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ORIGINAL ARTICLE

Coverage of health insurance among the near-poor in rural Vietnam and associated factors

Thanh Duc Nguyen · Andrew Wilson

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Abstract
Objectives The Vietnamese government is committed to universal health care largely through social health insurance. The near-poor population is entitled to subsidized but not free insurance under this scheme, but remains under-represented compared to other groups. The aims of this research were to estimate the health insurance coverage of the near-poor in rural Vietnam and identify the individual and household factors associated with health insurance status.
Methods Rates of health insurance coverage were estimated from district-level administrative data. A cross-sectional survey was conducted in a representative sample of 2000 near-poor in Cao Lanh district, Dong Thap province, Vietnam. Face-to-face interviews were conducted with a standardized questionnaire. Multiple logistic regression was applied to identify the factors associated with insurance status.
Results The insurance coverage of the near-poor in the selected communities was 20.3%. Enrollment in the health insurance scheme was significantly associated with poor health status (OR = 4.8, 95% CI = 2.4–9.8), good knowledge of health insurance (OR = 4.6, 95% CI = 3.4–6.2), interest in health insurance (OR = 30.1, 95% CI = 11.6–78.0), and the perceived cost of the insurance premium (OR = 2.4, 95% CI = 1.7–3.6).
Conclusions The cost of insurance premiums is a barrier to enrollment. Information, education and communication campaigns together with modified insurance scheme for the near-poor are necessary to enhance insurance coverage in Vietnam.

Keywords Health insurance · Near-poor · Universal health coverage

Introduction

The World Health Organization promotes the achievement of universal health coverage (UHC) as a goal for all countries, where UHC is defined as "a system in which everyone in a society can get the healthcare services they need without incurring financial hardship" (Savedoff et al. 2012). Vietnam has fully adopted UHC as a national strategy (Somanathan et al. 2014). The World Health Organization Health Financing Strategy for the Asia Pacific Region (2010–2015) suggested two important indicators to evaluate universal health coverage: (1) over 90% of the population is covered by prepayment and risk pooling schemes; and, (2) close to 100% coverage of vulnerable populations with social assistance and safety-net programmes (Chua and Cheah 2012).

Social or universal health insurance is one approach to UHC providing variable levels of financial protection (Savedoff et al. 2012). In Vietnam, social health insurance has been in place since 1992. The Law of Health Insurance came into effect in Vietnam from July 1st 2009 and identified 25 target groups to be involved in health insurance including the near-poor. The goal of universal health insurance was to ensure effective and equitable health service delivery (Lieberman and Wagstaff 2008; Ministry

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T. D. Nguyen
Hanoi School of Public Health, Hanoi, Vietnam

A. Wilson (✉)
School of Public Health, University of Sydney, Sydney, NSW, Australia
e-mail: a.wilson@sydney.edu.au

of Health 2010). The near-poor are defined by monthly incomes in the range 18 USD to 23.4 USD per capita if they live in a rural area and from 22.5 USD to 29.2 USD per capita for an urban area (Prime Minister of Vietnam 2011). They pay a premium of 4.5% of the basic minimum salary (Government 2009), with the government subsidizing 70% of this premium (Prime Minister of Vietnam 2012). In Vietnam, overall social health insurance coverage was 71% in 2014, but out-of-pocket spending accounted for 48.8% of total health expenditures in 2012 (Joint Annual Health Report 2015). One of the contributing factors to this unexpectedly low coverage was a low enrolment of the near-poor, just 25% in 2012 despite the government's premium subsidy while the enrolment rate of other groups were much higher. Increasing the proportion of the population participating in social health insurance is a key policy goal for the Government of Vietnam (Somanathan et al. 2014). To this end in 2012, the "Master Plan for Universal Health Coverage from 2012–2015 and 2020" was developed by the Ministry of Health and approved by the Prime Minister. The specific objectives were to achieve 70% social health insurance coverage by 2015 growing to 80% by 2020 and to reduce out-of-pocket spending to less than 40% by 2020 (Somanathan et al. 2014). Further in 2014, the Law on Health Insurance revised by the National Assembly.

