

Determinants of Health Insurance Subscription among Myanmar Women

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Abstract: *Evidences regarding subscription of health insurance schemes of citizens in developed and few developing countries are devoted to explore the fact about probability choice and likelihood to shift among available schemes. But studies are very few on enrollment in insurance schemes in Asian developing countries. Policy makers and insurance companies are not getting information on influencing factors responsible for enrollment. Information is very limited on factors affecting enrollment of women, most health sensitive gender working inside the house. This paper has ergo extracted demographic and socio-economic determinants predicting the woman decision to register in the scheme, using probit regression model on first time released cross-sectional datasets from woman questionnaire of Myanmar Demographic and Health Survey 2015-16. The results reveal that age, place of residence, education level, wealth status, and number of children under age 5 in the family predict health insurance ownership among Myanmar women. Family size and marital status are insignificant to predict probability choice of the enrollment. Those having many children under age 5 in family, urban dwellers, no or low education level and poor were women mainly not registered to the insurance scheme. To increase financially protected insured women, policy makers should go for health education introducing within public education and the health information services, reduction of poor through the generation of employment or direct subsidies to the poor and women having relatively more small children so that they get invigorated to subscribe in the scheme.*

Key Words: Myanmar, health insurance, ownership, women, Probit model.

1. INTRODUCTION:

Succeeding universal health coverage depends on local level research ranging from studies of causation to studies of how health systems function effectively to address the factors during the concern of public health programs, such as health insurance (HI), close to the supply of and demand for health services [1,2]. Being agreed with economic theory, variation in the household's ability to balance increased out-of-pocket (OOP) payment should be addressed in the design of an optimal social health insurance program in developing countries [3]. HI scheme is quite young and nationally prioritized program in Asian low income countries having less than 5% coverage [2] of total population. More specifically, Myanmar has the least coverage of health insurance where chance of dying people between ages 30 and 70 years only from few Non-Communicable Diseases is 24% [4], this scenario ultimately shows financial burden on households due to healthcare is high but only a small segment of the population are covered with health insurance [5].

Per Capita health Expenditure in Myanmar seems dramatically increasing in recent years, being more than 20\$ in 2015 from less than 10\$ in 2005 [6]. In Myanmar, people those have been insured are covered with the OOP payment agreement, raising financial risk at household. Currently, the national health account reports that out-of-pocket payments still covers for almost 100% of spending for private health care, meaning that the limited public and private prepayment system had little impact on patterns of health-care spending [7]. Evidences show that OOP expenditure on health scheme pushes many of such households to below poverty line [8]. Though health insurance scheme is poorly prioritized by government, some public and private insurance companies are active in HI schemes to the general public since 2012 and the insurance market seems spreading, with the presence of public and increasing private insurance companies [9]. Few or deficient demand for HI scheme with significant number of suppliers in Myanmar creates the curiosity what are the major determinants that people, especially women, concede or ignore the scheme.

Recently, a failure of voluntary health insurance programs to protect the most disadvantaged and the poor in many low income countries as prohibitive OOP expenses and large financial risks has resulted health policy reforms in the form of social health insurance systems compulsory in the target population [10]. In practice, health insurance in developing countries usually provides direct payment for expenses for mild illnesses and injuries [10–12]. However, annual rate of premium charged and area coverage of the health insurance relies on the country specific policy under

the insurance deal between the insured and the insurer. Moreover, a country with high heterogeneous population and recently reviving from political problems urgently needs information about factors that implicitly influencing in the success of HI schemes while formulating health system policy linking with universal health coverage.

Most of the recent literatures are rigorously devoted on studies of ongoing HI programs and among several issues regarding health insurance in Asian developing countries. Handful studies found involving creating econometric models by using survey data [3,10,13,14]. But researchers seem still unreached to explore the determinants of choice of HI for the strength of women welfare oriented health policy for reviving economy of Myanmar.

Therefore, bearing in mind the aforesaid, a detail comprehension of factors influencing the choice of health insurance among women of Myanmar is clearly an urgent and is thus the main purpose of this study. Specifically, this study aims at identifying the demographic and socio-economic factors that determine choice of health insurance schemes among women of Myanmar.

