


# Health Insurance Cards and Health Care Services Utilization: Evidence From Children in Mountainous Regions of Vietnam

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## Abstract

Health insurance reform for children younger than 6 years of age was implemented in 2005. The study aimed to describe the health insurance card status, health care services use, and associated factors. The cross-sectional study was conducted with 210 Hmong mothers of children younger than 6 years of age, and of those, 118 mothers having an ill child in the previous 4 weeks were selected in this study. Descriptive statistics and multiple logistic regression were applied to predict the associated factors. In all, 42.9% of children had health insurance cards and 45.8% ill children accessed public health facilities. The factors included children's age, mothers' knowledge of the free health care policy, mothers' knowledge about one sign of lung infection of their children associated with health insurance status, and health care services use. In conclusion, the 2005 reform of child health insurance policy has brought a modest impact on insurance coverage of children younger than 6 years of age and health care services use. Mothers' knowledge of free health care policy should be improved.

## Keywords

Health insurance card, health care services utilization, among children younger than 6 years of age, Vietnam

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## Introduction

Globally, the 2030 Agenda for Sustainable Development identified 17 Sustainable Development Goals in which Goal 3 focused on individual health outcomes for all. In particular, Article 3.8 states that by 2030, universal health coverage (UHC) would be achieved. Individuals would be protected from financial risk and could access quality essential health care services and access safe, effective, quality, and affordable essential medicines and vaccines.<sup>1</sup> UHC has been defined as insurance program where people can access health care services they need without facing any financial hardship. This goal is particularly important for children who have great need for health care.<sup>2,3</sup> Countries have reached UHC using different approaches and varying health systems. However, there are 3 common characteristics typically identified in countries that are making progress toward achieving UHC. First, there must be a political commitment to create regulations for expanding access to care,

improving equity, and pooling financial risks. Second, health expenditures need to be increased to purchase more health services for more people. Third, the share of health spending must be raised and pooled to avoid reliance on household out-of-pocket payments.<sup>3</sup> Three common indicators can be used to measure health coverage, comprising (1) health insurance coverage, (2) the number of inpatient and outpatient visits, and (3) out-of-pocket expenditures for health.<sup>4</sup>

Social health insurance is the most important pillar of health financing in Vietnam and plays a very important role in ensuring equity in health care. However, different

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policies affect health insurance coverage. For public health insurance, the first Decree No 299/HDBT dated August 15, 1992, valid from 1992 to 1998, stipulated that some groups must participate in the compulsory health insurance program including public sector employees, pensioners, people entitled to work with disability benefits, Vietnamese workers in international organizations in Vietnam, and employees of non-state enterprises having 10 or more employees. Since 1998, other groups have also been required to participate in compulsory health insurance according to Decree 58/1998/ND-CP.<sup>5</sup>

From July 1, 2005, Decree 63/2005/ND-CP came into effect and modified eligibility for coverage for those who were already stipulated in Decree 58. These changes required that employees working in non-state enterprises employing less than 10 people be involved in the compulsory health insurance program. The poor and ethnic minority populations were also covered in the compulsory health insurance program with the government subsidizing 100% of their premiums according to Decision 139/2002/QD-TTg.<sup>6</sup> In 2005, all children younger than 6 years of age also benefitted from the government noncontributory policy.<sup>2</sup> In 2009, the health insurance law issued by the Vietnamese National Assembly came into effect and was amended in 2015. This law stipulated 25 target groups to be involved in the compulsory health insurance program in Vietnam. Children younger than 6 years of age, especially among ethnic minorities and mountain tribes, are still provided with free health insurance. In the short term, when the children do not have health insurance cards (HICs), they can show their birth certificate to access free health care services.<sup>6,7</sup>

Various studies have been conducted about the impact of health insurance policies for children, which reported positive effects of health care use and expenditures for health. A research study in the United States demonstrated that children with HIC benefitted more from health services.<sup>8,9</sup> One study conducted from 2003 to 2006 in the Philippines showed that HIC contributed to reduce delayed care and health care costs for poor children.<sup>10</sup> Another study conducted in 2006 in rural China showed that HIC contributed to a lower proportion of deaths among children.<sup>11</sup> Recently, a study using 3 rounds of the Vietnam Household Living Standards Survey to assess the impact of health insurance program for children younger than 6 years of age found that health insurance increased the number of outpatient and inpatient health care visits.