In previous studies, important factors found to be associated with health insurance enrolment were insurance premium levels and knowledge of health insurance benefits (Abdel-Ghany and Wang 2001; Chankova et al. 2008; Chernew et al. 2005). In Vietnam, although an enrolment rate of the near-poor is only 25% as a share of the population (Joint Annual Health Report 2015), little data have been collected to identify the factors associated with health insurance coverage of this target group. Anecdotal evidence suggests that affordability is the main reason for low coverage for this group (Somanathan et al. 2014).

The aims of this research were to estimate the health insurance coverage of the near-poor in a representative sample of the near-poor in Cao Lanh district, Dong Thap province, Vietnam, and identify the individual and household factors associated with health insurance uptake of this target group in the period 2011–2013.

Methods

Study design and population

The study was a cross-sectional survey and a part of a larger project which was conducted from 2012 to 2015. The research participants were the near-poor living in Cao Lanh district, Dong Thap province, Vietnam. This province was chosen because of the ongoing training and research collaboration between Dong Thap Department of Health and Hanoi School of Public Health. Cao Lanh district was purposely selected as the health insurance scheme for the near-poor has been better implemented compared to other districts, so results were less likely to be due to administrative issues.

All near-poor households were survey-eligible unless any household member was eligible for a more beneficial health insurance scheme. The intended sample size for this study was 2000 near-poor individuals. The sample size was based on a combination of an estimation of the power of the study to detect important differences and the practical limitations of the cost of recruitment. We approached 2200 near-poor individuals anticipating that some potential participants would not be available to be interviewed or may decline to participate in the study.

A multi-level sampling approach was used whereby:

- Level 1 Communes: The district Division of Social Insurance provided a list of 18 communes with near-poor households of which 10 in the Cao Lanh district were randomly selected. A commune consisted of an average of 3–5 hamlets with each containing administratively defined 10–12 "Community Self-Management People's Units". Each Unit was responsible for managing 30 households and for identifying near-poor households lists according to the Prime Ministerial directive (Prime Minister of Vietnam 2011). These lists are reviewed by a commune review board that makes a final decision on who is categorized as near-poor. This is a routine administrative task unrelated to the study.
- Level 2: In each selected commune, near-poor households with and without health insurance were identified according to the list of near-poor households also provided by the district Division of Social Insurance. The total insured households in the 10 communes were 1290. All households were selected as they were approximately equal to the intended study sample size. The uninsured households were proportionately identified in accordance with the total number of the uninsured near-poor households in 10 communes and systematically randomly sampled from the lists (Sample interval was approximately 2). The sample of the uninsured households was 710.
- Level 3: In each sampled insured and uninsured household, a household member was randomly selected. The member would be interviewed if he/she agreed to participate in the survey. If he/she did not agree to participate in the survey, the selection of another member would be carried out until a member agreed to survey participation. The detailed sampling approach is presented in Fig. 1.