2. METHODS AND MATERIALS:

Study Design

This study is cross sectional study based on the secondary data drawn from the 2015-16 Myanmar Demographic Health Survey (MDHS), a national sample survey to provide up-to-date information on demographic, socio-economic and health status among households, women and men. To meet the purpose of this study, we specifically used data from women survey involving a sample size of 22,989 households conducted from December 7, 2015, through July 7, 2016, using the direct interview method where a questionnaire was managed. The MDHS for the first time included this type of questions pertaining to health insurance, in addition to detailed information on a series of personal and household characteristics. Of the total sample respondents, only 171 women found insured, meaning distribution of households unenviably skewed towards women who did not own health insurance. For the study reasonable and normally distributed, a random sampling was carried out among women did not own HI setting upper bound equal to HI owned respondents.

Ever since the main objective of the study is to identify and analyze determinants of health insurance ownership among Myanmar women, we included demographic and socio-economic variables like age, education, gender, family size, number of small children at home and marital status and household wealth quintiles. National wealth quintiles were compiled by assigning the household score based on the number and types of assets households possess, ranging from a television to a bicycle or car, and other characteristics such as source of drinking water, toilet facilities, and flooring materials; derived using principal component analysis; and then dividing the distribution into five equal categories, each with 20% of the population.

Theoretical Model

Welfare economics of uncertainty claims that individuals may insure against both forms of risks: the risk of becoming ill and the risk of total or incomplete or delayed recovery [15]. The theory of expected utility, applied in this study, explains that each risk-averse individual tries to maximize the expected value of a utility function because of diminishing marginal utility of income and individually independent health risks, so that combining them condenses the risk to the insurer [16,17]. The potential consumers of insurance would probably decide to opt insurance if the the level of expected utility with insurance minus expected utility without insurance is greater than zero

If EU_{ij} is the utility that i^{th} individual presumes to derive from the choice of j^{th} health insurance option; $j = 1$ if an individual owns health insurance; $j = 0$ if the individual has no health insurance, here the expected utility allied with each health insurance option is a vector of individual's demographic and socioeconomic characteristics (R_i) plus a stochastic error term (ϵ). Algebraically, an individual's decision method can be expressed as:

$$EU_{ij} = v(R_i) + \epsilon \dots\dots\dots (1);$$

Thus, the probability that i^{th} individual chooses to have health insurance is: $P_{i1} = P(EU_{i1} > EU_{i0})$ whereas probability that i^{th} individual selects not to have health insurance is: $P_{i0} = P(EU_{i1} < EU_{i0})$. Probit model seems better for regression to identify the factors determining health insurance consisting of continuous as well as categorical variables which are defined as shown in Table 1.

Table 1 Hypothesized relationships between the insurance ownership and independent variables

Variable Name	Definition	Expected Sign	Literatures on which expected signs are assumed.
Age	Age of the respondent	+ve	Amu [18], Kiplagat and Muriithi [11]
Place of residence	Current place of residence of the	+ve	[18]

	respondent urban???		
Education	Education level of the respondent	+ve	Wang [19], Ameyaw [20]
Family Size	Number of member in the family	-ve	Odememe and Nixon [21]
Wealth quintiles	Composition of Household posing Materials	+ve	Kiplagat and Muriithi [11]
Children under age 5	Number of children under age 5 in the family	-ve	Indeterminate
Marital Status	Respondent's current marital status	+ve	Basaza et al. [22], Amu [18]

Econometric Model

To examine the factors determining the demand for health insurance, a probit model has been employed in the analysis of individual's choice between owning and not owning health insurance. So, the dependent variable for this study is ownership of health insurance. The dependent variable was coded 1= "Yes" and 0 = "No" since it was dichotomous. A discrete choice model, specifically, the probit or logit regression allows the predictions on a mixture of continuous and categorical variables, given that this technique is more appropriate for dichotomous variables [18]. The formulae supporting the model is given as;

Let y be a dichotomous variable which is defined as

$$P_i = E\left(y = \frac{1}{x_i}\right) \frac{1}{1 + e^{-(b_1 + \sum b_k x_{ik})}}$$