Several positive factors were associated with being insured including living in a poor household, an urban area and a remote commune, living with an older adult,

being married, and being a better educated household head. Factors that negatively influenced the health insurance status include children's higher age, belonging to the majority Kinh ethnic group, and having a household head with less than primary education.<sup>2</sup> Another study using 4 rounds of the Vietnam Household Living Standards Survey to assess the impact of health insurance program for children older than 6 years found similar results of health care use.<sup>12</sup>

In reality, due to objective and subjective reasons, a number of children younger than 6 years of age are not fully benefiting from their lawful right to free health insurance. According to research conducted in 2011 in 4 cities and provinces (Ho Chi Minh City, Kon Tum, Ninh Thuan, and Dien Bien), 27% of children younger than 6 years of age, and 44% of children with temporary residence, did not have HIC. Specifically, in Dien Bien, children younger than 6 years of age without HIC accounted for 33%.<sup>13</sup> The research also pointed out that only 25% of children frequently use HIC when having medical treatment, while 15% have never used HIC.<sup>13</sup> A World Bank report in 2011 indicated that 1.9 million children younger than 6 years of age in Vietnam had no HIC yet.<sup>8</sup>

Dien Bien is a mountainous province with geographical, economic, and cultural hardship. The Dien Bien Bureau of Statistics estimated the province population at 543 772 in 2014, including 21 ethnic minorities, of which the 3 main minorities are Thai (38%), Hmong (30%), and Kinh (20%). Among these 3 minorities, the Hmong live in the mountains, experience difficulties in transport, economy, and cultural and social conditions, as well as have low educational attainment.<sup>14</sup> These factors create alarming risks in health care, in obtaining and using HIC in medical treatment for local citizens, especially among children younger than 6 years of age. This research was conducted at 3 Hmong villages of Tua Chua District, Dien Bien Province, to explore the current situation and related factors influencing the access of HIC and health care services use among Hmong children younger than 6 years of age.

## Materials and Methods

### Research Design

This research employed a cross-sectional design, using a combination of quantitative methods.

### Research Subject

Quantitative research subjects were of 2 types: (1) mothers of ethnic Hmong residents with children younger

than 6 years of age and (2) children younger than 6 years of age.

### Research Site

Three communes with 100% Hmong residents in Tua Chua District, Dien Bien Province, were purposely selected. Dien Bien is one of the mountainous provinces, located in north of Vietnam. The province is characterized by difficulties in low economic status and level of education, particularly among 21 ethnic minorities. Among these minorities, the Hmong living in the high and remote mountainous areas, experience the most difficulty accessing health care services, particularly for children younger than 6 years of age.

### Sample Size and Sampling Method

The following formula was applied to calculate the minimum number of children younger than 6 years of age needed to identify the proportion of children with HIC:

$$n = \frac{z_{1-\alpha/2}^2 p(1-p)}{d^2},$$

where  $n$  is the minimum number of children younger than 6 years of age needed for research;  $Z$  is the reliable factor, with reliability of 95%,  $Z = 1.96$ ;  $p$  is the children younger than 6 years of age with HIC, according to UNICEF (United Nations International Children's Emergency Fund) and Ministry of Health research,  $p = 67\%^9$ ; and  $d$  is the absolute accuracy ( $d = 0.07$ ).

Using this formula, the calculated sample size was 173 children younger than 6 years of age. However, because mothers were the interviewees, the minimum number of mothers with children younger than 6 years of age was 173. In reality, 210 mothers were interviewed as mothers from adjacent households were willing to be interviewed, and the research team found time to interview them. Of 210 mothers, 118 had children who were ill in the previous 4 weeks. To identify the associated factors with health insurance status and health care use, we chose the youngest ill children of each mother as their mothers would be likely to bring them to the health facility. Systematic random sampling method was used to select mothers to be interviewed.

### Data Collection

The structured questionnaires were designed to interview mothers. Data on their children's health insurance status were collected from interviews with the selected mothers. The interviews ascertained information concerning the insurance status and their health care services use of

children younger than 6 years of age and other associated factors such as sociodemographic data about the respondents and their households. Interviews took about 45 to 60 minutes and interviewers were all experienced in collecting data. They were trained to understand the study objectives and how to ask each survey question including role-playing. The interviewers also practiced how to collect data at commune study sites eligible for but not included in the survey. This helped minimize community sensitization to the study among the sampled communes.

