

Lao People's Democratic Republic Maternal Health, Child Health & Nutrition in Lao PDR

Evidence from a Household Survey
in Six Central and Southern Provinces

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MATERNAL HEALTH, CHILD HEALTH, AND NUTRITION IN LAO PDR: EVIDENCE FROM A SURVEY IN SIX CENTRAL AND SOUTHERN PROVINCES¹

EXECUTIVE SUMMARY

Lao PDR has made dramatic improvements in some population-level health outcomes over the past several decades. For example, life expectancy has increased from 46 years in 1970 to 67 years in 2011. However, the country still has some of the worst maternal health, child health, and nutrition indicators in the region. The under-five mortality rate is 42 per 1,000 live births, while the maternal mortality rate is 470 per 100,000 live births. Nutrition indicators are also alarming, with 32% and 48% of under-fives are underweight and stunted respectively. With its high prevalence of undernutrition, Lao PDR is an outlier when contrasted with regional comparators, even after accounting for national income. Recently introduced strategies, such as the free maternal and child health (MCH) policy and the National Nutrition Strategy, aim to address these issues and to attain health-related MDGs by 2015. Against this backdrop, this report presents findings from a household, village, and health center survey of largely rural communities in six central and southern provinces of Lao PDR conducted in 2010. These communities are the target of various pilot interventions aimed at addressing these poor health-related MDG indicators, for which this survey was designed to contextualize, inform, and evaluate.

The household survey, which focused on rural households with at least one living child under two, confirms the largely rural nature of the sample compared with the national population, with a higher proportion of non-Lao Tai ethnic groups, larger household sizes, and a predominance of agricultural activities as the primary occupation. Indeed, more than 80% of households were resident in rural

areas. Unsurprisingly, physical access to health facilities was difficult: the mean distance to the nearest health center and hospital for households in the sample was 6 km and 34 km respectively. Apart from physical access, financial barriers are also important and were in fact the most frequently reported constraint to the utilization of health services (by 45% of respondents). This relates to the low coverage of health insurance schemes: less than 4% of households were covered by any such scheme.

Given this context, the utilization of all the basic maternal health services – antenatal care visits, institutional deliveries, and postnatal care visits – was extremely low. Only 40% of women with a child under two years reported at least one antenatal care visit; only 14% of births occurred at any health facility, and postnatal care visits were exceedingly rare (2%). Even where utilization occurred, this was often inadequate from both a demand-side and supply-side perspective. For example, on the demand-side, antenatal care visits were often too late in the pregnancy (less than a third had their first visit during the recommended first trimester) and only about half went for the recommended minimum of four antenatal care visits. On the supply-side health facilities lacked important commodities like iron or folate supplements. Importantly, utilization varied along key demographic characteristics: for example, institutional delivery rates were much higher in urban communities (30%) compared with rural communities without a road (6%) and were also much higher among mother's with secondary education (30%) compared with mother's with no education (7%).

¹This report was written by a team consisting of Chantelle Boudreaux, Ajay Tandon, and Wei Aun Yap; Data analysis was conducted by Ajay Tandon, Wei Aun Yap, Laurence Lannes, and Chantelle Boudreaux; The survey was designed by Magnus Lindelow, Chantelle Boudreaux, and Robert McLaughlin; IndoChina Research Ltd. collected the data; Valuable inputs were provided by Phetdara Chanthala, Sophavanh Thitsy, Anna Lorenza-Pigazzini, Somchit Akkhavong, and Khamseng Philavong; The team would like to thank Yi-Kyoung Lee and Darren Dorkin for excellent comments made on a previous version of the report.

Utilization of preventative child health services was also extremely low, with only 9% of children under two taken for routine well-baby check-ups. For this reason, it is unsurprising that coverage of immunizations was also poor, with only 26% of children aged 12-23 months having received all the Expanded Program on Immunizations (EPI) vaccines. A sharp decline is noted between the first dose of vaccinations (83% for DPT1 and 83% for Polio1) compared with the second dose of vaccinations (41% for DPT2 and 45% for Polio2) thus indicating substantial loss to follow-up.

Dietary diversity was limited with almost all families consuming grains and vegetables but less than half consuming any meat or fish. Household diets lacked both Vitamin A-and iron-rich foods. Furthermore, only 40% of children under two benefitted from timely initiation of breastfeeding within one hour of delivery. Anthropometric measurements of children under two further confirm the severity of undernutrition in these communities. More than a third (36%) of these children were stunted and 13% were severely stunted. Almost one-third (31%) of these children were underweight and 11% were severely underweight. Importantly, undernutrition varied along key demographic parameters and household characteristics, but remained substantial even in relatively wealthy and better-educated households. For example, the prevalence of stunting varied from 43% among the poorest economic quintile to 24% among the richest; and also varied from 43% among children whose mother had no education to 23% among children whose mother had lower secondary education. Children whose household lacked access to a toilet were also associated with higher rates of stunting (39%) than children with such access (26%).

These variations in the prevalence of undernutrition are further contextualized by water and sanitation indicators generated from this survey. Only 23% of households had access to a sanitation facility and only 40% of households had access to improved drinking water sources. Behavioral indicators are also a concern as even though most households had a specific place to wash hands,

only 50% of respondents washed their hands before cooking and only 9% did so before feeding the baby. The survey also notes that 15% of children under two had an episode of diarrhea in the last two weeks prior to the survey. Symptomatic episodes of diarrhea are not the only nutritionally relevant manifestation of fecal-oral contamination. Environmental enteropathy, which is intestinal damage caused by contaminated water, toxins, antigens, nutrient deficiencies, and infections, is both a contributor to malnutrition (through malabsorption and maldigestion), and a result of malnutrition. As 77% of households in this sample in the lacked a toilet, the environment of the whole community – not just individual households who lack sanitation facilities – would be presumed to be contaminated. Hence, interventions aimed at arresting this downward spiral of child undernutrition should be aimed at the whole community, including both adults and children, rather than focusing only on nutritionally vulnerable children.

The results from this survey thus shed light on what it would take to attain the health-related MDGs. In order to improve the level and equity of maternal and child health indicators, interventions would need to address numerous demand-side barriers, including physical access barriers, financial barriers, and cultural, linguistic, and educational barriers. In addition to demand-side measures aimed at increasing utilization, it is likely that more investments are required on the supply-side to insure high-quality services are available by adequately-trained staff and adequately equipped and stocked-health facilities. With regards to nutrition indicators, a cross-sectoral approach is required, intervening not just within the health sector (for example, in encouraging appropriate breastfeeding and complementary feeding practices, providing micronutrients to both mothers and children, and promoting hygienic practices) but also in sectors beyond health. Interventions which promote access and use of improved drinking water supply and hygienic sanitation facilities are needed to reduce the prevalence of diarrhea, while interventions in the agriculture sector will help to address food security and dietary diversity issues.

INTRODUCTION

Despite being on-track on the child- and maternal-health MDGs, Lao PDR continues to have some of the worst maternal and child health (MCH) and nutrition outcome indicators, both globally as well as in the East Asia and Pacific (EAP) region. Underlying poor levels of MCH and nutrition outcomes are poor quality and low levels of coverage of key MCH utilization indicators such as antenatal care (ANC), skilled birth attendance, as well as measles and DPT immunization rates. Physical, financial, and cultural barriers help explain low coverage rates from a demand-side perspective. Poor training of health workers, service readiness deficiencies, and generally inadequate quality of care are some of the key challenges from a supply-side perspective.

In recognition of these challenges, the Government of Lao PDR has recently adopted a health sector reform strategy with the overarching objectives of: (i) attainment of health-related MDGs by 2015; and (ii) achievement of universal health coverage (UHC) by 2025. Key aspects of the reform agenda include increasing domestically-sourced government financing for health, ensuring adequate availability of skilled and motivated health workers, improving access to essential medicines and technology, and bolstering grass-root level service delivery efforts, among others.

This report presents results from a household, village, and facility survey on MCH & nutrition in mostly rural areas of six central and southern provinces of Lao PDR. Effective implementation of the government's health sector reform agenda will require timely and frequently-updated information on the underlying factors determining the low levels of key MCH and nutrition-related outcomes and, in looking forward, what the impact of policy interventions on these outcomes has been. In light of helping provide evidence for informing policy-making and implementation, this report provides some key baseline information on MCH- and nutrition related outcomes and their correlates in Lao

PDR. The information in this report localizes MCH & nutrition-related information that are typical for sampled catchment areas of selected health centers in six central and southern provinces of the country.² In addition, the report summarizes data on service availability and readiness of health centers in terms of their ability to provide key MCH & nutrition-related services.



Photo by Bart Verweij/2013

²The analysis in this report complements recently compiled national and provincial-level information on MCH & nutrition-related data collected in 2011 as part of the Lao Social Indicators Survey (LSIS).

BACKGROUND AND CONTEXT

Lao PDR has made steady and significant progress on several key population health outcomes over the past few decades.

Life expectancy has steadily increased to almost 67 years in 2011, up from 54 years in 1990 (Figure 1). The under-five mortality rate has also declined steadily from 148 per 1,000 live births in 1990 to 42 per 1,000 live births in 2011 (Figure 1). At current trends, Lao PDR is projected to meet the child- and maternal-health related Millennium Development Goals (MDGs). Under-five and infant mortality rates in Lao PDR are about average, adult mortality rates are better than average relative to GDP per capita in the newly reclassified lower-middle income country.