Where,

P_i = Probability of owning health insurance

b₁ = constant term

b_k = coefficients of x_k; for k = 1,....,7, are the independent variables and subscript i denotes ith observation. Here, k₁ = Age, k₂ = Place of Residence, k₃ = Education, k₄ = Family size, k₅ = No of children, k₆ = Wealth quintiles k₇ = Marital Status

Let, $Z_i = b_1 + \sum b_k x_{ik}$

Then,

$$P_i = \frac{1}{1 + e^{-z_i}}$$

As Z_i ranges from -∞ to + ∞, P_i ranges from 0 to 1 and P_i is non-linearly related to Z_i. In estimable form, the model is

$$Pr_i = Ln\left(\frac{P_i}{1 - P_i}\right) = Z_i = b_1 + \sum b_k x_{ik}$$

Where, Pr is the probit. It shows how the log odds in favor of health insurance change as the respective independent variable changes. To determine the probability of health insurance ownership, the following model was estimated:

$$P_{ij} = \alpha + \beta_1 \text{ Age} + \beta_2 \text{ Residence} + \beta_3 \text{ Education} + \beta_4 \text{ Family size} + \beta_5 \text{ no_of_children} + \beta_6 \text{ Wealth_quintiles} + \beta_7 \text{ Marital_Status} + \varepsilon_i \dots\dots\dots (2)$$

Where, $P_{ij} = 1$ if individual 'i' owns insurance ($j = 1$) and zero otherwise ($j = 0$); (α) is the intercept term; (β_s) are the estimated coefficients; and ε_i is the stochastic error term. The explanatory variables included in the model are defined in Table 1. Owing to the restrictions associated with linear probability model, the probit version of equation 2 was estimated, using maximum Likelihood Method.

3. RESULTS:

Result of Descriptive Analysis

As per the provided dataset in MDHS 2015-16, of the total samples of women about 22989 only 171 (0.15%) women have owned health insurance, of which around 80% of insured women live in rural areas. Almost 62% of households cook their food inside house using only solid fuels, which is harmful for health. In terms of age, it is observed that the least health insurance owned age group of women is 15-19, interestingly number of insured and uninsured women have increased as age group increases. From educational aspect, comparatively among insured women, high educated respondents preferred health insurance (Table 2). Respondents with no education and middle level education had the lowest insurance ownership. While majority of women (88 %) who owned insurance are married. Unusually, it is observed that respondents in the 'Poorer' wealth categories had highest health insurance among insured women, followed by 'Richest'.

Table 2. Descriptive statistics of sample women with and without insurance cover

Variables	With insurance	Without insurance
Age group		
15-19	1	104
20-24	11	892
25-29	22	2303
30-34	31	3,647
35-39	34	4,761
40-44	72	5,409
Place of residence		
Urban	36	4881
Rural	135	17937
Education		
No Education	36	5266
Primary	71	11456
Secondary	36	5197
Higher	28	28
Marital Status		
Married	150	20713
Others	21	2105
Wealth Quintiles		
Poorest	29	6057
Poorer	48	5268
Middle	34	4678
Richer	25	3905
Richest	35	2910

Source: MDHS, 2016

Results of Econometric Analysis

Because of too small number of women insured, compared to the total number of sample, a truncated view of analysis in the light of the Probit regression results is shown in table 3. Unexpectedly, marital status and family size of women were seen to be insignificant. The woman's level of education likely perceived to have a significant impact on their health insurance participation. This result exactly matched with the expected positive sign of the coefficient. As women get highly educated, they get enlightened regarding the safety of their families. Again the positive sign of the coefficient as expected for household wealth status and being quite significant at 5% reveals that richer women are more likely to choose health insurance, compared to the poorest.

Age as a determinant of health insurance participation was a significant variable at 1%. In this particular study, surprisingly opposite to the expectation, it appeared that the older Myanmar woman gets, the lower the chances of enrolling for health insurance schemes. Women in the urban areas were less likely to own health insurance compared with their colleagues in rural areas. Number of children under age 5 was significant at 5% though the

negative sign was not to be expected. One could think that as children under 5 increases, health insurance participation of women would be less owing to be unable for the basis of payments that growing children may have to make towards health insurance premiums. Ultimately, this may seem to be unaffordable and hence the woman may decide not to own at all. This is probably applicable for low income family of developing countries where there are no prolonged illnesses in the family.

