, Xayaboury, Luangphrabang, Huaphan, Xiengkhuang and Luangnumtha respectively in order. The lowest rate in Vientiane Municipality (72). There were 4 provinces (Xaysomeboon SR, Attapeu, Borikhamxay, Xayaboury) where the CDR higher than national average (15.1), while 4 provinces (Luangphrabang, Xiengkhaung, Champasack and Vientiane province) closed to national average.

As mentioned earlier that CDR data at provincial levels in 2000 is less reliable compared to 1995 population Census estimated. However, the result of estimate show that in 2000 the CDR varies moderately among provinces, they rank from a low 3-5 per thousand in Xayaboury, Vientiane Mun. Borikhamxay, Sekong to a high 8-11 per

thousand in Saravan, Luangphrabang, Khamuan. There were 10 provinces have higher CDR than that of the national average (6.3 per thousand).

Infant mortality in 2000 also varies significantly from provinces to province ranging from 18-47 per thousand in Vientiane Municipality, Borikhamxay, Vientiane, and Huaphan to a high 93-125 per thousand in Attapeu, Svannakhet and Luangphrabang. Only five provinces are having much higher infant mortality rate than the National average (82 per thousand). (see table 2).

Table 2: Mortality by provincial, 1995-2000

No. Code	Province	Crude Death		Infant Mortality Rate		Under 5 Mortality Rate		Maternal Mortality Rate	
		1995	2000	1995	2000	1995	2000	1995	2000
1	Vientiane Mun.	10,9	3,7	72,0	17,9	115	21,4	228	na
2	Phongsaly	11,7	4,6	94,0	61,9	145	77,3	1064	na
3	Luangnamtha	12,9	5,2	119,0	88,3	226	119,1	1595	na
4	Oudomxay	11,1	7,3	88,0	79,1	126	111,1	1304	na
5	Bokeo	13,9	4,2	82,0	73,3	data missing	91,1	27	na
6	Luangphrabang	15,2	8,8	132,0	124,8	204	149,7	872	na
7	Huaphanh	15,1	6,7	125,0	58,3	240	94,8	656	na
8	Xayaboury	16,8	3,4	134,0	46,8	259	66,1	1118	na
9	Xiangkhuang	15,0	7,5	121,0	69,6	231	90,4	551	na
10	Vientiane	13,9	5,6	102,0	34,9	102	58,8	454	na
11	Borikhamxay	16,5	3,6	136,0	26	152	47,7	445	na
12	Khammouane	12,3	10,8	83,0	91,5	137	116,2	897	na
13	Svannakhet	12,1	6,4	86,0	98,7	data missing	123,9	820	na
14	Saravane	12,6	8,3	86,0	75,8	137	96,6	930	na
15	Sekong	12,9	4,9	96,0	55,4	142	70,7	1431	na
16	Champasack	14	6,5	91,0	77,8	148	93,8	449	na
17	Attapeu	16,6	6,4	93,0	93,1	152	111,7	468	na
18	Xaysonboon SR	16,9	6,7	138,0	58,7	273	68,3	551	na

Sources: State Planning Committee, National Statistical Center 1997, Result from Population Census 1995,

Committee for Planning and Cooperation, National Statistical Center, Summary Report of provincial Data Analysis 2003
Reproductive Health Survey, 2000.

From above discussion on the mortality differential across the provinces, next section will therefore examine some of mortality determinants.

5. Mortality Key Determinants

The high levels of infant mortality rates (IMR) and child under 5 mortality rates (U5MR) reflects the poor health status in the country. The overall poor status of population, particularly women, infant, young children are result of many factors included mother occupation, level of education, health, knowledge and practices as well as poverty and access to health services.

Maternal factors are included mother's age at marriage and first birth, birth spacing, maternal health; Environmental factors are included water and pollution, place of residence, parasitic diseases, sanitation (vaccination), etc; Nutritional factors are included breast feeding, malnutrition, under malnutrition and other traumas such as

accidents, burn, drown etc. There are disease prevention methods that included methods of seeking for preventive treatments and determination of a family in curative treatment. In addition the socio-economic or indirect factors namely family income, access to health care services, availability of well equipped hospital and dispensary, maternal education and preventive curative treatment schemes are also a contributory factor in child death or survival.

The next portion of the paper will be summarized some of those determinants of child mortality. Since only few of indicators/ determinants are available for both 1995 and 2000 at provincial level. Therefore the discussion will mainly focused the across provinces comparison using the LRHS 2000.

5.1 Mother age's at marriage:

Table 3 indicates that the median age at first marriage of ever married women by province⁴. The national median age of first marriage is around 18 years old. It varies very slightly from province to province, ranging from a low 16-17 years old in the central provinces of Xaysomboun SR, Borikhamxay and Vientiane; and the northern provinces of Oudomxay, Bokeo, Luangprabang and Xayabury to a high 18 years old in the southern provinces of Sekong, Champsack and Attapeu; central provinces of Vientiane Municipality, Savannakhet, Khammuane and Xiengkhuang; and northern provinces of Luangnamtha, Phongsaly and Huaphanh. Surprisingly, the median age at first marriage is too low in some provinces with around 50 percent of women marrying at adolescent ages below 17.