### Measurement and Key Variables

The main outcome variables comprised health insurance status and health care services use. These variables used the value 0 when a child was uninsured and value 1 when this individual was insured. The independent variables comprised children and their mothers' socioeconomic indicators including child's sex, mother's education, child's and mother's age, household economic status, and total number of children in the household. Other independent variables included mother's knowledge regarding free health care policy, mother's knowledge concerning at least one dangerous sign of lung infection and diarrhea, and degree of child's illness.

### Data Management and Analysis

Epidata was used for data entry. SPSS Software, Version 20.0, was used to analyze quantitative data. Descriptive statistics were used to describe the proportion and frequency of data. In addition, a multivariate model was then constructed using binary logistic regression analysis. Odds ratio (OR) and 95% confidence intervals (CIs) were used to identify the associated factors with insurance status and health care services use.

### Research Ethical Clearance

The research was approved by the institutional review board in the Hanoi University of Public Health, Vietnam, Reference No. 093/2015/YTCC-HD3. Individuals understood and signed the inform consent form.

## Results

### Health Insurance Card and Associated Factors

Table 1 provides summary statistics for the dependent variables of health insurance status and the observed independent individual and household factors. Of the 210 children, 90 (42.9%) had HICs and 120 (57.1%)

**Table 1.** Description of Independent Variables and Adjusted Odds Ratio and 95% Confidence Intervals for Measures of Health Insurance Card.

Characteristics	Number (N = 210)	Percentage	Health Insurance Card, Yes (n = 90) Versus No Card (n = 120)
Child's sex			
Male	110	52.4	—
Female	100	47.6	1.2 (0.7-2.3) <sup>a</sup>
Child's age group			
Less than 1 year old	48	22.9	—
From 1 to 3	133	63.3	0.1 (0.04-0.28)**
Over 3	29	13.8	0.02 (0.004-0.069)**
Mother's education			
Illiterate	157	74.8	—
Literate	53	25.2	0.8 (0.37-1.75)
Mother's age group, years			
≤21	73	34.8	—
≥22	137	65.2	1.6 (0.78-3.17)
Mother's perception of free health care policy			
Yes	85	40.5	—
No	125	59.5	3.1 (1.52-6.14)**
Mother's economic status			
Poor/near-poor	143	68.1	—
Other	67	31.9	0.99 (0.50-1.97)
Child's health insurance card			
Yes	90	42.9	—
No	120	57.1	—

<sup>a</sup>Numbers in parentheses are 95% confidence intervals.

\*\* $P < .01$ .

had none. The sample consisted of 52.4% males and 47.6% females. The majority were children aged from 1 to 3 years (63.3%). The children with mothers having no education were 3 times as many as those with mothers having obtained education. The mothers aged from 22 years accounted for a much higher proportion (65.2%) than those aged 21 and less than 21 years. Children belonging to poor or near-poor household\* were twice the number as those from another economic status. Mothers who knew the policy of free health care for their children accounted for 59.5% higher or about 1.5 times than those not knowing about this policy.

Table 2 shows the results of the binary logistic regression analyses and examines the effects of the factors associated with child's health insurance status.

Of the independent factors, 2 significant predictors were found to be associated with health insurance status.

\*Poor household is a household with an average monthly per capita income of 700 000 VND or less. Near-poor household is a household with an average monthly per capita income of 700 000 VND to 1 000 000 VND.

Children aged from 1 to 3 years and above were less likely to have HIC than those less than 1 year old (OR = 0.1, 95% CI = 0.04-0.28, and OR = 0.02, 95% CI = 0.004-0.069, respectively). Children whose mothers knew about the free health care policy were more likely to have HIC for their children than those whose mothers did not know (OR = 3.1, 95% CI = 1.52-6.14). Other factors were not significantly associated with child's health insurance status.

### Health Care Services Use and Associated Factors

Table 2 provides a summary of statistics for the dependent variables of health care services use and the observed independent individual and household factors. Of the 118 ill children in the previous 4 weeks, 62 (52.5%) had HIC and 56 (47.5%) had none. The sample consisted of 55.1% males and 44.9% females. The rate of children suffering from moderate/heavy illness was about 1.5 times as much as that of those with mild illness. The majority of children had mothers without education (72%).