Table 3: Probit Regression Results

Variable	Coefficients	Standard Error
Age	-0.0369***	0.0122
Place of Resident urban	-0.671***	0.241
Education (Reference: no education)		
Primary	-0.484**	(0.197)
Secondary	-0.325	(0.250)
Higher	0.858**	(0.376)
Family Size	0.0102	(0.0334)
Number of Children Under 5	-0.296**	(0.115)
Wealth Quintiles (Reference: Poorest)		
Poorer	0.729***	(0.214)
Middle	0.595**	(0.232)
Richer	0.703***	(0.258)
Richest	0.430	(0.311)
Marital Status	-0.226	(0.233)
Constant	1.656***	(0.599)
Observations	342	

*** p<0.01, ** p<0.05, * p<0.1

Health insurance: Yes=1, No=0

Place of residence: Urban=1, Otherwise=0

Marital Status: Married=1, Otherwise=0

Results of Marginal Effects

The availability of insurance scheme in the rural areas increases the woman’s probability of participating in health insurance schemes by 56%, which is double chance compared to their urban colleagues. On the other hand a unit increase in household wealth increases the woman’s chances of participation but vary with level of wealth, however, by 0.57 at richer level. The chance of possession of health insurance by highly educated woman seems to be almost double compared to uneducated. Interestingly, an additional year of schooling on the part of the woman increases the woman’s chances of participation by more than 0.42. The number of children under age 5 was negatively related to health insurance participation of women. An addition to the household by one more child reduces the respondent’s chances of enrolling for a health insurance scheme by 0.14. In contrast to the expectation, age became to be negatively related to health insurance participation. Thus, a unit increase in age of the women decreases the probability the woman joins for health insurance by 0.87. Family size and marital status of women were insignificant as explained above in regression results, however both variables seems positive to the direction of increasing likelihood of woman enrolling in health insurance scheme.

Table 4: Results of Marginal Effects

Independent Variable	dy/dx	Standard Error	z-value	P-value	95% C.I.	
Age	-0.87	0.40	-2.17	0.03	-1.65	-0.08

Rural	0.56	0.29	19.31	0.00	0.51	0.62
Urban	0.25	0.35	4.46	0.00	0.14	0.35
No Education	0.48	0.06	7.83	0.00	0.36	0.59
Primary education	0.42	0.04	10.51	0.00	0.34	0.49
Secondary education	0.49	0.06	7.82	0.00	0.37	0.62
Higher education	0.86	0.06	13.77	0.00	0.74	0.98
Family Size	0.64	0.17	0.39	0.69	-0.26	0.39
Number of Children Under 5	-0.14	0.82	-1.75	0.08	-0.31	0.02
Poorest	0.38	0.59	6.41	0.00	0.26	0.49
Poorer	0.53	0.51	10.33	0.00	0.43	0.63
Middle	0.43	0.56	7.63	0.00	0.32	0.54
Richer	0.57	0.70	8.23	0.00	0.43	0.71
Richest	0.63	0.08	7.16	0.00	0.46	0.81
Unmarried	0.52	0.78	6.76	0.00	0.38	0.68
Married	0.49	0.03	18.16	0.00	0.44	0.55

4. DISCUSSION:

Though government and other community or private insurance company avidly working on health insurance all over the country, owning health insurance by 0.17% of total sample women in Myanmar reports that understanding the determinants of health insurance seems one of the best options to tackle the problems regarding extension of insurer in the country. This research has extracted out that age, urban residence, education level, number of children under age 5 and wealth status are the major determinants potentially causing for the least level of enrollment.

Based on some country specific literatures, [11,18,23], age is significant factor to influence positively in the decision of owning health insurance, but in this case the fact that age of woman uniquely stands negative in relation with probability chance of owning health insurance which is opposite to economic theory that predicts that stock of health denigrates at a decreasing rate with increase in age [11]. This may be because as women get higher and higher age, being more responsible in the family, they tend to devote all resources of home in the betterment of other member in the family rather than take care of themselves, or in fact they may depend upon grown up children expectedly taking over most responsibilities in the home including healthcare expenditure [18].