Data in table 3 reveal that the median age at first marriage among Laotian women in 2000 became higher than in 1994 (17.1 years).

⁴ The median age at first marriage is defined as the age by which 50 percent of women have been married.

Table 3: Median age at first marriage among women aged 25-49 years by province, FBSS 1994 and LRHS 2000

Province (self-weighted)	Median	Number of women
North		
Phongsaly	17,8	460
Luangnamtha	18,1	404
Oudomxay	17,1	455
Bokeo	17,4	401
Luangprabang	17,1	449
Huaphanh	17,7	437
Xayabury	17,2	471
Central		
Vientiane Mun.	18,4	481
Xiengkhuang	17,6	450
Vientiane	17,2	455
Borikhamxay	17,3	401
Khammuane	17,8	448
Savannakhet	18,1	458
Xaysomboun SR	16,3	411
South		
Saravane	17,7	375
Sekong	17,9	408
Champasack	18,4	434
Attapeu	17,6	444
Country (weighted): Lao PDR		
	17,6	7 783
Lao PDR , Fertility and Birth Spacing Survey 1994*		
	17,1	7 703

Note: The media for women 15-19 and 20-24 can not be estimated because less than 50 percent were married by age 15 and 20, respectively.

** Age at first marriage was calculated based on month and year of marriage and exclude 21 marriage year.

5.2 Age at First Birth:

Age at first birth or timing of first birth signals to onset of childbearing and is an important demographic indicator. Early start in childbearing will most likely result in higher completed fertility. Conversely, delaying the first birth and lengthening the birth interval of subsequent birth can contribute not only to fertility reduction but also to improvement in maternal and child health. Mother's age at birth is known to have an association with infant and child mortality. The older of mother are at the time of birth the less likely it is that the child will survive through the childhood.

Table 4 presents differentials in mean age at first birth among women 25-49 years of age by province. Overall, the median age at first birth is around 20 years old. At the provincial level, the median age at first birth fluctuates moderately from province to province, ranging from a low 19 years in the provinces of Luangprabang, Huaphanh, Xayabury and Oudomxay (northern region) as well as of Vientiane and Xaysomboun SR (central region) to a high 21 years in the northern province of Phongsaly and central province of Vientiane Municipality.

**Table 4: Median age at first birth among women aged 25-49 years
by province, FBSS 1994 and LRHS 2000.**

Province (self-weighted)	Median	
	Median	Number
North		
Phongsaly	20,5	557
Luangnamtha	19,8	498
Oudomxay	19,4	527
Bokeo	19,6	494
Luangprabang	19,3	536
Huaphanh	18,9	543
Xayabury	19,4	553
Central		
Vientiane Mun.	20,5	530
Xiengkhuang	19,8	536
Vientiane	19,2	551
Borikhamxay	19,6	479
Khammuane	19,8	526
Savannakhet	19,5	542
Xaysomboun SR	18,5	537
South		
Saravane	20,0	457
Sekong	20,4	470
Champasack	20,4	491
Attapeu	19,5	516
Country (weighted)	20,2	9 343
Lao PDR , Fertility and Birth Spacing Survey 1994**	20,5	7 724

Note: The median for women 15-19 and 20-24 can not be estimated because less than 50 percent of the women have not yet had birth by age 15 and 20 respectively.

The median age at fist birth among women age 25-49 years at the country level in 2000 was lower then during the 1994 at 3 months.

5.3 Adolescent Fertility

Adolescent or teenage fertility is an important topic since increasing number of adolescent mothers and children are at greater risk of serious social and health problems. Adolescent births most often accompany early marriage, and come from poor families with little education, inadequate occupation skills and poor health status. Thus, their children are at greater risk of morbidity and mortality than other children.

Appendix table 11 shows the percentage of adolescent women aged 15-19 who are mothers or pregnant with the first child by province. At the national level, 15 percent of the adolescent women become mothers and 4 percent are currently pregnant with their first child. Thus, over 18 percent of adolescent women of Lao PDR have started early childbearing.

At the provincial level, the proportion of adolescent women starting childbearing fluctuates substantially among provinces from the national average (18.4%). Provinces with high proportion of adolescent women starting early childbearing include: Saravane

(29%) and Sekong (25%) in the southern region; Huaphanh (28%), Luangnamtha (21%) and Luangprabang (21%) in the northern region; and Xaysomboun SR (31%), Xiengkhuang (28%) and Vientiane (21%) in the central region.

5.4 Birth Spacing:

➤ Knowledge with family planning methods:

At the national level, 78 percent of all women indicated that they know at least one contraceptive method. Knowledge of modern FP methods (77%) is much higher than the knowledge of traditional methods (44%)(See Table5). Given the low level of knowledge of FP methods, there is a need to raise the level of knowledge of women on all modern FP methods through an innovative information and education campaign.