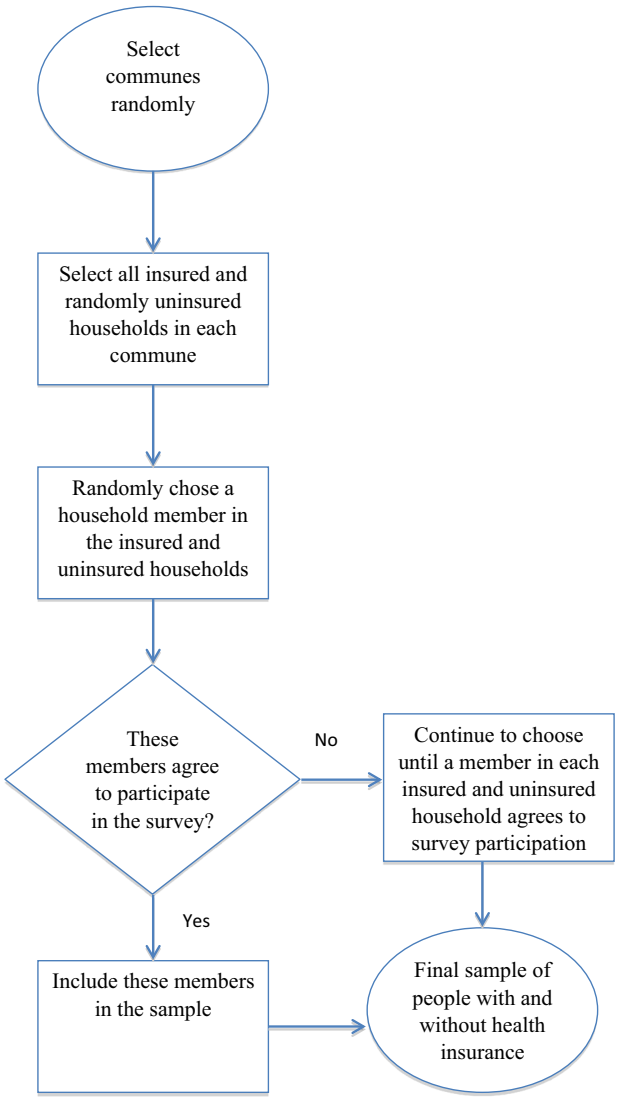

Fig. 1 Flowchart of Sampling Method, Vietnam 2011–2013

Data collection

The survey questionnaire was developed with a reference to the Vietnam Household Living Standard Survey in 2008. Data on health insurance coverage were estimated based on the list of the insured and uninsured near-poor provided by the district Division of Social Insurance. Data on health insurance involvement were collected from interviews with the selected near-poor individuals. The interviews ascertained information on the type and extent of insurance and other associated factors such as socio-demographic data about the respondent and the household and individual's understanding of health insurance and its perceived benefits and costs. Interviews were conducted with the randomly selected individuals where the individual was an adult or the household owner where the selected individual was a child (under 18 years old) or others not capable of being interviewed. Interviews took about 45–60 min.

Interviewers were all experienced having previously been employed to collect data in other studies conducted within the target district and province. They were trained to understand the study objectives and in how to ask each survey question including role-playing. The interviewers also practiced at commune study sites eligible for but not included in the survey. This helped to minimize community sensitization to the study in the sampled communes.

Definitions of key variables

The main outcome variable is health insurance status. This variable took the value 0 if the near-poor individual was uninsured and the value 1 if this individual was insured. The independent variables are socio-economic indicators including sex, education, age, marital status, work status, health status of interviewed household member, type of family, total number of persons in the households, number of elderly persons, children under 18 years age and females over 18 years age in the households, and housing type.

- *Knowledge of health insurance* Knowledge of health insurance was assessed by 25 questions about the definition of health insurance, the government subsidy of premiums, and the healthcare benefits covered by insurance. A score of 1 was given for each question if the respondent answered correctly and 0 if otherwise. The overall knowledge score had a potential scoring range from 0 to 25. Overall knowledge levels were low, so from examination of the histogram, a cut-off point of 5 was determined to identify individuals with and without knowledge of health insurance. The knowledge of health insurance was represented by two values −0 to 5: low knowledge and 6–25: higher knowledge.
- *Perception of the cost of health insurance premiums* Respondents rated their perception of the cost of health insurance premiums as high, medium or low.
- *Attitude towards health insurance* Attitude of health insurance was measured by asking the selected household member whether or not he/she is interested in health insurance.

Data analysis

All analyses were conducted using the SPSS statistical package version 20. Descriptive statistics were used to describe the proportion and frequency of data. In addition, Chi-squared was used to describe the association among the variables in bivariate analysis. A multivariate model was then constructed using a binary logistic regression

analysis. Odds ratio and 95% of confidence intervals were used to identify the associated factors with insurance status.