The fact that women in rural areas seems more likely susceptible regarding to subscribe to health insurance than women in urban areas, meaning that women in rural areas feel the higher need for health care services to be timely documented to manage the unforeseen out of pocket health expenditure in rural areas than in urban areas . This result is similar to the study carried out in Kenya [11]. Moreover, women in rural areas may have a higher level of awareness with regards to the necessity of being ready for any unforeseen health challenges and as such decide to own health insurance, as opposed to those living in urban areas who may not face the level of threat that will be postured to their health and life without any financial preparedness for any unanticipated health challenges but these events may occur.

Education level and wealth status of women are again expectedly positive relation with probability chance of having health insurance. With Education, regardless a study[24] claimed no relationship of insurance coverage, our study remains consistent with many other country specific studies [3,19,20,25]. More so people may tend to look at their efforts in education as some kind of investment for their families, and so getting reckless with their lives and taking chances when it comes to health matters may not be plausible. It may again be the case that as part of their learning, some may have included in their program some aspects of health care, and possibly health insurance too.

In fact, 'Middle' and 'Richest' wealth quintiles were more likely to be under insurance coverage, this result is consistent with a study by Ameyaw et al. [20]. This may be because richer women may have easy financial access, an enabling factors rousing healthcare utilization organizes wealth status similar to a claim by the Behavioral Model [26]. Generally, respondents whose household incomes are high tend to have a positive uptake of health insurance, and thus higher chances of participating, owing to their affordability.

As observed in our study, number of children under age 5 is also an important predictor in the decision of insurance coverage and brings many fluctuations in the decision [14], posing negatively significant. This again was expected that it may be normal that as one gets many children in family, especially for average wealth status household, we believe that women may be in pressure to shift all the available resources to be financially fit in the present take care of children rather than realizing in the self-protection from unforeseen future catastrophes in the health expenditures. The fact that family size and marital status seems surprisingly insignificant as being unexpected to this study which are significant for previous literatures [13,21]; however, married marital status is marginally significant with positive relationship being consistent with a study by Shen [13], meaning that chance of enrollment of women increases with increase in married women.

Prior to the policy prescriptions, some pitfalls in this paper are to be mentioned. One limitation of the current study is that no information is taken on out-of-pocket payments and health care utilization; therefore, we objected to examine the effect of having health insurance on these two outcomes. The main weakness of this study is that, although the data set not only devoted with health insurance but for a different purpose, it does not have any insurance-specific aspects, such as premiums, co-payments, deductibles and the quality of health care services where the insured pursued to go for care. Therefore, leaving important explanatory variables may lead to omitted variable bias [27], and could restrict to have the true value of the population. Nevertheless, the presence of some limitations in this study, demographic and personal characteristics of women were analyzed and found to be strongly associated to influence enrollment decision on health insurance scheme in Myanmar.

Through policy perspective, Myanmar government has established social security and private health insurance since 2012 but have had little impact on patterns of health spending and still low enrollment [7]. To move towards universal health coverage, most neighboring countries of Myanmar, for example Philippines, Thailand and Vietnam have introduced contributory financing schemes in the informal sector have initially provided partial or full subsidies from government revenues and in Lao and Cambodia through a health equity fund [7]. But this tragic scenario currently present in Myanmar having least level of women enrollment in the health insurance can be addressed now by pointing the national policy on these potential determinants extracted by this research results. Design of innovative and reasonable health insurance schemes especially covering poorest, not educated, urban residence, all age group and women with many small children should urgently be prepared and immediately implemented being based on agricultural motivated programs and government subsidies for example, farmers' cooperative schemes, savings and credit societies, women/men developmental groups, civil service, etc. to maintain the country's health system status equivalent to other counterparts.

5. CONCLUSION :

This study finds that buying a health insurance by Myanmar women is affected by age, place of residence, education level, wealth status, and number of under five children in the family. Those women having many under five children in family, residing in urban areas, having no or low levels of education, with higher age and poor economic status have less chance of registering to the insurance scheme. To increase insurance coverage among women, Government can therefore strengthen health education programs among the women who are at high risks. Similarly, poverty reduction through the generation of employment or direct subsidies to the poor can help them feel financially protected and uptake to subscribe the scheme. Such programs need to be targeted more on women having relatively large number of small children.

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