At the provincial level, differentials in knowledge of any contraceptive method vary widely from one province to another. This variation ranges from a low 37 percent in the northern province of Phongsaly to a high 98 percent in the central province of Vientiane Municipality. Additionally, out of 18 provinces 12 have lower knowledge of any contraceptive method than the national average (78%). As regards modern FP methods, provincial differentials follow a similar pattern of variations: ranging from 30 percent in Phongsaly to a high 98 percent in Vientiane Municipality.

Knowledge of popular methods, such as pills, IUD, injection and female sterilization varies with ranging from a low level (16-21%) in Phongsaly to a high (88-94%) in the central urban province of Vientiane Municipality. There are about the same number of provinces(12) that have lower knowledge level of those popular methods than those of the national level. In particular, the knowledge of condom varies substantially from province to province. Other modern FP methods (male sterilization, Norplant, foam/jelly) display a similar pattern of variation but at a lower knowledge level.

➤ Ever use of family Planning method:

In Table appendix 2, at the national level, nearly 41 percent of the currently married women had used a contraceptive method at some point: 37 percent had used modern methods and 8 percent traditional methods. The majority of the currently married women (60%) have never used any contraceptive method.

At the provincial level, ever use of modern contraceptives varies widely from province to province, ranging from a low 12 percent in the southern provinces of Attapeu and Sekong to a high 51-66 percent in the central provinces of Vientiane Municipality (66%) and Vientiane (51%), and in the northern province of Xayabury (56%). In addition, 12 out of 18 provinces have lower proportion of currently married women who have ever used any modern FP method than the national average (37%).

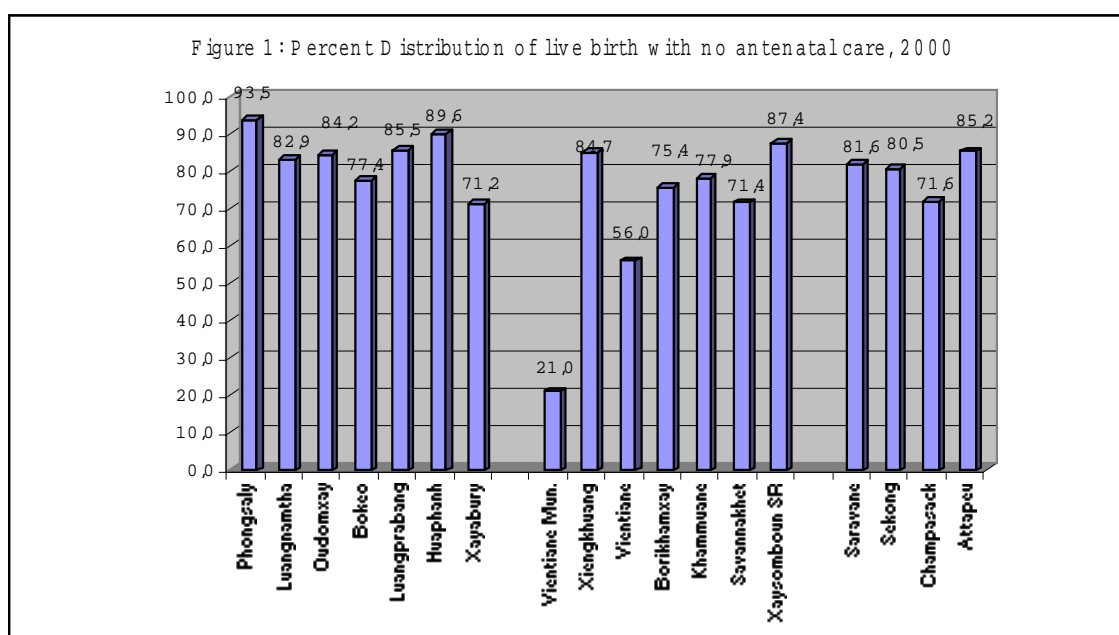
The popular modern contraceptive methods vary in a similar manner from province to province but at a lower level of use. However, the never users of contraception vary substantially also from province to province, ranging from a low 20 percent in the central province of Vientiane Municipality to a high 88 percent in the southern provinces of Sekong and Attapeu.

5.5. Maternal health

➤ Antenatal Care

Appendix Table 3 displays the provincial differentials in the antenatal care coverage⁵. Overall, more than three-quarters (76%) of the births born in the last 5 years to women received no antenatal care from anyone.

There are large variations between provinces. A high proportion of births that have no antenatal care are from the three regions: Phongsaly (94%), Huaphanh (90%), Luangprabang (86%) and Oudomxay (84%) in the northern region; Xaysomboun SR (87%) and Xiengkhuang (85%) in the central region; and Attapeu (85%), Saravane (82%) and Sekong (81%) in the southern region (see figure1).