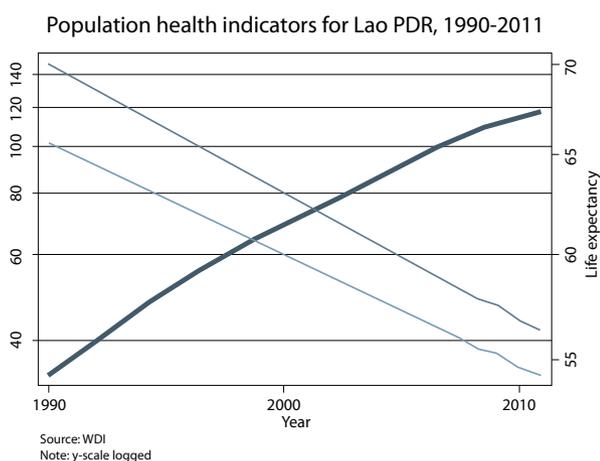


Figure 1: Key population health indicators for Lao PDR: 1990-2011

The decades between 1990 and 2010 have been a time of significant economic growth for Lao PDR, following economic liberalization reforms which began in 1986. Major national infrastructure initiatives were active during this period: the time period saw the upgrading of highway 13 and a large rural electrification initiative. Poverty headcounts (based on a poverty line of US\$ 1.25 per

day, PPP) have declined from 56% of the population in 1992 to 34% in 2008. In the social sectors, adult literacy rates rose from 60% to 73% between 1995 and 2005, while the fertility rate (total births per woman) declined dramatically from 6.2 in 1990 to 2.7 in 2010. In the health sector, preventative strategies – including expanding access to family planning, immunizations, and the reduction of anemia – have been important contributors to the improvements seen in child and maternal health indicators.

Despite notable progress in health on some fronts, considerable challenges remain.

Despite being on-track on the child- and maternal-health MDGs, Lao PDR continues to have some of the worst MCH and nutrition outcome indicators, both globally as well as in the East Asia and Pacific (EAP) region. Although there is some uncertainty regarding exact numerical values, WHO/UNICEF/UNFPA/World Bank (2012) estimate that, at 470 per 100,000 live births, Lao PDR's maternal mortality ratio (MMR) is among the highest in the world, and is almost double that of neighboring Cambodia and almost eight times that of Vietnam (Table 1).³ More recent estimates from LSIS data indicate an MMR of 357 per 100,000 live births. About a third of all children under five remain underweight in the country. At current trends, Lao PDR is off-track on the nutrition MDG, and there are significant urban-rural, socio-economic, geographic, and ethnic-group related inequalities in health outcomes. Underlying poor levels of MCH and nutrition outcomes are poor quality and low levels of coverage of key MCH utilization indicators such as antenatal care (ANC) and skilled birth attendance. Births attended by skilled personnel only increased from 14% to 17% between 1994 and 1999,⁴ while, despite improvements over time, immunizations rates including measles and DPT remain low relative to neighboring countries (Table 1).

³ WHO/UNICEF/UNFPA/World Bank (2012), Trends in Maternal Mortality: 1990-2010, Geneva: World Health Organization.

⁴ Eckermann, Liz. "Finding A 'safe' place on the Risk Continuum: a Case Study of Pregnancy and Birthing in Lao PDR." Health Sociology Review 15, no. 4 (2006): 374-386.

Table 1: Key MDG and other indicators for Lao PDR and comparators

Country	GNI per capita (2011)	MMR per 100,000 live births (2010)	At least 1 ANC visit	Skilled birth attendance	Prevalence of underweight children<5	Prevalence of stunting children<5	Under-five mortality rate per 1,000 live births (2011)	Measles immunization rate	DPT3 immunization rate
Cambodia	\$820	250	69%	57%	29%	41%	43	85%	87%
China	\$4,940	37	92%	98%	4%	9%	15	95%	95%
Indonesia	\$2,940	220	93%	79%	21%	39%	32	82%	78%
Lao PDR	\$1,130	470	35%	29%	32%	48%	42	64%	74%
PNG	\$1,480	230	79%	53%	18%	44%	58	58%	59%
Philippines	\$2,210	99	91%	62%	21%	32%	25	91%	88%
Thailand	\$4,440	48	99%	98%	7%	16%	12	97%	99%
Timor-Leste	\$2,220	300	84%	29%	45%	58%	54	64%	69%
Vietnam	\$1,270	59	91%	88%	21%	31%	22	93%	94%
East Asia & Pacific	\$3,257	140	87%	81%	17%	31%	30	82%	84%
Lower-Middle Income Countries	\$2,371	215	86%	79%	15%	31%	49	83%	85%
Lower-Income Countries	\$553	452	76%	53%	23%	40%	99	75%	77%

Note: Unweighted averages for country groupings; average or latest available year 2005-2011 where year not noted.

In recognition of these challenges, the Lao PDR government has recently adopted a health sector reform strategy with the overarching objectives of: (i) attainment of health-related MDGs by 2015; and (ii) achievement of universal health coverage (UHC) by 2025. Key aspects of the reform agenda include increasing domestically-sourced government financing for health, ensuring adequate availability of skilled and motivated health workers, improving access to essential medicines and technology, and bolstering grass-root level service delivery efforts, among others.⁵ In addition, Lao PDR has recently signed on to become an “early riser” in the global

Scaling-Up Nutrition (SUN) initiative, and a dedicated national nutrition center housed within the Ministry of Health has recently opened. The 7th National Socioeconomic Development Plan highlights “sustainable health financing” as one of the priority areas for 2011-2015, with a focus on increasing the government budget for health, expanding prepayment schemes, and developing mechanisms for ensuring the poor have access to health services.⁶ The government has made a commitment to increase health’s share of the government budget to 9%, up from current allocations that have been in the 3% range.⁷

⁵ Ministry of Health (2012), National Health Sector Reform Strategy: 2013-2025, Vientiane: Ministry of Health.

⁶ Ministry of Planning and Investment (2011), The Seventh Five-year National Socio-Economic Development Plan (2011-2015), Vientiane: Ministry of Planning and Investment, Government of Lao PDR.

⁷ Lindelow et al, World Bank (2011), “Government Spending on Health in Lao PDR: Evidence and Issues,” World Bank, Washington, DC.

In order to improve the utilization of MCH services, and to reduce the burden of associated out-of-pocket payments, the government is in the process of beginning the implementation of a Ministerial decree aimed at incentivizing the supply as well as demand of MCH and other related services at all public health facilities. The decree - referred to as the “free MCH policy” - is a form of results-based financing (RBF) that will remove user fees and charges for medicines, provide beneficiaries with small incentive payments, and reimburse health facilities for provision of MCH-related care. The free MCH policy builds on the relatively positive experience of several smaller-scale donor-financed pilots that have implemented similar interventions in selected regions of Lao PDR over the past few years.⁸ In addition, the government will soon complete the piloting of the Community Nutrition Project, which utilized village health volunteers, village heads, and Lao Women’s Union representatives to provide key messaging related to MCH and nutrition in addition to providing conditional cash transfers to mothers and pregnant women for the use of services (Box 1).

Box 1: The Community Nutrition Project (CNP)

The Community Nutrition Project was conceived as an emergency pilot project to protect and improve nutritional outcomes in the context of high and volatile food prices. It aimed to expand the utilization of key health services, which may be under pressure due to food price and other macro shocks. The project piloted two key demand-side interventions: (1) a conditional cash transfer (CCT) scheme for all pregnant women and mothers of children under two, conditional on utilizing key maternal and child health services such as antenatal visits, facility-based deliveries, and regular child growth monitoring visits; and (2) a community-based health and nutrition behavior change program, which trains village facilitators to conduct regular village meetings where health and nutritional messages are discussed. Additional activities for training and supervising health workers, and the distribution

of micronutrients by community-based distributors are also included. These interventions are intended to increase the demand for and utilization of basic health services. The first intervention is also intended to improve financial protection from catastrophic health expenditure. Both interventions contain nutrition-sensitive and nutrition-specific interventions on enabling the distribution of micronutrients, encouraging appropriate exclusive breastfeeding and complementary feeding, and hygiene and sanitation messaging. The survey described in this report was conceived both to inform the implementation of these interventions and to act as a baseline for an embedded impact and process evaluation. The complementary endline survey is currently in progress in the same panel of villages and health centers.

Given this backdrop, this report presents results from a household, village, and facility survey on MCH and nutrition in mostly rural areas of six central and southern provinces of Lao PDR.

Effective implementation of the government’s health sector reform agenda will require timely and frequently-updated information on the underlying factors determining the low levels of key MCH and nutrition-related outcomes and, in looking forward, what the impact of policy interventions on these outcomes has been. In helping to provide evidence for informing policy-making and implementation, this report provides some key baseline information on MCH- and nutrition-related outcomes and their correlates in Lao PDR.

The remainder of the report is organized as follows:

the next section provides a brief overview of the socio-economic characteristics of households included in the survey sample. The report then highlights key findings related to general nutrition and health indicators, followed by outcomes and correlates related to MCH and nutrition outcome and coverage indicators. The report concludes with a summary overview and some discussion of policy implications.

⁸ Pilots include the World Bank-supported Health Services Improvement Project (HSIP) as well as projects financed by Lao-Lux, WHO, and Medicine du Monde.

SOCIO-ECONOMIC CHARACTERISTICS OF HOUSEHOLDS

Using a multi-level cluster sampling methodology, the survey sampled 2,741 households living in 193 villages across 21 high-priority and/or poor districts in the provinces of Borikhamxay, Khammuane, Savannakhet, Saravane, Champasack, and Attapeu. The data span the catchment areas of 38 health centers in these six provinces.⁹ These included both health centers and villages which were the intended target of CNP and matched control health centers and villages. Figure 2 shows the location of sampled districts, villages, and health centers. The sampled villages cover a population of approximately 112,000, from a national population of 6.2 million¹⁰, in 21 out of 142 districts, and 6 out of 17 provinces. The household data, which is the main focus of this report, is complemented by facility audits and questionnaires conducted at each of the 38 health centers and surveys conducted at the village level. At health centers, facility personnel answered questions, while village heads were the respondents for the village questionnaire. This survey focuses on the results of the household survey, for which mothers or the primary caretaker was interviewed in randomly selected households having at least one living child less than two years of age.