Results

Individual and household characteristics of the near-poor in Cao Lanh district, Dong Thap province, Vietnam

Table 1 provides summary statistics for the dependent variable and all observed independent individual and household factors. Of the 2200 respondents who were approached, 200 declined to participate in the survey, giving a response rate of 91%. The reasons for non-participation were either that the target individuals were not at home after three attempts at contact or did not agree to answer the questionnaire. Of the 2000 near-poor individuals surveyed, 1290 (64.5%) were insured and 710 (35.5%) uninsured.

The sample was 43.6% male with most people aged 25–64 years (86.1%) and mainly married or divorced (94.2%). The majority had primary school or less education (66.9%). Reflecting the province, the sample was largely rural (86.0%) and the most common forms of employment were farming (31.1%) and free labouring (46.7%). Over three quarters of the sample reported their health as either fair (57%) or poor (20.7%), with only 22.3% reporting their health as excellent or good.

The respondents were mostly living in semi-permanent and temporary houses, (49.6 and 40.9%, respectively). More than half (66.5%) of the households had 4–6 people living in the same house which included only 24% with more than 1 child aged 18 or younger and 22.8% with persons aged 60 years or more.

Nearly two-thirds of the sample (64.8%) had low knowledge of health insurance (score of 5 or less on 25 point scale). Most respondents rated the cost of the health insurance premiums as medium or high 5(4.5 and 23.7%, respectively). However, 93.3% of respondents reported an interest in health insurance.

The health insurance coverage for a representative sample of the near-poor in Cao Lanh district, Dong Thap province, Vietnam

The number of near-poor households, the size of the near-poor population, the near-poor individuals enrolling in health insurance schemes and the health insurance coverage from 2011 to 2013 as recorded by the District administration are presented in Table 2. The health insurance coverage was 18.9% in 2011, 18.0% in 2012 and increased slightly in 2013 to 20.3%.

Differences between the uninsured and the insured

The results displayed in Table 3 show the profiles of the insured and uninsured samples.

Compared to the uninsured, the insured tended to live in urban areas (Chi-square = 15.7, $p < 0.01$), to be older (Chi-square = 36.8; $p < 0.01$), to work as farmers or in other jobs (Chi-square = 13.8, $p < 0.05$), to rate their health as poor (Chi-square = 59.4, $p < 0.01$), to have good knowledge of health insurance (Chi-square = 156, $p < 0.01$), to evaluate health insurance premiums as low or medium (Chi-square = 96.0, $p < 0.01$) and to be interested in health insurance (Chi-square = 225.4, $p < 0.01$). In addition, the insured appeared more likely to live in single-parent households (Chi-square = 6.2, $p < 0.05$), to have one or more elderly in the home (Chi-square = 56.7, $p < 0.01$), to have two or more females over 18 years of age in the household (Chi-square = 8.2, $p < 0.05$) and to live in permanent houses (Chi-square = 46.2, $p < 0.01$).

There were no significant differences between the insured and uninsured for other independent variables of gender, education, marital status, number of people in the household, and number of children in the household.

Factors associated with the decision to enrol in subsidized health insurance

Table 4 shows the results of the binary logistic regression analyses and examines the effects of the associated factors.

Respondents were more likely to be enrolled in health insurance if they reported poor health status (OR = 4.8, CI = 2.4–9.8, $p < 0.01$), higher knowledge of health insurance (OR = 4.6, CI = 3.4–6.2, $p < 0.01$), health insurance premium costs to be low or medium (OR = 2.1, CI = 1.5–2.8, $p < 0.01$ and OR 2.4, CI = 1.7–3.6, $p < 0.01$, respectively), interest in health insurance (OR = 30.1, CI = 11.6–78.0, $p < 0.01$), or, one or more elderly in their household (OR = 2.2, CI = 1.5–3.3 $p < 0.01$).

Respondents living in the temporary and semi-permanent houses were less likely (OR = 0.4, CI = 0.4–0.9, $p = 0.01$, and, OR = 0.6, CI = 0.3–0.7, $p < 0.05$, respectively) to participate in health insurance schemes compared to those who lived in permanent houses.