Only two provinces have relatively low proportion of births that have no antenatal care: Vientiane Municipality (21%), Vientiane province (56%). Thus, it is clear that majority of the births from most of the provinces (12 out of 18 provinces) receive no proper antenatal care than the national average (76%).

Of those provinces which receive antenatal care, only the central provinces (i.e. Vientiane M., Vientiane, and Savannakhet) receive relatively higher antenatal coverage by a medical professional (doctor, nurse, or midwife) than most of the provinces in the northern and southern regions (see Table ST 8.01).

This low level of antenatal care received by high proportion of births in majority of the provinces, has serious implications for maternal health and child survival.

⁵ These are expressed in percent distribution of last three live births in the five years preceding the survey

➤ Antenatal Care visits

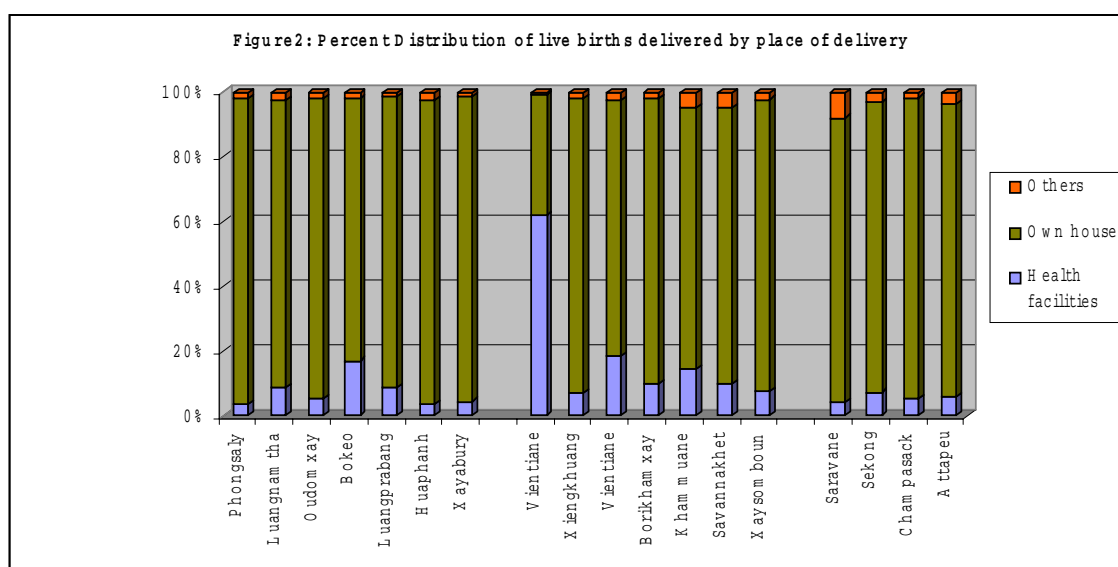
Serious complications resulted from pregnancy can be prevented or resolved at early antenatal care visits for monitoring, consultation and treatments, particularly after becoming pregnant or during first few months of pregnancy and for high parity pregnancy.

Appendix table 4 shows the percent distribution of live births in the 5 years preceding the survey at the time of mothers' first antenatal visit by province. Overall for the country, only 24 percent of the births receive first antenatal care visits at various stage of pregnancy: 10 percent within 3 months of pregnancy, 8 percent during 3-5 months, and 7 percent at 6th or later month of pregnancy.

At provincial level, the proportion of births receiving first antenatal care before three or six months of pregnancy varies widely among provinces. There are 12 out of 18 provinces that have lower proportion of birth having first antenatal care before the sixth month of pregnancy. Only 6 out of 18 provinces have a higher percentage of births receiving first antenatal care visits in less than six months than the national average (17.6%). These provinces are: Northern region - Bokeo (19%) and Xayabury (23%); central region -Vientiane Municipality (70%), Vientiane (32%) and Borikhamxay (19%); and southern region - Champasack (21%). It should be noted that majority of the births (70%) in Vientiane Municipality have earlier first antenatal care visits (at less than 6 months) than the remaining 17 provinces with only 3-32 percent of births having first antenatal care visits.

➤ Place of Delivery

Appendix table 5 indicates that, at national level, majority of the births are delivered at either the mother's own home or another home (86%), while only a small proportion (around 11%) are delivered at health facilities (central/provincial/district hospitals, health centers and clinics).