80.4% of respondent households lived in rural areas (42.6% in rural areas with road access plus 37.8% in rural areas without road access) and the remaining 19.6% lived in urban areas. This contrasts with the national population, where 67% of the population is rural.¹¹ The average household size among the sample was 6.4, higher than the national average of 5.2, and 95.0% of households were headed by men.¹² A slight majority (51%) of household heads were Lao-Tai, followed by 44% who were Mon-Khmer and 3% who

were Hmong-Mien (Table 2). As can be seen in Table 2, the proportion of non-Lao-Tai ethnic groups in the survey was higher than in the national population, again reflecting the greater proportion of rural and remote communities included in the sample.



Photo by Bart Verweij/2013

⁹ The survey was conducted in April-June 2010 to provide baseline information for the World Bank and European Union-financed Community Nutrition Project currently being implemented by the Department of Hygiene and Prevention of the Ministry of Health of the Government of Lao PDR; The full list of the 38 health centers is reported in Annex A.

¹⁰ WDI 2010

¹¹ WDI 2010

¹² Ministry of Health and Lao Statistics Bureau (2012), Lao Social Indicator Survey 2011-2012, Vientiane, Lao PDR: Ministry of Health and Lao Statistics Bureau.

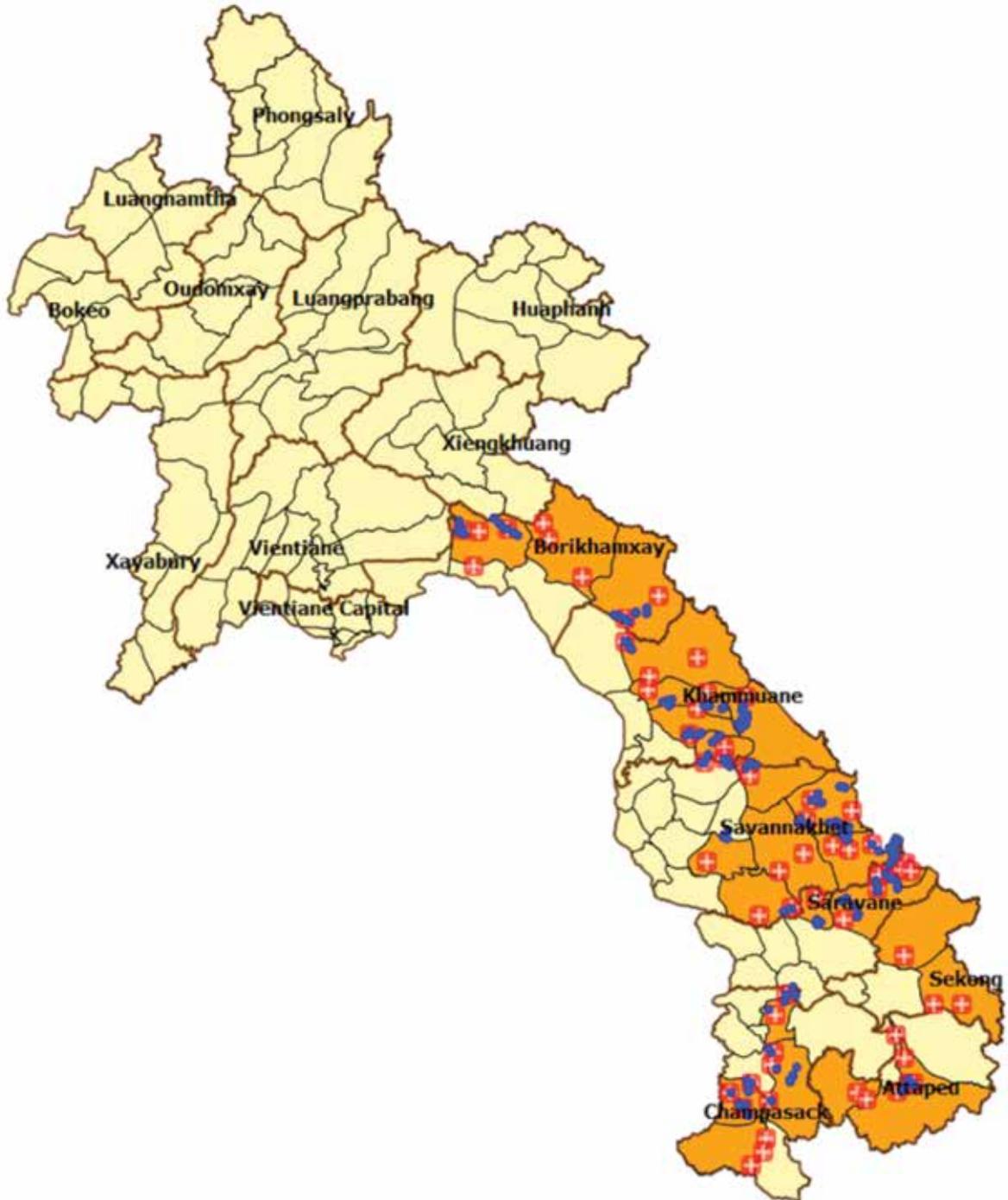


Figure 2: Survey map: sampled districts (orange), villages (blue dots), and health centers (red crosses)

Table 2: Distribution of households by ethno-linguistic group¹³

Ethno-linguistic group	Percent of sample	Percent of Lao PDR national population
Lao-Tai	51%	68%
Mon-Khmer	44%	22%
Hmong-Mien	3%	7%
Chinese-Tibetan	0.2%	3%
Other	2%	0.6%
Total	100%	100%

Among individuals aged 14 and above, 87% are reported as being self-employed in agriculture. In the same age group, 3% are as reported to be students, 4% are employed by the public sector, and 3% are retired, sick, or disabled. In 36% of households, the head had no formal education whatsoever; and a similar proportion had completed

only primary education. About 18% of household heads had completed secondary schooling, with the remaining 7% having had some post-secondary education. Respondent mothers (those that had given birth most recently in the household) had even lower educational attainment levels, with more than half reporting no schooling (Figure 3).

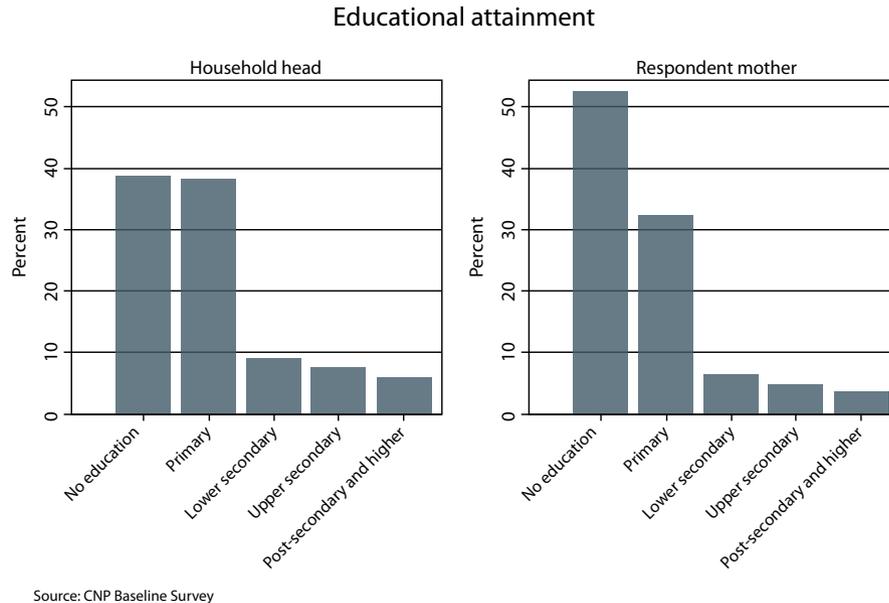


Figure 3: Educational attainment of household heads and respondent mothers

¹³ The national ethnic-group distribution is from the Lao Social Indicator Survey report.

Almost all (98%) households reported owning their own home. Most households accessed drinking water using a protected well, followed by surface water, and an unprotected well (Table 3). In all, about 40% of households had access to improved drinking water sources.¹⁴ More than three-fourths of the households reported sometimes boiling the water before drinking to make it safer, although this was consistently practiced by less than half of those reporting boiling the water. About 77% of households did not have a sanitation facility; the remaining reported having a flush toilet (22%) or a pit latrine (0.8%) (Table 3). Among households which reported having a toilet, most (93%) appeared to have been used, and 83% were very clean or moderately clean. Despite the relatively higher availability of toilets, few households used them to dispose of child waste. More than 80% of families left child feces in the open (54%) or in a ditch or drain (27%). Slightly less than 20% of families disposed of the feces safely, with 14% burying the waste, and 4% using toilets or pit latrines.

Table 3: Water source and sanitation facilities

Water and sanitation	Distribution
<i>Water source</i>	
Piped water	0.7%
Protected well	34%
Unprotected well	18%
Spring water	16%
Rain water	0.4%
Surface water	28%
Bottled water	3%
<i>Sanitation Facilities</i>	
Flush toilet	22%
Pit latrine	1%
No toilet	77%

Most (83%) households had a specific place where household members usually wash their hands. Almost all (94%) respondents reported washing their hands before eating but only 50% did so before cooking, and only 9.3% did so before feeding the baby. Furthermore, only 20% of respondents reported

washing their hands after using the toilet and 17% reported washing their hands after cleaning the baby's bottom. Where the place and process of hand washing was observed, the following items were observed: bar soap (39%), detergent (24%), liquid soap (3.2%), and ash/mud/sand (0.11%). Observations of respondent hand washing note that water was frequently (93%) used but soap was less frequently (45%) used. Only 89% washed both hands, rubbed their hands at three times (75%), and dried it with a clean cloth or allowed it to air dry (45%).

Only 41% of households in the sample reported having access to electricity from the grid. About 11% reported using electricity from generators or batteries, and 36% reported using kerosene lamps as their primary source of light. Most (>90%) households in the sample had wood and bamboo flooring and walls.