**Table 2.** Description of Independent Variables and Adjusted Odds Ratio and 95% Confidence Intervals for Measures of Health Care Services Use.

Variables	Number (N = 118)	Percentage	Health Care Services Use, Yes (n = 54) Versus No (n = 64)
Child's sex			
Male	65	55.1	—
Female	53	44.9	1.4 (0.58-3.50) <sup>a</sup>
Child's level of sickness			
Mild	47	39.8	—
Moderate/heavy	71	60.2	1.4 (0.54-3.57)
Health insurance card of children			
No	56	47.5	—
Yes	62	52.5	6.0 (2.39-15.17)**
Mother's education			
Illiterate	85	72.0	—
Literate	33	28.2	1.1 (0.39-3.09)
Mother's age group, years			
≤21	45	38.1	—
≥22	73	61.9	0.9 (0.36-2.29)
Number of children younger than 6 years of age			
1 year old	51	43.2	—
2 to 6 years old	66	56.8	0.9 (0.39-2.38)
Mother's knowledge about at least one dangerous sign of lung infection			
No	73	61.9	—
Yes	45	38.1	3.1 (1.0 – 9.98)*
Mothers' knowledge about at least one dangerous sign of diarrhea			
No	56	47.5	—
Yes	62	52.5	0.6 (0.18-1.76)
Mother's perception of free health care policy			
No	68	57.6	—
Yes	50	42.4	3.5 (1.30-9.36)*
Mother's economic status			
Poor/near-poor	78	66.1	—
Other	40	33.9	0.7 (0.28-1.84)
Distance from home to the nearest health facility			
Less than 5 km	49	41.5	—
5 km and above	69	58.5	1.1(0.46-2.84)
Health care services use			
No	64	54.2	—
Yes	54	45.8	—

<sup>a</sup>Numbers in parentheses are 95% confidence intervals.

\* $P < .05$ . \*\* $P < .01$ .

The mothers aged 22 years and above accounted for a much higher proportion (61.9%) than those aged less than 21 years. Children less than 1 year old accounted for 43.2%, slightly lower than those from 2 to 6 years old. In this sample, children belonging to poor or near-poor households were twice as many as those from another economic status. However, this sample included a higher rate (57.6%) of mothers not knowing the policy of free health care for their children than those knowing about this policy. Mothers knowing at least one sign of lung infection,

needed to bring their children to a health facility, accounted for a much higher rate (61.9%) than those not knowing while this issue was not as serious as for diarrhea. The subjects' households were far from a health facility. Of the sample, the rate of children using health services (45.8%) when ill was lower than those using services.

Table 2 shows that of the independent factors, 3 significant predictors were found to be associated with health care services use. Children with HICs were 6 times more likely to go to a health facility for health care



services than those without (OR = 6.0, 95% CI = 2.39-15.17). Children whose mothers knew about the free health care policy were 3.5 times more likely to use health care services than those whose mothers did not know (OR = 3.5, 95% CI = 1.30-9.36). Finally, children whose mothers knew at least one sign of lung infection, needed to bring their children to a health facility, were 3.1 times more likely to use health care services. Other factors were not significantly associated with children health care services use.

## Discussion

In this study, Hmong children's health insurance coverage was 42.9%. This proportion was lower than the reported data of Dien Bien Department of Labor, Invalids and Social Affairs<sup>15</sup> and another study of health insurance impact on children younger than 6 years of age in Vietnam.<sup>2</sup> The reason may be that this study was conducted using a much smaller sample size than other studies. The proportion of ill children using health care services accounted for 45.8% in this study. This rate can be considered as low. The reason may be that ill children's mothers tended to use self-treatment, which cost them less than the total curative expenditure. The distance from home to health facility is also an explanation.<sup>16</sup> However, this was not identified in the following analyses. One of the reasons may be that mothers do not bring their ill children to public health facility because they think their children are not seriously ill and complicated treatment are not needed. Private health care providers are used instead, especially those using of Eastern Medicine.<sup>16</sup> This issue is very common in rural areas in Vietnam, but data were unavailable in this study.

A binary logistic regression model was constructed to examine the factors associated with insurance status of children younger than 6 years of age. The results indicated that the probability of having insurance coverage was significantly associated with children's age and their mother's knowledge of free health care policy.