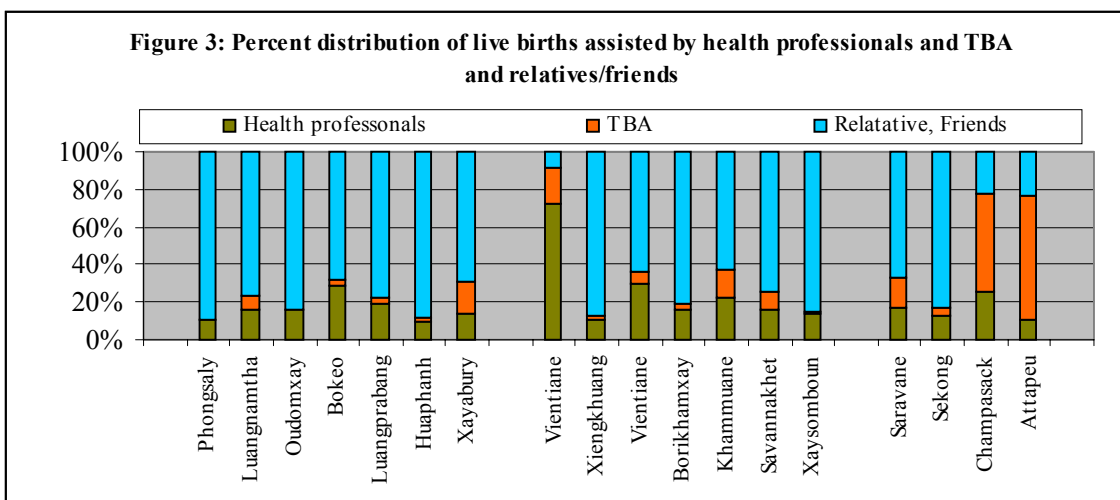


At provincial level, 14 out of 18 provinces have greater proportion of births delivered *at home* than the already high national average (86%). Only 4 out of 18 provinces use more of the health facilities (hospitals, health centers and clinics) and less home delivery than the national average. These four provinces are: Vientiane Municipality (health facilities- 62% and home delivery- 37%), Bokeo (health facilities- 17% and home- 81%), Vientiane (health facilities- 18% and home- 80%) and Khammuane (health facilities- 14% and home- 83%) (see figure 2).

➤ Assistance at delivery

As shown in appendix table 6, at the national level, more than two-thirds of births in the 5 years preceding the survey are assisted by relatives/friends (55%) and traditional birth attendants (TBAs: 13%), while a small proportion (17%) is delivered by health professionals (doctor, nurse, midwife and health workers).

At the provincial level, only 5 of 18 provinces have a higher proportion of births assisted by health professionals than that at the national level (17%). These provinces are: Vientiane Municipality (70%), Vientiane (26%) and Khammuane (18%) in the central region; Bokeo (26%) in the northern region; and Champasack (24%) in the southern region. Majority (over two-thirds) of the births from the remaining 13 provinces are assisted by relatives/friends or TBAs. These high proportions of births delivered with the assistance of friends/relatives and TBAs, who have little or no proper training, will tend to pose a higher risk of negative pregnancy outcome for the mothers.



5.6 Breast-feeding

Breast-feeding is a critical component of infant feeding as it affects child and maternal health and nutritional well-being as well as infant and child morbidity and mortality. Though it is widely accepted as the best form of early infant feeding, breast-feeding coupled with proper food supplementation will contribute significantly to nutritional needs of the growing infant and child.

Appendix table 4 displays breast-feeding status of three most recent children born in the 5 years preceding the survey by province. Overall, nearly all (96%) of the children are being breastfed at least some time in the past 5 years. At the provincial level, the proportion of children who were breastfed does not vary much by province, except five provinces that have lower breast-feeding prevalence than that of the national level (96%): in the central provinces of Vientiane Municipality, (90%), Vientiane (94%), Khammuane (93%) and Savannakhet (95%); and the southern province of Champasack (94%). It is interesting to note that breast-feeding is almost universally practiced in the provinces.

Appendix table 6 shows the current breast-feeding status of living children aged 37 months (3 years) and under by province. Looking at differentials of breast-feeding at provincial level, current breast-feeding status of the provinces vary substantially from the national average: “Not breastfeeding”- 30%, “Exclusively breastfed”- 3%, and “With other supplement”- 67%. The proportion of living children (under 37 months) who are not currently breastfed varies from province to province.

It must be stressed that the survey data show that only a very small percentage of children are exclusively breastfed. This seems to indicate that almost all the Laotian's babies are breastfed with supplementation at very early infancy: a practice that is not recommended by the health authority and WHO, in particular⁶.