Approximately 50% of households reported having a motorcycle, 21% had bicycles, 30% owned two-wheeled tractors, and 4% had a four-wheeled tractor and 3% had a car, van or truck (Figure 4). About 30% of households reported having a mobile phone. There was a strong relationship between educational attainment of household head and economic status, the latter estimated by means of an asset index. Household heads had no education in 58.3% of households in the bottom economic quintile, whereas the head in only 19.6% of households in the top economic quintile reported having no education (Table 4).

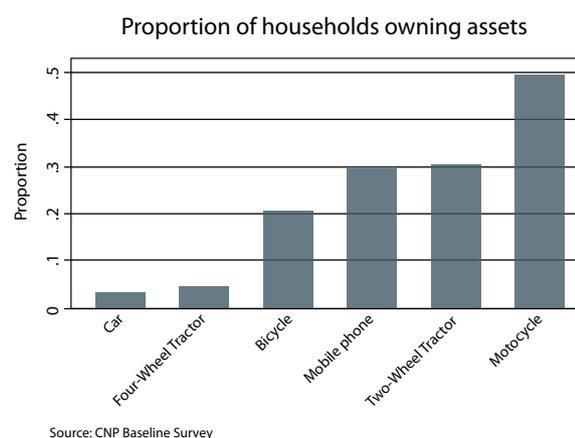


Figure 4: Selected asset ownership

¹⁴ Access to improved drinking water sources is defined as year-round access to water from a piped source, protected well, rain water, and/or bottled water.

Table 4: Distribution of household head's educational attainment by economic status

Economic quintile	Educational attainment of household head					Total
	No education	Primary	Lower secondary	Upper secondary	Post-secondary and higher	
Poorest	58.3%	30.5%	3.5%	5.2%	2.5%	100%
Second	38.4%	41.9%	6.9%	5.8%	7.1%	100%
Middle	32.3%	42.7%	6.7%	9.7%	8.7%	100%
Fourth	31.2%	41.6%	11.3%	8.1%	7.7%	100%
Richest	19.6%	42.0%	16.8%	13.0%	8.6%	100%

In terms of access to health services, the mean distance to a health center for households in the sample was 5.5 km, and the mean distance to the closest hospital (provincial or district) was 34.1 km. Households reported taking approximately 35 minutes to reach a health center during dry months, and almost double that time during the rainy season (Table 5). The average time to a hospital was 1 hour and 42 minutes during the dry months and almost 3 hours during the rainy season. As expected, urban

households had better access to health facilities as compared to households in rural areas without access to a road (Table 5). Respondents generally reported a very positive perception of the quality of care received at health centers. More than 40% of respondents described the quality of their health center as "excellent", with most of the remaining describing it as "good" (30%) or "okay" (22%). Only 3% described HCs as "not very good" or "bad", and 5% did not know or refused to answer.

Table 5: Distance and time to nearest health facility

Residence	Distance and time to nearest health facility					
	Distance	Health center		Distance	Hospital	
		Time (dry season)	Time (rainy season)		Time (dry season)	Time (rainy season)
Urban	3.0 km	0.3 hrs	0.4 hrs	23.5 km	0.6 hrs	0.8 hrs
Rural with road	5.2 km	0.4 hrs	0.8 hrs	34.5 km	1.6 hrs	2.6 hrs
Rural without road	7.0 km	0.9 hrs	1.7 hrs	39.0 km	2.3 hrs	4.2 hrs
All	5.5 km	0.6 hrs	1.1 hrs	34.1 km	1.7 hrs	2.8 hrs

GENERAL DIETARY AND HEALTH-RELATED INDICATORS

Respondents reported a diet heavy in grains, and were largely self-sufficient in the main foods eaten.

The survey asked a number of questions related to household dietary diversity. Specifically, respondents were asked to report on consumption of twelve broad food groups in the 24 hours prior to the survey. While most families consumed grains (98%) and vegetables (92%), the percentage of families who ate fruits (32%) was much lower, as was the proportion eating red meat (43%) or fish (46%). On average, families ate from four to five of the available categories. Table 6 provides an overview of what families were consuming, as well as what types of foods were self-produced and which were purchased.

Table 6: Household dietary diversity

Type of Food	Number of families consumed this food	Proportion who purchased
Grains	98%	13%
Roots and Tubers	28%	4.8%
Vegetables	92%	2.9%
Fruits	32%	27%
Red or White Meat	43%	24%
Eggs	12%	62%
Fish	46%	17%
Legumes, Nuts or Seeds	2.6%	63%
Dairy or Insects	19%	99%
Oils or Fats	11%	86%
Sugar or Honey	15%	96%
Coffee, Tea, Alcohol	58%	96%
Total	100%	100%

Many women and children were not consuming essential micronutrients.

Only 69% of respondents reported a diet rich in Vitamin A, and only 55% reported consuming foods rich in iron. Dietary habits were not clearly associated with the ethnicity of the family, although there was a notable trend toward higher dietary diversity with increasing education of the head of the household, as well as with wealth. For example, 57% of households in the lowest quintile reported a diet rich in Vitamin A compared with 67% among the highest quintile. Likewise, only 40% of respondents in the lowest quintile reported a diet rich in iron compared with 64% for the highest quintile.

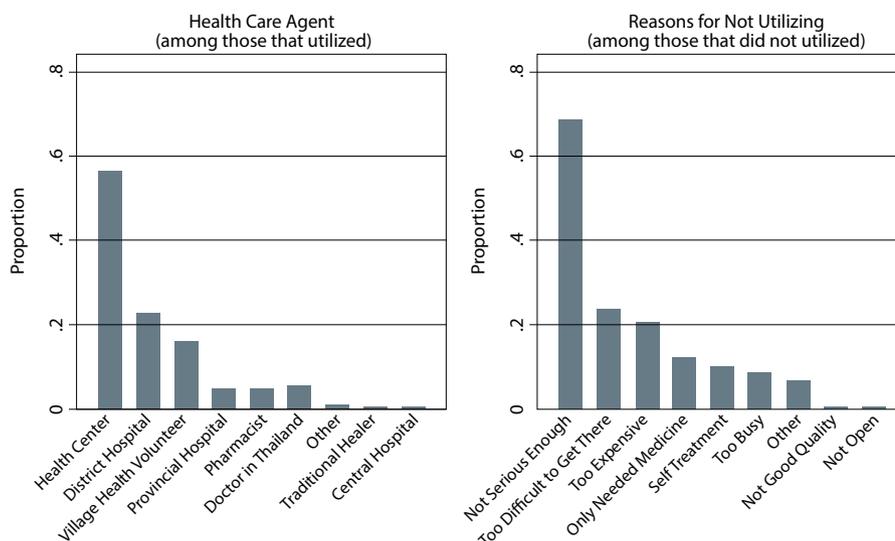
More than 68% of households reported that there had been one or more shocks causing a large negative impact on living conditions in the two years prior to the survey.

A health shock – involving the serious illness, injury or death of any member of that household – affected 26% of all households in the two years prior to the survey. Weather-related shocks (drought, floods, mudslides, or strong winds) affected 42%, and livestock or crop diseases affected 35% of all households in the two years prior to the survey.

The burden of sickness and injury is significant, with more than 77% of households reporting that someone in the household had been sick or injured in the last three months,

and just under half (42%) of these cases being serious or somewhat serious. Advice or treatment was sought in 75% of cases. This typically involved going to a health center (57%), district hospital (25%) or seeing the village health volunteer (16%) as detailed in Figure 5. Where help was wanted but not sought, reasons include physical access barriers (23%) and financial considerations (20%).

Health Utilization



Source: CNP Baseline Survey

Figure 5: Utilization among families experiencing a health shock

Less than 4% of households had any form of health insurance scheme. For those who did, the main schemes used were the social security scheme (1.1%) and health equity funds (0.7%). 4% of all households reported having to borrow for financing a delivery in the last two years, and 6% reported having to borrow to cover the costs of health care for the respondent or their children. The median amount borrowed was US\$50 (400,000 kip) but a quarter of these were US\$125 (1,000,000 kip) or more. About 45% of these borrowers remain in debt at the time of survey, with half of them owing US\$50 (400,000 kip) or more, and a quarter owing US\$125 (1,000,000 kip) or more.¹⁵

Financial factors were the most-reported constraint to utilization health services by women. 45% of all women reported that “getting money for treatment” was a barrier to obtaining medical advice or treatment. Not wanting to go alone and physical access were additional problems reported. Language and communication concerns were reported by 13% of women. The full list of reported constraints is summarized in Table 7.

Table 7: Barriers to seeking treatment among women

Barriers	(%)
Getting the money needed for treatment?	45%
Finding someone to go with you/Not wanting to go alone?	39%
The distance to the health center or hospital?	31%
Means of transportation to the health center or hospital?	29%
Concern there may not be a health worker?	22%
Getting permission to go?	21%
Concern about having to read?	20%
Concern that the health worker cannot help?	20%
Concern that there are no supplies or drugs?	20%
Concern that health worker does not speak your language?	13%
Concern that there may not be a female health worker?	13%

¹⁵ According to the most recent Lao Expenditure and Consumption Survey (LECS 2007), households in the survey provinces had an average monthly consumption of US\$251 (2,089,000 LAK).

Respondents scored well in recognizing dangerous symptoms, and many noted the appropriate responses to these symptoms. Most respondents reported knowing that with high fever and diarrhea, one should seek advice from health centers (HCs), hospitals, or village health volunteers. However, as

these are self-report statements, they need to be interpreted with caution as they may not correlate with what respondent actually do when such symptoms occur. Responses to health-seeking attitudes are summarized in Table 8 below.