Discussion

The health insurance coverage for a representative sample of the near-poor in Cao Lanh district, Dong Thap province, Vietnam

This study examined reasons for participation or non-participation in the social health insurance programme of the

Table 1 Individual, household and other characteristics of the near-poor in Cao Lanh district, Dong Thap province, Vietnam, 2011–2013

Characteristics	Size (*N*)	Proportion (%)
Gender	($N = 2000$)	
Male (reference category)	871	43.6
Female	1129	56.4
Education	($N = 1998$)	
No education (reference category)	239	12.0
Primary school	1096	54.9
Secondary school	537	26.9
High and upward	126	6.2
Residence	($N = 2000$)	
Rural (reference category)	1720	86.0
Urban	280	14.0
Age	($N = 2000$)	
Younger than 25 (reference category)	87	4.4
25–44	913	45.6
45–64	811	40.5
65 and older	189	9.5
Marital status	($N = 2000$)	
Married (reference category)	1884	94.2
Unmarried	116	5.8
Work status	($N = 1999$)	
Farmer (reference category)	622	31.1
Free labourer (mason, peddler…)	934	46.7
Others	443	22.2
Type of family	($N = 2000$)	
Two-parent (reference category)	579	29.0
Single-parent	197	9.9
No parent	1224	61.1
Number of households' people	($N = 1997$)	
1–3 (reference category)	520	26.0
4–6	1328	66.5
7 and more	149	7.5
Number of households' children $\leq$18	($N = 1997$)	
0–1 (reference category)	1522	76.2
2 and more	475	23.8
Number of households' elderly	($N = 1997$)	
No people aged 65 (reference category)	1542	77.2
1 and more	455	22.8
Number of households' females over 18	($N = 1896$)	
One (reference category)	1065	56.2
Two and more	831	43.8
Housing type	($N = 1998$)	
Permanent (reference category)	190	9.5
Semi-permanent	992	49.6
Temporary	816	40.9
Health status	($N = 1998$)	
Excellent (reference category)	97	4.9
Good	348	17.4
Fair	1139	57.0
Poor	414	20.7
Knowledge of health insurance	($N = 1958$)	
No (0–5) (reference category)	1269	64.8
Yes (6–25)	689	35.2

Table 1 continued

Characteristics	Size (*N*)	Proportion (%)
Perception of premium	($N = 1939$)	
High (reference category)	459	23.7
Medium	1056	54.5
Low	424	21.8
Interested in health insurance	($N = 1997$)	
No (reference category)	134	6.7
Yes	1863	93.3
Health insurance card	($N = 2000$)	
No	710	35.5
Yes	1290	64.5

Table 2 The insurance coverage of the near-poor in Cao Lanh district, Dong Thap province, Vietnam, 2011–2013 Source: District Division of Social Insurance, Cao Lanh district, Dong Thap province, Vietnam

Variable	Time		
	2011	2012	2013
The number of near-poor households	4466	4279	4214
The size of the near-poor population	18,818	18,044	17,700
The insured individuals	3560	3289	3598
The insurance coverage	18.9%	18.0%	20.3%

near-poor population living in a rural province in Vietnam. A sample of 2000 individuals out of approximately 4500 near-poor was chosen for face-to-face interviews. The study achieved a high participation rate of more than 80%. The first aim of this study was to estimate the health insurance coverage of the near-poor in a representative sample of the near-poor in Cao Lanh district, Dong Thap province, Vietnam. The three-year data (2011–2013) of the near-poor population and insurance coverage were collected from the district Division of Social Insurance. The near-poor population (18,187) in Cao Lanh district accounts for 0.31% of the near-poor throughout Vietnam, which is estimated to be 5,800,000 (Ministry of Health 2012). The number of near-poor households and the size of the near-poor population trended down through the three years. Insurance coverage in Cao Lanh fluctuated at or just below a fifth of the near-poor population and this rate is lower than that of the whole country, which was about 25% in 2012 (Somanathan et al. 2014).