5.7 Water and sanitation

➤ Water and sources of water

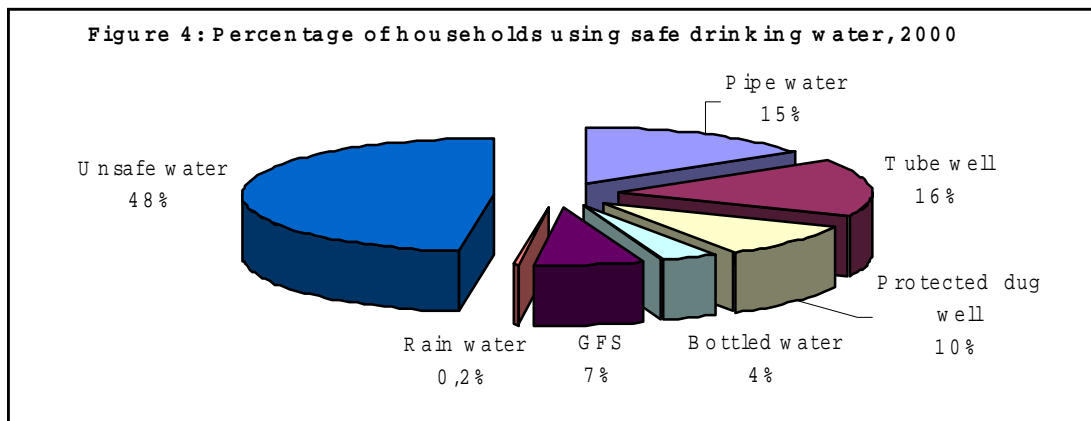
Safe water is a basic necessity for human life. Unsafe drinking water can be a significant cause of diseases. Drinking water with can also be tainted with chemical, physical and radiological contaminates with harmful effects on human health. In addition in rural areas, access to safe drink water near the house is very important for women and children who bear the primary responsibility for carrying water from remote sources to the household for drinking, washing and cooking.

In Lao PDR, drinking water was considered safe if the water from pipe in to dwelling, piped in to yard or plot, public taps, tube wells, protected dug wells or protected springs, bottled water, rain water collected and gravity fed system.

Data from the National Health Survey 2000 indicated that 52% of population had access to safe drinking water, in rural 38% and urban 76 %. In urban area twice as many compared to rural area.

The proportion of population used water from the river or pond and unprotected dug well accounted for 22% and 17 % respectively. The source of drinking water for population

⁶ It is important to note that the recommendations of World Health Organization (WHO) on breast-feeding and food supplementation are that infant should be exclusively breastfed for the first four months and then receive food supplementation by 7-9 months



varied strong by area. In urban area, 27 % of the population used drinking water that is piped in to their dwelling or in to their yard or plot, followed by tube –well (17%) and protected dug well (13.3%). In the rural areas, the main source of drinking water was a river or pond (32.7%) and unprotected dug wells. The majority households spent about 5-10 minutes for getting water. However there more than one third of households spent more than 10 minutes for getting water.

Similar findings founded in the LRHS, 2000 where the proportion of household having access to drinking potable water (both filtered and tap water) account for 14%, while bore pumps account for another 46 % and river/streams/ other account for remaining 40%.

At the provincial level, the type of drinking water varies considerably from province to province (see appendix table8). For example, a high proportion of households using river/streams/other sources of water for drinking are from the northern provinces of Luangprabang (88%), Phongsaly (80%), Oudomxay (71%), Huaphanh (67%); Xayabury (57%) and Luangnamtha (57%); from the central province of Xaysomboun SR (70%); and from the southern province of Sekong (69%) and Attapeu (56%). Majority of households in the central provinces use bore/pumps to obtain drinking water: Savannakhet (73%), Xiengkhuang (68%), Borikhamxay (65%) and Khammuane (65%). However, pumps are already popular among households in a few provinces, such as Vientiane Municipality (60%), Vientiane (20%), Sekong (13%) and Luangnamtha (11%).

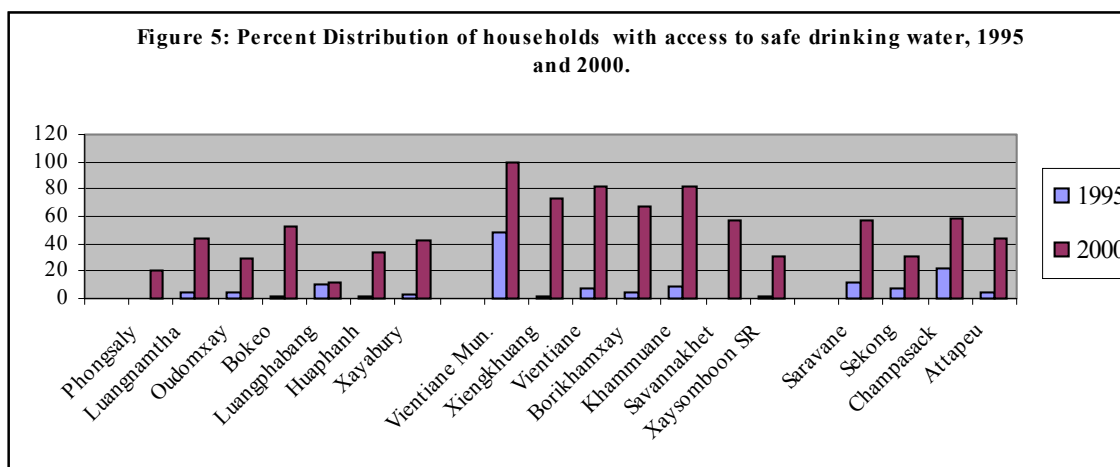
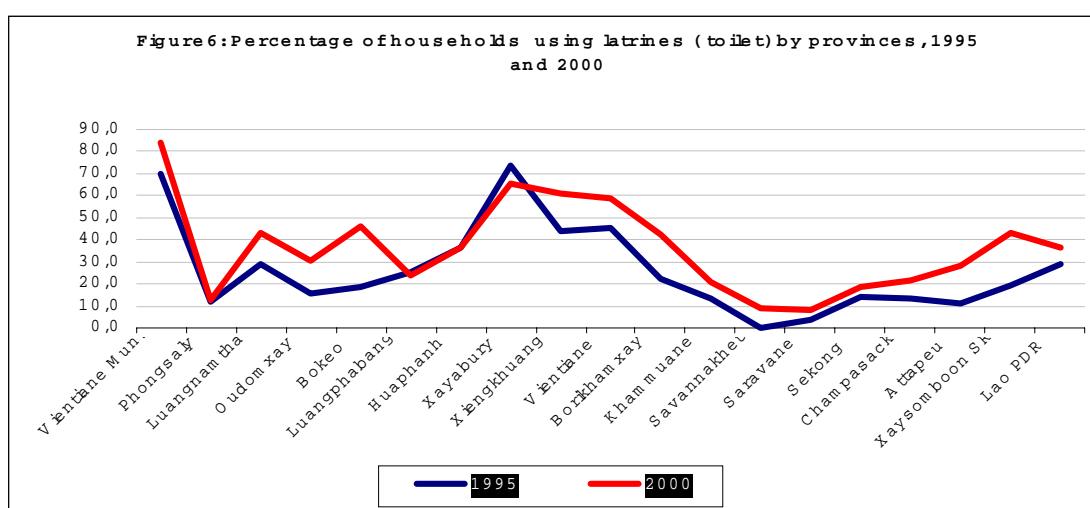