Table 8: Health seeking knowledge and attitudes

Health Issue	Survey Question	Response (%)
Dengue fever	You just learned that your friend's four-year old child is not feeling well. She has a fever, chills and a headache and isn't sure it's just a minor illness or if it could be dengue fever. What would you advise her to do FIRST?	<ul style="list-style-type: none"> - Go to health center (61%) - Go to district hospital (18%) - Go to village health volunteer (12%) - Self-treatment or traditional treatment (3.3%)
Diarrhea	You just learned that your friend's two-year old son has diarrhea that has lasted for a few days. She wants to know what she should do. What would you advise her to do FIRST?	<ul style="list-style-type: none"> - Go to health center (60%) - Go to district hospital (17%) - Go to village health volunteer (12%) - Self-treatment or traditional treatment (4.2%)
Diarrhea warning symptoms*	Children often get diarrhea. Can you tell me what signs indicate diarrhea so dangerous that medical attention is required?	<ul style="list-style-type: none"> - Ongoing vomiting (53%) - Blood/mucous in stool (dysentery) (30%) - Pass watery stools 10 times a day (19%) - Fever (16%) - Unable to eat or drink (10%) - Child not better in three days (3.9%)
Diarrhea treatment*	What should you do to care for diarrhea at home? (for normal cases)	<ul style="list-style-type: none"> - Traditional treatment (39%) - Give ORS (29%) - Give medicine (25%) - Increase fluid intake (10%) - Don't know (7.7%) - Watch for dangerous signs (6.1%) - Continue feeding as normal (2.9%) - Reduce fluid intake (0.25%)
Severe illness warning symptoms*	Sometimes children have severe illnesses and should be taken immediately to a health center or hospital. What types of symptoms would cause you to take your child to a health center or hospital right away?	<ul style="list-style-type: none"> - Child develops fever (61%) - Child becomes sicker (46%) - Child has diarrhea and vomiting (44%) - Child has cough/cold (32%) - Child as difficult breathing (5.7%) - Child has blood in stool (3.2%) - Child has fast breathing (3.1%) - Child not able to drink/breastfeed (2.3%) - Child is drinking poorly (0.48%)
Pregnancy warning symptoms*	What are the dangerous signs that you know?	<ul style="list-style-type: none"> - Pain in abdomen (39%) - Don't know (35%) - Strong headache/blurred vision (30%) - Fever (12%) - Swollen limbs (8.1%) - Decrease in fetal movement (4.9%) - Vaginal bleeding (3.3%) - Water breaking (0.48%)

*Multiple responses allowed

More than three-fourths of respondents reported having received health information on immunizations, insecticide-treated bed nets, and hand washing. Far fewer reported receiving information regarding growth monitoring, treatment of tuberculosis, respiratory infections, HIV/AIDS, or the importance of iron or folate for pregnant women. The primary sources of health messages were from HCs (81%), village health volunteers (70%), and village chiefs (68%). Table 9 and Table 10 summarize these findings.

Table 9: Health education by topic (last 6 months)

Have you heard the following health message in the last 6 months?	(%)
Bringing your children for immunization?	90%
Sleeping in a mosquito net soaked with mosquito repellent?	81%
Washing hands?	78%
Using clean water?	73%
How to prevent or treat diarrhea?	63%
The benefits of having children take Vitamin A?	54%
Maintaining a sanitary toilet?	47%
Good ways to nourish children	45%
Using iodized salt?	45%
Monitoring your child's height and weight?	39%
How to prevent or treat tuberculosis?	38%
How to prevent or treat respiratory infection?	32%
How to prevent or treat HIV/AIDS?	31%
Women, especially when pregnant, taking iron or folate?	27%

Table 10: Health education by source (last 6 months)

Source of information	(%)
Health staff at health center?	81%
Village Health Volunteer?	70%
Village Chief?	68%
Outreach health worker during community visits?	61%
Friends/relatives?	54%
Doctor/nurse in hospital?	38%
Lao Women's Union?	30%
Radio?	22%
Television?	18%
Traditional Birth Attendant (TBA)?	16%
Pharmacist?	13%
Village PA system?	10%
Traditional Healer?	9%
Newspapers?	3%
Doctor/nurse at clinic?	2%
Monk/Nun?	2%

Given this background on household characteristics as well as general diet- and health-related indicators, subsequent subsections report findings with regard to key MCH and nutrition-related indicators.

MATERNAL HEALTH

The survey asked mothers that had a child in the two years prior to the time of survey to provide information on key aspects of their antenatal, delivery, and postnatal periods for their most recent pregnancy. Findings from the survey responses related to maternal health are summarized below.

Fertility and Contraception

Women had, on average, given birth 3.3 times prior to the survey.¹⁶ Approximately half of women reported having ever used family planning to try to prevent pregnancy, with injections (42.8%) and the pill (40.3%) being the two most popular methods.

Antenatal Period

Only about 40% of women reported at least one antenatal care (ANC) visit during their most recent pregnancy. ANC visits were significantly higher among urban residents, those mothers that had secondary education and higher, those from richer households, and those belonging to the Lao-Tai ethnic group (Table 11).¹⁷ ANC utilization rates were particularly low among Mon-Khmer and Hmong-Mien ethnic group households, and among poorer households and households where the mother had received no formal education.

Table 11: Percent reporting at least one ANC visit during last pregnancy

Antenatal care (%)	
<i>Residence</i>	
Urban	58.5%
Rural with road	43.6%
Rural without road	25.4%
<i>Age of mother</i>	
Less than 20	36.3%
20-34 years	41.5%
35-49 years	34.7%
<i>Mother's education</i>	
None	29.1%
Primary	43.9%
Lower secondary	68.1%
Upper secondary	68.7%
Post-secondary and higher	58.2%
<i>Economic quintile</i>	
Poorest	22.8%
Second	26.2%
Middle	38.9%
Fourth	48.3%
Richest	64.1%
<i>Ethno-linguistic group of household head</i>	
Lao-Tai	54.0%
Mon-Khmer	29.0%
Hmong-Mien	10.5%
Other	14.4%
Total	40.0%

¹⁶ Although the survey included a module on contraceptive use, the sampling methodology does not permit an adequate estimation of contraceptive use and fertility. Only households with at least one living child two were included in the survey.

¹⁷ The levels of ANC utilization are similar in magnitude to those found by other studies in Lao PDR; For example, Manithip et al (2011) found that about 51% of women in their sample in Khammouane and Champasack provinces received ANC during their most recent pregnancy in the past 12 months; See Manithip, C, A Sihavong, K Edin, R Wahlstrom, and H Wessel (2011), "Factors Associated with Antenatal Care Utilization Among Rural Women in Lao People's Democratic Republic," *Maternal and Child Health Journal*, 15: 1356-1362.

Only about half of those utilizing ANC visits had four or more of the recommended visits. Among those who did not attend an ANC visit, more than two-thirds reported not doing so because they did not perceive having any antenatal problems; 17% did not utilize because of financial considerations; and 11% because of physical access issues (Table 12).¹⁸ Health center staff were the most-frequently reported persons seen for ANC care with visits occurring both at the health center as well as in villages during outreach services.

Table 12: ANC utilization

Antenatal care	Percent (%)
Received any ANC	40%
<i>Reasons for not receiving ANC</i>	
No problems	71%
No money	17%
Health center too far	11%
<i>Person seen for ANC (among those receiving ANC)</i>	
Health staff	93%
Traditional birth attendant	3.5%
Village health volunteer	2.6%
<i>Most common locations of ANC</i>	
Health center	73%
In the village	64%
District hospital	27%
Home	11%
<i>Timing of First ANC Visit</i>	
First trimester	31%
Second trimester	52%
Third trimester	17%
<i>Total number of ANC visits</i>	
1 visit	14%
2-3 visits	35%
4+ visits	52%

During ANC visits, the most common services received were weighing (82%) and counseling on early and exclusive breastfeeding (76%). Other common services during ANC included counseling on maternal nutrition (59%), iron distribution (56%), blood pressure measurement (50%), family planning counseling (48%), blood tests (23%), and tetanus vaccination (33%). Urine pregnancy tests were available at only 20% of HCs, and only 19% of women reported receiving one. Nearly 85% of women reported ever receiving at least one tetanus toxoid (TT) vaccination, and 37% reported having the recommended five or more vaccines required to be considered fully immunized. Tetanus vaccination is an important element of the ANC services and is commonly documented in the maternal vaccination card, which 36% of women reported owning (although the card was seen in only 7.1% of cases).¹⁹ Slightly more than a third (39%) of women utilizing ANC reported having been counseled on danger signs during their visit. Decreased fetal movement and headache or blurry vision were the most commonly discussed issues.

From a supply-side perspective, facility surveys indicated that basic ANC care services were generally available in all 38 health centers included in the sample. Most health centers reported providing weight checks, blood pressure checks, fundal height, abdomen checks, and fetal heartbeat checks. Iron or folate supplements were provided in 76% of facilities, however, only 55% provided deworming medicine, and less than 20% provided hemoglobin or any urine test (Table 13). Furthermore, 15 of the 38 health centers did not have even one staff member who had received training in ANC services in the two years prior to the survey, raising concerns about the quality of ANC services provided. In spite of intensive national campaigns, only half of health centers report discussing early and exclusive breastfeeding during ANC, and only 55% discussed

¹⁸ Manithip et al (2011) found that that 49% of women not utilizing ANC care in their sample in Lao PDR did so because they felt normal and did not perceive any antenatal problems and 48% reported difficulty accessing health centers.

¹⁹ Within a given pregnancy, a woman is considered immunized if she has had two doses during that pregnancy or at least five doses in her lifetime.



danger signs.²⁰ Although most health centers report discussing maternal nutrition and self-care, many miss the opportunity to discuss birth and emergency planning and the need for follow-up care. About 20% of all mothers reported practicing food restrictions during their last pregnancy, the proportion being the same whether or not they had received any ANC care.