Factors associated with the decision to enrol in subsidized health insurance

The Vietnamese government policy aims to substantially increase uptake of social health insurance by the near-poor from a very low base. This study substantially adds to knowledge about the factors associated with the participation in subsidized health insurance by the near-poor in Vietnam. The results indicate that the probability of having insurance coverage was significantly associated with health status, knowledge of health insurance, perceived cost of insurance premiums, interested in health insurance, the number of elderly in the household and the housing type of the respondent.

The respondents reporting poor health status were nearly 5 times more likely to be enrolled in the health insurance scheme than those who reported excellent health status. This result is consistent with other studies conducted in developing countries such as Vietnam, China and Senegal (Chankova et al. 2008; Jowett et al. 2003; Wagstaff and Lindelow 2008). Where the health insurance scheme allows it, low-income households may only purchase a health insurance card when there have health problems. This gives rise to the issue of "adverse selection", whereby high users of health care are more likely to take up health insurance. This is well recognized by the Vietnamese Ministry of Health (Ministry of Health 2008, 2010, 2012). This may help the poor individuals to reduce the private financial burden due to health shocks, but has negative consequences for the health insurance fund balance (Ministry of Health 2008).

The size of the insurance premium is an important factor associated with insurance involvement. Respondents who considered the health insurance premium to be low and medium were more likely to participate in the health insurance programme. This result has been documented in

Table 3 Individual, household and other characteristics by health insurance status, Vietnam 2011–2013

Characteristics	Uninsured ($n = 710$)	Insured ($n = 1290$)	Chi-square (χ^2)
Age ($n = 2000$)			
Younger than 25	41.4 (36)[a]	58.6 (51)	$\chi^2 = 36.8$**
25–44	41.5 (379)	58.5 (534)	
45–64	31.2 (253)	68.8 (558)	
65 and older	22.2 (42)	77.8 (147)	
Gender ($n = 2000$)			
Male	37.4 (326)	62.6 (545)	$\chi^2 = 2.5$
Female	34.0 (384)	66.0 (745)	
Education ($n = 1998$)			
No education	32.6 (78)	67.4 (161)	$\chi^2 = 4.8$
Primary school	34.2 (375)	65.8 (721)	
Secondary school	38.9 (209)	61.1 (328)	
High and upward	38.1 (48)	61.9 (78)	
Residence ($n = 2000$)			
Rural	37.2 (640)	62.8 (1080)	$\chi^2 = 15.7$**
Urban	25.0 (70)	75.0 (210)	
Marital status ($n = 2000$)			
Married (including divorced)	35.9 (676)	64.1 (1208)	$\chi^2 = 2.1$
Unmarried	29.3 (34)	70.7 (82)	
Work status ($n = 1999$)			
Farmer	32.8 (204)	67.2 (418)	$\chi^2 = 13.8$*
Free labourer	39.6 (370)	60.4 (564)	
Others	30.5 (135)	69.5 (308)	
Type of family ($n = 2000$)			
Two-parent	36.4 (211)	63.6 (368)	$\chi^2 = 6.2$*
Single-parent	27.4 (54)	72.6 (143)	
No parent	36.4 (445)	63.6 (779)	
Households' size ($n = 1997$)			
1–3	36.9 (192)	63.1 (328)	$\chi^2 = 0.9$
4–6	34.8 (462)	65.2 (866)	
7 or more	36.9 (55)	63.1 (94)	
Number of households' children $\leq$18 ($n = 1997$)			
0–1	35.0 (533)	65.0 (989)	$\chi^2 = 0.7$
2 or more	37.1 (176)	62.9 (299)	
Number of households' elderly ($n = 1997$)			
No people aged 60	39.9 (615)	20.7 (927)	$\chi^2 = 56.7$**
1 or more	60.1 (94)	79.3 (361)	
Number of households' females over 18 ($n = 1896$)			
One	38.5 (410)	61.5 (655)	$\chi^2 = 8.2$*
Two or more	32.1 (267)	67.9 (564)	
Housing type ($n = 1998$)			
Permanent	20.5 (39)	79.5 (151)	$\chi^2 = 46.2$**
Semi-permanent	32.0 (317)	68.0 (675)	
Temporary	43.4 (354)	56.6 (462)	