Respondents having children aged from 1 to 3 years and above were less likely to have HICs than those less than 1 year old (OR = 0.1, 95% CI = 0.04-0.28, and OR = 0.02, 95% CI = 0.004-0.069, respectively). This finding was consistent with another study of health insurance impact on children younger than 6 years of age also conducted in Vietnam.<sup>2</sup> The reason may be that the children less than 1 year are more likely to be ill than those aged more than 1 year, as was found in this study. Thus, they were paid more attention by their mothers than the older children. Children whose mothers knew about the free health care policy were more likely to have HICs for their children than those whose mothers did not

know (OR = 3.1, 95% CI = 1.52-6.14). However, Table 1 shows that about 59.5% of mothers did not know about this policy and 75% of mothers were illiterate. Thus, improving the knowledge and education of these ethnic mothers would play an important role in increasing their children's insurance coverage.<sup>12,17,18</sup> According to the law of health insurance updated in 2014, children younger than 6 years of age were freely given health insurance and benefited from health care services.<sup>19</sup> The procedure of providing HICs for children younger than 6 years of age has been clearly promulgated.<sup>5</sup> This procedure consists of the steps described below. First, village heads make a list of children younger than 6 years of age. This list will then be submitted to the commune's People's Committee to check the children's information and request amendments when necessary. Next, the list will be then submitted to the District Department of Labor, Invalids and Social Affairs for approval and is forwarded to the District Social Health Insurance Department to issue HICs. Finally, the HICs will be sent to the village heads and they will distribute the cards to the households having children younger than 6 years of age. For children to have HICs, these steps must be well implemented and closely followed for accountability.

A binary logistic regression model was also applied to examine the factors associated with children's health care services use. The results indicated that the probability of using health care services was significantly associated with children's insurance status and their mother's knowledge of free health care policy and at least one sign of lung infection, needed to bring their children to a health facility. Children with HICs were 6 times more likely to go to a health facility for health care services than those without (OR = 6.0, 95% CI = 2.39-15.17). This finding was strongly consistent with other studies.<sup>12,17,20</sup> Children whose mothers knew about the free health care policy were 3.5 times more likely to use health care services than those whose mothers do not know (OR = 3.5, 95% CI = 1.30-9.36). Finally, children whose mothers knew at least one sign of lung infection, needed to bring their children to a health facility, were 3.1 times more likely to use health care services. Once again, these findings confirmed that improving the knowledge and education of these ethnic mothers is essential. To some extent, health and life outcomes will be improved when access to health care services for young children is increased. This is an important strategy for policy makers in Vietnam.<sup>2</sup>

## Limitation

The research study had several limitations. First, this research was conducted in only 3 communes that were

purposely selected. The results might not represent the whole population of the Hmong minority, especially those residing in different geographical areas. Second, qualitative information was not collected, which partly affected the complete understanding of the whole picture of Hmong children's health insurance coverage and health care services use as well as any associated factors.

## Conclusion

This cross-sectional study was conducted among Hmong children younger than 6 years of age to explore the current of health care services use and its associated factors, partly provided the evidence for the governmental 2005 reform to fully subsidize health insurance for children younger than 6 years of age in Vietnam. The main findings indicated that the policy has been more or less successful in improving health insurance coverage and health care services use for Hmong children younger than 6 years of age. The procedure of providing health insurance for children younger than 6 years of age remains clear. However, the knowledge about the free health care policy of children's mother is important and necessary to be improved to ensure children's insurance coverage and health care services use. There are some educational interventions that would be suggested and trialed in to the mothers, such as "door-to-door" or "community-based," to help educate these families about their health care insurance coverage options for young children in Vietnam. Moreover, further research is needed to identify what other potential factors prevent greater insurance coverage and health care services use among Hmong young children and other ethnic minorities as well.

## Author Contributions

Prof. Nhu who the first author of this paper, responded for the whole content and structure of this paper and also wrote the abstract and conclusion section. Dr. Thanh responded for the data analysis, result and discussion sections and review all the sections in this paper. Ms. My Anh responded for the materials and methods section and she assigned for the corresponding author of this paper to format editing, online submission and contact with the journal editor. Ms. Anh Van wrote the introduction of this paper.

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