Table 13: Provision of ANC services at health centers

Provision of ANC service	Percent (%)
Is the following ANC service provided?	
Fundal height	95%
Abdomen check	95%
Fetal heartbeat check	95%
Other physical exam	92%
Weight check	87%
Blood pressure check	87%
Iron or folate	76%
Any Tetanus toxoid	66%
Deworming	55%
Any urine test	18%
Hemoglobin test	11%

Deliveries

Only 18% of births among surveyed women were attended by skilled birth attendants. With 22% of women seeking the assistance of a traditional birth attendant (TBA), these local resources seem to assist somewhat more frequently than the formal health sector, who were reported to be present in only 18% of deliveries (Table 14).

Table 14: Assistance at delivery

Assistance at delivery	Percent (%)
None	55%
Traditional birth attendant	22%
Health staff	18%
Village health volunteer	4%
Traditional healer	0.30%
Total	100%

Only 14% of births among surveyed women took place at health facilities (Figure 6). While national trends suggest that facility-based delivery is increasing in prevalence, it remains relatively rare in our sample. Traditions surrounding delivery vary substantially around the country. In some rural communities, child birth is traditionally conducted in a forested area outside of the village, while other communities build separate birthing structures which are used only once. Home births remain the most common location of delivery, even in relatively more developed areas of the country. More women reported delivering in birth structures or in the village than did at the health center, and all facility-based deliveries (including health centers, district hospitals, and provincial hospitals) accounted for only 14% of deliveries. Reasons for delivering outside of health facilities included convenience (43%), tradition (22%), and a lack of money (10%).²¹



Source: CNP Baseline Survey

Figure 6: Place of delivery

²⁰ A study of four district hospitals and 18 health centers in Khammouane and Champasack provinces by Manithip et al (2012) found that the average encounter time for an ANC visit was very brief (only about 5 minutes) and of poor quality; See Manithip, C, K Edin, A Sihavong, R Wahlstrom, and H Wessel (2012), "Poor Quality of Antenatal Care Services – Is Lack of Competence and Support the Reason?" Midwifery, doi:10.1016/j.midw.2011.12.010.

²¹ Convenience, cost, comfort, and tradition were the reasons cited for not using health facilities for deliveries in a qualitative study of rural Laotians; See Sychareun, V, V Hansana, V Somphet, S Xayavong, A Phengsavanh, and R Popenoe (2012), "Reasons Rural Laotians Choose Home Deliveries over Delivery at Health Facilities: A Qualitative Study," BMC Pregnancy and Childbirth, 12: 86 doi:10.1186/1471-2393-12-86.

As with ANC, there are clear socio-economic gradients with regard to skilled birth attendance and institutional delivery rates. Both skilled birth and institutional delivery rates were four to five times higher among those women who had received ANC during their latest pregnancy (Table 15). Village remoteness was a key factor with those in rural villages without road access having very low skilled birth attendance and institutional delivery rates as was maternal education and economic status. Lao-Tai ethnic group households had higher rates compared with those from other ethno-linguistic groups (Table 15).

Table 15: Skilled birth and institutional delivery rates

	Skilled birth attendance (%)	Institutional deliveries (%)
<i>Received any ANC</i>		
No	7.5%	6.3%
Yes	34.5%	26.0%
<i>Residence</i>		
Urban	37.0%	30.3%
Rural with road	18.2%	14.0%
Rural without road	8.6%	6.0%
<i>Age of mother</i>		
Less than 20	24.1%	20.9%
20-34 years	18.3%	13.5%
35-49 years	13.3%	12.6%
<i>Mother's education</i>		
None	10.3%	7.2%
Primary	20.1%	16.8%
Lower secondary	41.7%	30.2%
Upper secondary	40.1%	29.8%
Post-secondary and higher	34.0%	31.9%
<i>Economic quintile</i>		
Poorest	6.0%	4.6%
Second	12.7%	9.7%
Middle	14.7%	8.4%
Fourth	20.5%	15.6%
Richest	37.3%	32.9%
<i>Ethno-linguistic group of household head</i>		
Lao-Tai	26.3%	21.5%
Mon-Khmer	11.0%	7.7%
Hmong-Mien	16.3%	11.7%
Other	1.9%	1.5%
Total	18.2%	14.2%

More than a quarter (28%) of responding mothers reported giving birth to a child who later died.

Consistent with global patterns, the majority of deaths occurred in the first several months of life and 78% of these children died within the first year of birth. More than a third of mothers did not know the cause of death for their child; among those that knew, fever and diarrhea were among the leading causes (Table 16).

Table 16: Cause of child death

Leading Causes of Death Among Children	(%)
Fever (excluding Malaria & Dengue)	26%
Diarrhea	9.2%
Dengue	5.3%
Respiratory infection	2.7%
Malaria	2.0%
Accident	1.2%
Other	17%
Unknown	37%
Total	100%

From a supply-side perspective, most (87%) of health centers in the sample provided some delivery services for pregnant women; however, the range of delivery services was generally limited. Among those health centers providing delivery services, many lacked capacity to actively manage the third stage of labor. Only 24% had partographs, and just under half offered oxytocin, injectable antibiotics, or neonatal resuscitation. Magnesium sulfate is still rare in rural Lao PDR, and was available at only 17% of the health centers surveyed (Table 17). Of the 33 health centers providing delivery services, 29 (88%) offer these services during evenings and weekends.

Table 17: Delivery service availability at health centers

Are the following delivery services available?	Percent (%)
Any	87%
<i>Among those who provide any services:</i>	
Partograph	24%
Injectable antibiotics	45%
Oxytocin	42%
Magnesium sulfate	17%
Neonatal resuscitation (with mask and bag)	45%

Postnatal Period

Post-natal care (PNC) check-ups within one week of delivery were rare, and were reported by only 2% of women.²² The most common reasons for not seeking PNC included not having any problems (75%), no money (11%), inability due to the post-delivery “roasting” period (8%), and the distance from the health center (5%).



Photo by Bart Verweij/2013

Food taboos were very prevalent during the postnatal period, and were reported by 76% of women. Meats were very commonly avoided, with 77% of women avoiding buffalo meat and 63% of women avoiding beef. 58% of women had returned to their normal diet within one month of delivery, while 24% restricted their diets for more than six months.

Almost all women (99%) reported ever breastfeeding their child, with 40% of all women initiating breastfeeding within one hour of delivery. However, about 40% reported waiting 1-3 days before breastfeeding, and nearly half 49% fed the infant something prior to breastfeeding. Three-quarters of women reported giving their child colostrum. Among those who delayed breastfeeding, 77% had no milk, while an additional 19% reported that the child would not suck.

CHILD HEALTH & NUTRITION

Well-baby and routine check-ups for children under two were reported by only 8.9% of households in the survey. Well-baby visits that did take place were generally provided through outreach (55%); 33% took place at the health center and 15% were at a hospital.

Immunizations

Only one-quarter (26%) children aged 12-23 months have received all of the vaccines included in the standardized Expanded Program on Immunizations (EPI) and one in ten children aged 12-23 months have not received any vaccinations at all. This data was obtained from a combination of vaccination cards (in the 30% of cases where vaccination cards were available) and verbal recall. The percentage of children aged 12-23 (i.e. those who are old enough to be fully vaccinated) months who have been immunized are summarized in Table 18

²² The low levels of PNC check-ups may be a result of the way in which the question was asked as PNC check-ups may have occurred during the same time as deliveries occurred and not as separate visits.

Table 18: Vaccination rates among children 12-23 months of age

Vaccine	Vaccination Card	Mother's Report	Either
BCG	28%	56%	84%
DPT1	28%	54%	83%
DPT2	25%	15%	41%
DPT3	22%	20%	42%
Polio 1	27%	56%	83%
Polio 2	27%	18%	45%
Polio 3	21%	20%	41%
Measles	15%	37%	51%
All	14%	12%	26%
None	0.0%	11%	11%
HepB	9.3%	0.0%	9.3%
Micronutrient	Vaccination Card	Mother's Report	Either
Vitamin A	19%	56%	75%

While nearly 90% of children receive at least one vaccination, the data suggest substantial loss to follow-up. Mothers reported many reasons for not fully vaccinating their children, with a lack of time or knowledge about the vaccination event being the most common. Table 19 provides a summary of the reasons given.

Table 19: Reasons for not receiving all vaccinations (multiple possible)

Reason	(%)
Not notified	25%
No time	17%
Makes baby sick	6.0%
Baby gets fussy	2.1%
Not useful	1.1%
Afraid it is harmful	1.0%
Expensive	0.5%
Other	10%

Table 20: Treatment patterns for childhood illnesses

Illness	Incidence in the last two weeks	Any treatment	Health center	Village health volunteer	District hospital	Pharmacy	Health staff (outside village)	Health staff (at village)	Friends/family
Fever	39%	65%	52%	23%	11%	9.3%	6.3%	2.3%	1.6%
Cough	24%	49%	55%	16%	11%	11%	9.1%	6.4%	1.4%
Diarrhea	14%	63%	46%	29%	12%	6.0%	--	--	2.2%

Consistent with national policy emphasizing quarterly outreach visits, most children are vaccinated in the village through outreach.

According to the survey respondents, vaccines were mainly provided in villages (78%), although health centers (16%) and hospitals (5%) were also important venues for the delivery of vaccinations. This trend was even more prominent when limiting the analysis to fully immunized children; among these children, an even higher proportion of vaccinations being delivered in villages (83%) at the expense of hospitals (1.4%). The role of health centers is unchanged at 16%.

Child Illnesses

More than a third of children less than two years of age had a fever in the two weeks prior to the survey; 24% had had a cough and 15% had had diarrhea.

Among children with a cough, fast breathing was noted in 64% of cases, which was attributed to a blocked or runny nose (75%), problems inside the chest (11%), or both (14%). Children were most likely to receive treatment for fever (65%, compared 49% of children with a cough and 63% of children with diarrhea). Treatment patterns were similar across the three illnesses, with the health center most commonly sought for advice, followed by village health volunteers, district hospitals and pharmacies in that order, regardless of illness type (Table 20). For fevers, caretakers typically waited until the day after the onset of the illness to seek advice or treatment; 32% seek care on the same day, and 97% seeking care within three days of the onset of illness. The pattern was similar for coughs, with 33% seeking care on the same day, and 96% seeking care within three days of the onset of illness.