Table 3 continued

Characteristics	Uninsured ($n = 710$)	Insured ($n = 1290$)	Chi-square (χ^2)
Health status ($n = 1998$)			
Excellent	52.6 (51)	47.4 (46)	$\chi^2 = 59.4$**
Good	43.4 (151)	56.6 (197)	
Fair	36.9 (420)	63.1 (719)	
Poor	21.3 (88)	78.7 (326)	
Knowledge of health insurance ($n = 1958$)			
No (0–5)	46.1 (585)	53.9 (684)	$\chi^2 = 156$**
Yes (6–25)	17.7 (122)	82.3 (567)	
Perception of premium ($n = 1939$)			
High	52.9 (243)	47.1 (216)	$\chi^2 = 96.0$**
Medium	29.3 (309)	70.7 (747)	
Low	25.9 (110)	74.1 (314)	
Interested in health insurance ($n = 1997$)			
No	95.5 (128)	4.5 (6)	$\chi^2 = 225.4$**
Yes	31.2 (582)	68.8 (1281)	

* $p < 0.05$

** $p < 0.01$

[a] Numbers in parentheses are sizes of observation

other studies (Chankova et al. 2008; Chernew et al. 2005; Vietnam Health Economic Association 2011). In Vietnam, the income gap between the definitions of poor and the near-poor groups is not great (Prime Minister of Vietnam 2011). However, the government's subsidy of health insurance premiums for these two groups is very different. The poor do not have to contribute to the health insurance premium while the near-poor have to pay 30% of the co-payment (Prime Minister of Vietnam 2012). This likely to be a major challenge in increasing insurance coverage of the near-poor compared to the poor groups. It is suggested that affordability is the main reason for low insurance coverage of this target group (Somanathan et al. 2014).

The implication of this finding is that to increase coverage the government will need to provide the same subsidy of health insurance premiums for the near-poor as it does for those classified as poor. In Vietnam, according to the Law of Health Insurance the near-poor belong to the voluntary enrolment group. Global experience has shown that voluntary contributions are not very effective in moving countries to universal health coverage (Kutzin 2012). To achieve expanded coverage, general income subsidies for social health insurance and full subsidizing of the premiums for the near-poor and mandatory enrolment should be implemented, which will also help to deal with adverse selection (Somanathan et al. 2014).

Knowledge of health insurance is important in predicting insurance coverage. Overall knowledge was low, but respondents with a higher knowledge of health insurance were nearly 5 times more likely to have health insurance. It would seem likely that those with health insurance would be expected to know more about the benefits. However, it is also likely that people are more likely to participate in a health insurance scheme when they know its benefits. This finding is consistent with other studies (Chankova et al. 2008; Nguyen and Knowles 2010; Vietnam Health Economic Association 2011). These results on knowledge of health insurance suggest that the current insurance scheme in Vietnam is not well understood at all among the near-poor. One aspect of the scheme, the sliding scale of premiums within households, is possibly too complex for low literacy groups such as the near-poor to understand. Simplification of the subsidy model may make it is easier to understand and improve uptake.

Respondents who showed interest in health insurance were far more likely to participate in health insurance programmes. This relationship is potentially bidirectional; if you hold health insurance then you are likely to express more interest in it than someone without it. However, better understanding of and a positive attitude towards health insurance is clearly important; although, based on the published literature there appears to be little research demonstrating this in developing countries. It is expected that the near-poor with positive attitudes towards health insurance may be more likely to choose to participate in health insurance schemes, other factors being equal. However, positive attitudes alone are unlikely to lead to behaviour change if outweighed by other concerns such as financial difficulties.