Figure 5 displays the trend of percent distribution of households with access to safe water in year 1995 and 2000⁷. Although the percentage of household without access to safe water in 2000 was high (more than 40 %), but seems that the positive progresses had been made during the last five years at national as well as across the provinces. At the national level percent of household with access to safe water increased from 15% in 1995 to 60% in 2000.

➤ Sanitation (Use of latrines)

Inadequate disposal of human excreta and lack of personal hygiene are associated with a range of diseases. Sanitary means of excreta disposal include flush toilet connected to sewage systems or septic tanks, pour flush latrines, improved pit latrines and traditional pit latrines.



The LRHS 2000 indicated that access to adequate sanitation was still insufficient, as only 36% of all households had latrines. Good sanitation as implied by the households with latrines, also varied by province. This indicated a lack of awareness of the importance of hygiene and limited knowledge about the use of latrines especially people in the rural areas⁸.

Figure 6 displays the percentage of the households using latrines in 1995 and 2000. It shows that except two provinces: Xayabury and Luangphrabang the percentage of household using latrines increased in the year 2000 compared to 1995. In general at the national level it was increased from 29 % in 1995 to 36% in 2000. However the proportion of households who not using the latrines still very high, accounted for more than half of the total of population. The highest proportion of households without using latrines in Savankhet and Saravane (91% and 92%) respectively.

⁷ Lao Reproductive Health Survey, 2000.

⁸ Large difference between urban and rural areas, 67% and 19% respectively .

5. 8 Access to the health care services

Access to health care services implies that all individuals wishing service should be able to easily reach a health care facility that service should be affordable and that individual should not be deterred because of quality of health service personnel. Access to and use of public health services remains problematic in Lao PDR due to the country's geography, limited transport infrastructure, culture and linguistic differences and modest social and economic development. (Lao PDR Country Paper, August 2000: Health and Education Needs of Ethnic Minorities in the Greater Mekong Sub-Region, ADB TA No. 5794. REG).

There are four types of public services in Lao PDR according to the four administrative levels in the country. Central hospitals are located in Vientiane Municipality and each province has a provincial hospital. Most of districts have a district hospital and many health posts operate in rural areas. In the rural areas, however, utilization is low and many health posts provide limited services. A lot of efforts had been made during the last five years to improve the state of repair and supply of equipment. However, many health facilities at the level of provincial and districts are in poor state of repair and lack of equipment and supplies, especially in rural areas.

In addition the number of hospitals and health center was not sufficient for the need of the population. All provincial and districts hospitals however, are located in towns therefore it is very difficult for those who live in the remote areas to access. As a result Laotian relies very much on self-care and out-of-pocket expenditures, as formal services are not always accessible particularly in rural area. However, many also rely on the private sector (local pharmacies, clinics, drug stores) as well as traditional healers.

In the LRHS 2000, included the question on " How long does it take to travel from your home to treatment place?. The result indicated that at the national level, more than half of households (55%) can reach hospitals and health care facilities within one hour, while 44 percent of households take more than an hour to reach hospitals and health care facilities for services.

At the provincial level, the time to reach the hospital varies considerably from province to province. For example, a high proportion of households in majority of the provinces (13 out of 18) take more than an hour to reach a hospital or health care facility for health services. These provinces include the northern provinces of Phongsaly (82%), Huaphanh (60%), Luangnamtha (54%), and Luangprabang (51%); in the central provinces of Savannakhet (49%), and in all the southern provinces: Attapeu (66%), Saravane (56%) and Champasack (53%) and Sekong (52%). (Appendix table10).