Most children ill with a fever (82%) were given a drug during the illness, most frequently on the same day (43%), the next day (26%) or two days after the fever (20%). Relatively few respondents were aware of the treatments given to their children; 77% of drugs given for febrile episodes unspecified. Among children who were sick the two weeks before the survey, and 31% were still sick with a fever, 39% still had a cough. Drugs were somewhat less likely to be given for a cough (70%). Treatment times were similar, with treatment most frequently initiated on the same day (45%), the next day (20%) or two days after the cough appeared (21%). The most common drug used is cough medicine (69%) followed by paracetamol (38%) (Table 21). None of the children sick with a cough (n=238) were reported to receive antibiotics.

Table 21: Treatment regimens for ill children

Treatment	(%)
<i>Fever</i>	
Paracetamol	39%
Antimalarials	3.2%
Antibiotics	1.7%
Unspecified	77%
<i>Cough</i>	
Cough Medicine	69%
Paracetamol	38%

The prevalence of diarrhea among children under two in rural areas was double that in urban households. Not unexpectedly, diarrhea rates were significantly higher in households that lacked or did not use a flush toilet/pit latrine and in households that lacked a designated place and did not have soap/ash for handwashing (Table 22). Access to improved

water sources did not correlate with diarrhea prevalence in the sample. Approximately two-thirds of children with diarrhea received ORS. During the episode of diarrhea, approximately 29% of children were given about the same amount of fluids, with 0.1% given none, 10% given much less and 28% given somewhat less to drink. Only 33% were given more liquids. Fluids given included a form of ORS in 66% of cases, reconstituted from a “special packed called ORS” (47%), or a government-recommended homemade fluid (22%), or a pre-packaged ORS liquid (18%).

Table 22: Diarrhea prevalence among children less than two years of age

Diarrhea prevalence two weeks prior to survey	Percent (%)
<i>Residence</i>	
Urban	8.7%
Rural with road	17.6%
Rural without road	15.3%
<i>Sanitation</i>	
No toilet	16.6%
Flush toilet/pit latrine	8.8%
<i>Hygiene</i>	
No designated handwashing area	18.3%
Designated handwashing area with soap/ash	13.9%
<i>Water source</i>	
No access to improved water source	15.2%
Access to improved water source	15.1%
<i>Total</i>	15.2%

Anthropometrics

Anthropometric data confirms the high rates of undernutrition among children under two years of age. Almost one-third (31%) of children under two were underweight while more than one-tenth (11%) were severely underweight.²³ The prevalence of stunting was even more extreme, with 36% of the same population stunted and 13% severely stunted. Wasting was also prevalent: 14% of children less than two were wasted, and 2.9% severely wasted. These parameters of malnutrition generally worsen with increasing age: for example, the prevalence of stunting increases from 22% among children aged 0–5 months, to 50% among children those aged 11–23 months, highlighting the importance of interventions aimed at adoption of appropriate complementary feeding patterns at the right times. Malnutrition rates were substantially higher among males than females. For example, the prevalence of underweight was 35% among males and 27% for females. Likewise, the prevalence of stunting was 40% among male children versus 27% among female children.

Undernutrition was significantly higher among rural, socio-economically marginalized households lacking access to basic infrastructure. Malnutrition rates were much higher among those in rural areas, those without access to toilet, and in households where the mother was older and less educated. Some of the highest malnutrition prevalence rates were observed among households that were in the lower economic quintiles. Households headed by the Mon-Khmer and Hmong-Mien ethnic groups also tended to have higher rates of malnutrition among children less than two years of age.



Photo by Bart Verweij/2013

²³ Underweight and stunting areas defined as two standard deviations below the median of the WHO Child Growth Standards adopted in 2006; severely underweight and severely stunted are defined as three standard deviations below the same.

Table 23: Malnutrition prevalence among children less than two years of age²⁴

Malnutrition prevalence	Underweight (%)	Stunted (%)	Wasted (%)
<i>Residence</i>			
Urban	21.3%	26.7%	12.7%
Rural with road	39.7%	40.4%	14.4%
Rural without road	31.3%	35.7%	13.4%
<i>Sanitation</i>			
No toilet	37.5%	39.1%	15.6%
Flush toilet/pit latrine	18.7%	26.2%	8.4%
<i>Hygiene</i>			
No designated handwashing area	33.8%	35.7%	16.1%
Designated handwashing area with soap/ash	27.5%	32.7%	9.3%
<i>Water source</i>			
No access to improved water source	35.6%	38.5%	14.1%
Access to improved water source	29.8%	32.6%	13.0%
<i>Age of mother</i>			
Less than 20	23.5%	36.2%	9.8%
20-34 years	33.8%	36.0%	14.2%
35-49 years	38.9%	37.8%	14.0%
<i>Mother's education</i>			
None	40.5%	42.8%	15.4%
Primary	28.1%	31.4%	12.8%
Lower secondary	23.4%	22.9%	12.3%
Upper secondary	21.6%	26.8%	11.2%
Post-secondary and higher	21.9%	30.0%	7.1%
<i>Economic quintile</i>			
Poorest	42.7%	42.6%	17.0%
Second	38.8%	41.4%	17.1%
Middle	34.9%	39.0%	12.1%
Fourth	29.4%	33.9%	11.9%
Richest	20.9%	24.2%	10.1%
<i>Ethno-linguistic group of household head</i>			
Lao-Tai	24.5%	29.1%	11.0%
Mon-Khmer	43.9%	43.4%	16.9%
Hmong-Mien	15.0%	39.7%	12.7%
Other	21.3%	33.3%	3.3%
Total	33.4%	36.3%	13.8%

²⁴ The table reports household-level prevalence of malnutrition, i.e., it reports the percentage of households that had at least one child under the age of two that was malnourished. Wasting, which is associated with greater child mortality, is less prevalent than either underweight or stunting, suggesting a dominance of chronic undernourishment rather than acute undernourishment.

SUMMARY & POLICY IMPLICATIONS

This report has presented results from a household survey on MCH & nutrition in mostly rural areas of six central and southern provinces of Lao PDR. The information is complemented in some places with data collected at health facilities. Survey results confirm and complement existing information from other sources (such as the LSIS and MICS3) on the state of MCH- and nutrition-related output and outcome indicators in the country. In addition, the survey sheds new light on some of the health risks and challenges faced by the population in central and southern Lao PDR, especially in rural and remote areas. On the positive side, the survey documents important gains in preventive MCH services. Coverage of several different vaccines, including BCG, are approaching or have met coverage targets of 80%, and coverage of the measles vaccine is now slightly over half (up from 35% in 2006). At 40%, ANC coverage is has increased by 5 percentage points since 2006.²⁵

Despite some modest gains in health service coverage outcomes, the survey results underscore the fact that MCH- and nutrition-related challenges continue to plague Lao PDR. More than a quarter of the mothers interviewed reported having at least one child who had died, and more than a quarter of households had at least one serious illness, injury, or death in the two years prior to the survey. The data suggest that health shocks are among the most common (and most expensive) shocks facing rural residents. Additional detailed analysis of out-of-pocket expenditure related to access to maternal health services based on the same survey is in progress and is expected later in 2013. Anthropometric measurements of children confirm recent reports of serious levels of undernu-

trition, with over a third of all children less than two years of age being underweight or stunted. One consistent finding relates to the socio-economic gradients in key MCH and nutrition-related indicators. Across the board, those living in rural, remote communities, poorer households, households headed by non-Lao-Tai ethnic groups, and those wherein the mothers were not educated tended to have some of the worst MCH and nutrition outcomes.

Service utilization rates remain exceedingly low, far lower than rates observed in comparable countries. The reasons provided by women for the low levels of ANC, institutional deliveries, PNC, and well-baby visitation rates indicate that, in addition to physical and financial barriers, lack of knowledge and awareness of the benefits of contacts with the formal health system in the country is widespread. In addition to demand-side considerations, the findings from the facility audits which complemented the household surveys highlight some key deficiencies with regard to service readiness, especially with regard to provision of key MCH services such as delivery-related care in the more rural and remote parts of the country. These findings will be documented in more detail elsewhere, but are presented in brief in Box 2 below. The survey makes clear that important constraints continue to exist in the supply of basic health services. The complementary system of outreach can be leveraged and enhanced in order to expand the coverage of basic health services, especially to remote areas. Careful attention will need to be paid to rationalizing use of care and institutionalizing a robust referral system as efforts are made to increase service utilization. Going forward, a key challenge will be to find the right balance of investments in underutilized health facilities vis à vis investments in the referral and outreach systems.

²⁵ Estimates for 2006 are taken from the 2006 Multiple Indicator Cluster Survey (MICS) 3.

Box 2: Facility Audits

The CNP survey included facility and village level data collection in addition to the household surveys. In all, 38 health centers were visited. At the facilities, data was collected on catchment area details and utilization; staffing, training and management; infrastructure and equipment; and drugs, tests, and supplies.

Facility audits highlight serious gaps in the Lao medical supply systems. While a small number of commodities – notably contraceptives, saline, and pain relievers – were routinely available, many essential supplies were missing in most health centers. BCG vaccine, which should be provided within three days of birth, was available at less than 40% of facilities visited, and infant antibiotics were available in only approximately 30% of facilities surveyed. Diagnostic capacity was nearly non-existent in the health centers visited, with only 40% of facilities able to provide a malaria test and 20%

offering urine pregnancy tests. Even the most basic equipment was often lacking: adult scales were missing in 20% of health centers and stethoscopes were missing in 15%.

Following methodology developed by the WHO, simple indices of facility service readiness were created by measuring the percentage of key equipment and drugs available at health centers. Figure 7 shows the distribution of service readiness scores – divided into quintiles – by both location (urban, rural with road, and rural without road) and local poverty. These results highlight declines in health facility service readiness as one moves from urban to more remote or to poorer regions. Complementary analyses suggest that women living in the catchment areas of relatively better resourced health facilities are nearly two times as likely to utilize ANC services as those in the catchment areas of less resourced facilities.