Table 4 Adjusted odds ratio and 95% confidence intervals for measures of insurance status using multiple logistic regression, Vietnam 2011–2013

Variable	Insurance coverage	
	Yes ($N = 1290$) vs. no coverage ($N = 710$)	
	OR	CI 95%
Age		
Younger than 25 (reference category)	–	
25–44	1.9	0.9–4.0
45–64	2.3	1.0–4.9
65 and older	1.9	0.7–5.0
Gender		
Male (reference category)	–	
Female	1.2	0.9–1.6
Education		
No education (reference category)	–	
Primary school	0.8	0.5–1.2
Secondary school	0.6	0.4–1.0
High and upward	0.6	0.3–1.2
Residence		
Rural (reference category)	–	
Urban	0.9	0.6–1.4
Marital status		
Married (reference category)	–	
Unmarried	1.8	0.9–3.7
Occupation		
Farmer (reference category)	–	
Free labourer	0.9	0.7–1.2
Others	1.2	0.8–1.8
Type of family		
Two-parent (reference category)	–	
Single-parent	1.2	0.7–1.9
No parent	1.0	0.7–1.3
Number of households' children ≤ 18		
0–1 (reference category)	–	
2 and more	1.1	0.8–1.6
Number of households' elderly		
No people aged 60 (reference category)	–	
1 or more	2.2***	1.5–3.3
Number of households' females over 18		
One (reference category)	–	
Two and more	1.2	0.9–1.5
Housing type		
Permanent (reference category)	–	
Semi-permanent	0.6*	0.4–0.9
Temporary	0.4**	0.3–0.7
Health status		
Excellent (reference category)	–	
Good	1.2	0.6–2.2
Fair	1.5	0.8–2.7
Poor	4.8***	2.4–9.8

Table 4 continued

Variable	Insurance coverage	
	Yes ($N = 1290$) vs. no coverage ($N = 710$)	
	OR	CI 95%
Knowledge of health insurance		
No (reference category)	–	
Yes	4.6***	3.4–6.2
Perception of premium		
High (reference category)	–	
Medium	2.1***	1.5–2.8
Low	2.4***	1.7–3.6
Interested in health insurance		
No (reference category)	–	
Yes	30.1***	11.6–78.0

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Respondents who reported one or more elderly persons in their household were more likely to be covered by a health insurance programme. Part of the explanation for this may be that the elderly have a higher likelihood of requiring health care. Participation in a health insurance scheme will reduce the household's cost burden when the elderly person suffers from illness and need healthcare services.

Respondents living in temporary and semi-permanent houses were less likely to participate in a health insurance scheme. It is likely that this is because living in semi-permanent and temporary houses is an indicator of lower household income. This is consistent with the well documented relationship of lower insurance coverage rates with lower household income (Kuangnan et al. 2012).

Several limitations of the study may affect the internal and external validity of the results. First, the study was confined to a district of one province, and therefore this sample may not reflect the total Vietnamese population. Consequently, this could limit the generalizability of the results on health insurance coverage, utilization of insurance benefits, out-of-pocket expenditures and the associated factors to other locations. The rates of health insurance among the near-poor are low throughout Vietnam suggesting there are common issues. Second, in this study, the factors related to the uptake of health insurance such as trust in scheme management, adequacy of information, registration and timing of premium collection were not collected. However, it is easy for the near-poor to buy health insurance card. It requires a phone call to an insurance agent living in the same commune as the near-poor, who will then go directly to the near-poor households to collect money and subsequently provide the insurance card.

Conclusion

The results from this study in Cao Lanh district, Dong Thap province, Vietnam, have important policy implications for health insurance, health care financing and delivery both to the objective of universal health coverage in Vietnam and for universal health insurance in other emerging economies.

If universal health insurance is going to be funded from subsidized premiums paid from personal income, the following is suggested: first, differentiation between the poor and the near-poor should not be made, as the near-poor can become poor with very little change in circumstances, for example, as a result of even relatively small health incidents. Second, the benefits of insurance must clearly outweigh premium costs at all levels of care, otherwise those with limited health care needs will see little benefit and significant cost in participating. Third, the subsidy model needs to be simple to understand (whereas the current Vietnamese model with a sliding scale of subsidy according to household size is not). Four, it is important that the community fully understands how insurance works and that this is communicated in forms that will be understood by people with low literacy.

Compliance with ethical standards

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964

Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

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