5.9 Maternal education

High maternal, infant and child mortality rates are affected by mother's educational level and level of health knowledge and practices. As mother's educational increases, mortality rates decrease. According to the 1993 Fertility and Birth Spacing Survey and the 2000 Reproductive Health Survey, mother's level of education directly affected the child under-5 mortality rate. The rate was 85 per 1000 in cases when mother had least secondary school education, it rose to 138 per 1000 when mother had primary school education only and reached 207 per 1000 when mother was illiterate.

Table 5 presents the finding from the LRHS 2000 regarding to infant and child mortality rates per 1000 live births for 5 years preceding survey 1995-1999 by residence and Mother 's Education. Urban-rural differentials in mortality rates show unexpected pattern: lower rate in urban than that in rural. Mortality rates of children of mothers with no education much higher then those with primary and secondary or higher education.

Table 5: Infant and Child mortality rates per 1000 live births for 5 years preceding the survey 1995-1999, LRHS2000

Background Characteristics	Infant Mortality Rate (IMR)	Child Mortality Rate (CMR)	Under 5 Mortality Rate (U5MR)
Residence			
Urban	41.7	6.8	48.6
Rural	87.2	27.0	114.2
Mother's Education			
None	96.1	30.5	126.5
Primary Education	79.1	25.0	104.1
Lower Secondary Education	57.3	10.9	68.2
Upper Secondary Education	70.5	12.8	83.3
Lower Secondary Education	7.5	0.0	7.5
Total	82.2	24.8	106.9

VI. Conclusions

The analysis has mentioned on many determinants that affected mortality in particularly infant and under five mortality. There seem to have some limitations, in the country, regarding to the compilation of mortality rates where the data is insufficient, the collection system decentralized and discontinued. However, 1985 and 1995 population census, Lao Reproductive Health Survey 2000 and other surveys that have been conducted during the 1990s give the view of mortality trends. In the year 2000 the mortality trend has significantly better changed compared to 1995.

Findings of early marriages, by province, indicate serious implications on the reproductive health of adolescents and their education and career development. In view of the importance of knowledge in the use of contraceptive methods and behavior change, the need to improve the level of knowledge of modern contraceptives, particularly in provinces with low knowledge of contraception, cannot be overemphasized. Similarly, increased knowledge of contraception by women will encourage the use of modern, safe and effective FP methods, thereby reducing reliance on the use of traditional/herbal methods that may be harmful to the health of woman.

In view of high proportion of currently married women who are never users and low proportion of them using modern contraceptive methods, particularly in majority of the

provinces, there is an urgent need for organizing intensive and sustained information and education campaigns coupled with provision of FP services

Low level of antenatal care received by high proportion of birth in majority of the provinces has serious implication for maternal and child survival. Since first antenatal care visits at early stage of pregnancy influence substantially maternal and child health, there is an urgent need to strengthen the Mother and Child Health (MCH) care system. The MCH that including IEC strategies, particularly at provinces with low antenatal visits to strive to reach the status of the capital city, Vientiane Municipality. Meanwhile moderate variations are found in the place of delivery by province. Thus, greater effort needs to be devoted to increase the low use of health facilities for delivery of birth and lower the use of home as place delivery. This could be done through the strengthening of MCH programmes, including information and education for behavior change, and of making the services and IEC more timely, accessible, and affordable.

In addition special attention and efforts need to be taken strengthen further the MCH or FP/RH programmes that will increase delivery of births by health professionals and decrease the delivery by relatives/friends and TBAs. In particularly for provinces that have sizable proportion of births delivered without any assistance.

In addition to health services, access to safe water and sanitation as well as mother's education are recognized as important component to reduce the mortality of mother and child. At the provincial level, access/ use of those services varies considerably from province to province. Thus, much remain to be done for delivering universal access to equality health and education across the country. Rural development policies will therefor plays a critical role including those designed to expand educational and health care services.

The result of comparative analysis of provincial data indicates a wide disparity in infant mortality rate (IMR) and under-5 mortality rate among provinces. This suggests that there is a need to reduce the high level of fertility and mortality and narrow their disparities in the provinces. It could be done through the implementation of effective policies and FP/RH programmes, including behavioral change interventions.

In response to the need in varies filed of statistics at national and sub-regional provincial levels including the government as well as other users. It is further required to improve data collection system and its quality. The following issues such the selection of sample size, questionnaire design, coverage and frequency of surveys might need to be actively undertaken by all concerned agencies.

Regarding to developing and monitoring MDGs, mortality is as crucial as other social indicators which all need to be developed and improved through various processes. In the next two years the NSC will be conducting the third population census and reproductive health survey. These two data sources will help to reduce the current MDGs gap particularly on social indicators in Lao PDR.

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