Figure 7: Health center service readiness scores by location and poverty status

Increasing uptake of services is of little value if the services received offer no benefit to patients, and serious attempts to increase the utilization of services must address these basic supply-side

challenges. These results highlight the need to invest more in insuring that high-quality services are available when contact is made with the health system.

The need for accelerating improvements in MCH- and nutrition-related outcomes has not gone unnoticed by the government. Efforts aimed at increasing uptake of MCH services are steadily gaining momentum in the country, and the government has committed itself to making key MDG-related health services accessible to the population as part of its new reform agenda. Although the planned increases in government health spending are welcome, challenges remain. These include ensuring that the additional resources are used to improve access to and quality of health services – especially in more remote areas – and progressively making additional domestically-financed resources available to reduce both dependence on external funding and out-of-pocket spending for health. To attain these objectives, the government should consider an appropriate mix of both demand-side and supply-side incentives. Instead of, or in addition to, setting a target for budgetary outlays for health, the government needs to improve the efficiency of existing outlays, the measurement of which requires the monitoring of key population health outputs. These should include focus on the level and equity of basic immunization rates, of skilled birth attendance, of institutional delivery rates, of need-based outpatient and inpatient utilization rates, and on adequate levels of financial protection from adverse health shocks.

The planned implementation of the free MCH policy, which will be implemented to scale this year, is a welcome step in the right direction. This policy seeks to remove user fees at the point of service for key MCH services and to provide utilization-based reimbursements to health facilities. Notably, the proposed package of services included in the free MCH Policy includes facility-based delivery. Experience from a recent World Bank-funded pilot eliminating user fees suggests that this policy may offer important gains in this area. A two-year World Bank-funded project piloted free deliveries in two districts in the same region. It found that facility based deliveries increased by 300% in the districts in which user fees were eliminated; this compares to a much smaller 40% increase in neighboring control health districts. However, implementation of the policy must be carefully monitored. As with all such strategies aimed at increasing the utilization of

services among the population as a whole, there is a danger that the policy will exacerbate existing health inequalities if relatively wealthier families – with better access to health infrastructure and services – disproportionately utilize the free services. In addition, implementation will need to be complemented by improvements in the capacity of health facilities, not just in clinical and service availability terms, but also in terms of their ability to manage and allocate revenues appropriately. Current weaknesses include inconsistent implementation of user fee regulations and revenue management, variation in management practices, weak procurement practices for drugs, and inadequate service provision levels.

It is important to note that the planned removal of user fees, as envisioned under the free MCH policy, may not be sufficient to improve utilization and inequalities across the country. To achieve this, the government should consider additional supply-side and community-focused demand-side interventions, especially in rural areas building on the lessons of the Ministry of Health's pilot Community Nutrition Project. If successful, the free MCH policy is likely to have its greatest impact on facility-based delivery rates. Alternative strategies will likely be needed to increase utilization of antenatal care, postnatal care, or vaccination, as each of these service categories are officially free of charge and have been so for decades. Strategies aimed at increasing coverage of these interventions should focus on a combination of demand-side interventions, aimed at behavior change and education campaigns, and supply-side interventions aimed at improving the quality of services that are delivered. One potentially important supply-side intervention is the expansion and improvement of integrated outreach. During routine outreach, health workers visit villages in their catchment areas to provide free-of-charge vaccination services, ANC, and PNC and some limited curative care. While these visits remain an important point of care for many living in rural areas, there is evidence that these visits are not currently offering access to a basic package of services. Although outreach guidelines provided by the Ministry of Health stipulate that several antenatal and postnatal services be available at outreach, the survey results suggest that less than 5% of ANC visits took place in the village.

Improving nutrition outcomes poses a particular policy challenge in the country. Poor nutritional outcomes in Lao PDR have complex causes. Food insecurity remains a problem. However, the issue goes beyond a shortage of food. Malnutrition is caused by inappropriate breastfeeding and complementary feeding practices, food taboos associated with pregnancy and the postpartum period, high incidence of vector and food-borne disease, and myriad other factors. Many of these causes are only weakly related to the availability of and access to food, as is evidenced by the relatively high rates of malnutrition observed even in better-off segments of the population. According to an earlier World Bank-supported study of infant and young child feeding in Lao PDR, there remains a widespread belief in Lao PDR that young children know when and how much to eat; this results in the absence of engaged and interactive feeding behavior, and low overall quantity of dietary intake for vulnerable children. Development partners such as UNICEF have been supporting the Ministry of Health in developing the capacity of the Center for Information and Education for Health (CIEH). Following the successful implementation of a national exclusive breastfeeding campaign in 2010, the center has more recently begun to tackle the challenge of building a broad engagement with national and local stakeholders- including government agencies, development partners, non-governmental organizations (NGOs), and civil society organizations (CSOs) – in order to ensure appropriate and consistent messaging. The team has also been active in expanding the availability of materials appropriate in multi-ethnic/multi-language and low literacy environments.

Improvements in nutritional outcomes will require a multi-sectoral response aiming to educate families on appropriate feeding practices, especially for infants and young children; increasing access to improved water and sanitation facilities to reduce the prevalence of water, food and vector-borne diseases; and improving access to health care services for those in need. Consistent with international studies,

the survey finds a strong correlation of diarrhea incidence and improved facilities. Table 23 highlights a consistent decrease in diarrheal incidence with the increase in the local availability of flush toilets. The National Nutrition Strategy (NNS) was released in 2009, and followed up with a National Plan of Action for Nutrition (NPAN) the same year. Together, the NPAN and NNS have helped to create a motivated coalition of actors seeking progress on what has been an especially intransigent challenge in Lao PDR. Fifteen ministries and organizations are held to be accountable for nutrition outcomes and, following the release of the NPAN, government and development partners rallied around the issue. However, implementation of the plan has been slow and better prioritization of critical interventions is needed. The existing NPAN contains 44 priority interventions requiring immediate action, and include increasing the coverage of exclusive breastfeeding and scaling up immunization to introducing conditional cash transfers for ANC, PNC, and deliveries. The annual budget for the 44 interventions was estimated at US\$25 million: while the targeted budget is substantial, there is little guidance on where the funds should come from and whether the planned increases in domestically-sourced government financing would specifically target these interventions.

The response to nutrition issues will need coordinated action across sectors. Leadership has been a challenge in Lao PDR. Even within the national health sector, leadership around nutrition is only recently beginning to arise, and a designated center for nutrition was only created at the Ministry of Health in 2012. While the goal of facing this multi-sectoral challenge with a multi-sectoral response was laid out in the Ministry of Health's NNP, early calls to introduce a coordinating committee at the level of the Cabinet – with ties to the Ministries of Health, Education, Agriculture and others that were initially envisaged to participate – have only recently been initiated. Attacking the persistently high levels of malnutrition in Lao PDR will require a high-level emergency multi-sectoral policy response.

²⁶ Gillespie, A, H Creed-Kanashiro, D Sirivongsa, D Sayakoumanne, and R Galloway (2004), "Consulting with Caregivers: Using Formative Research to Improve Maternal and Newborn Care and Infant and Young Child Feeding in the Lao People's Democratic Republic," HNP Working Paper, World Bank, Washington, DC.

ANNEX A: LIST OF SURVEYED HEALTH CENTERS

No	Province	District	Health Center	Status ²⁷
1	Attapeu	Phouvang	Nachuak	Intervention
2	Attapeu	Xaysetha	Kengmakeua	Intervention
3	Savannakhet	Thapangthong	Xekeu	Intervention
4	Savannakhet	Xepon	Dongsavanh	Control
5	Savannakhet	Xepon	Phabang	Control
6	Savannakhet	Xepon	Ladhor	Intervention
7	Savannakhet	Xepon	Manchi	Intervention
8	Savannakhet	Nong	Danvilay	Intervention
9	Savannakhet	Nong	Nakong	Control
10	Savannakhet	Vilabouly	Nayom	Intervention
11	Savannakhet	Phalanxay	Nasai	Control
12	Salavane	Samuoi	Amin	Control
13	Salavane	Samuoi	Asok	Control
14	Salavane	Samuoi	Kimae	Control
15	Salavane	Taoi	Tahouark	Intervention
16	Salavane	Taoi	Photang	Intervention
17	Salavane	Taoi	Kokbik	Control
18	Salavane	Toomlarn	Nadou	Control
19	Khammouane	Nakai	Natane	Intervention
20	Khammouane	Yommalad	Hai	Control
21	Khammouane	Yommalad	Phid	Control
22	Khammouane	Xaybouathong	Kengchone	Intervention
23	Khammouane	Xaybouathong	Naphao	Intervention
24	Khammouane	Xaybouathong	Nanoithong	Control
25	Khammouane	Boualapha	Sobpheng	Control
26	Khammouane	Boualapha	Sok	Control
27	Khammouane	Mahaxay	Panam	Intervention
28	Champasak	Sukhuma	That	Control
29	Champasak	Pathoomphone	Sanod	Control
30	Champasak	Pathoomphone	Lak 24	Intervention
31	Champasak	Bachiang	Kuangsy	Intervention
32	Champasak	Bachiang	Kengkia	Control
33	Bolikhambxay	Khamkheuth	Phamoeung	Intervention
34	Bolikhambxai	Khamkeut	Khammuane	Control
35	Bolikhambxai	Xaychamphone	Nam one	Control
36	Bolikhambxai	Borlikhan	Ban Bo	Intervention
37	Bolikhambxai	Borlikhan	Nakoun	Intervention
38	Champasak	Sukhuma	Nachan	Intervention

²⁷ The survey was conducted in preparation for the impact evaluation of CNP and matched paired health centers are included in the survey. Control health centers are not implementing project activities were surveyed together with intervention health centers which are.



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