

RESEARCH ARTICLE

# Universal Coverage Scheme in Thailand: Analysis of Factors Associated With and Reasons for Underutilization

Natthani Meemon and Seung Chun Paek\*

Mahidol University, Thailand

\*seungchun.pak@mahidol.ac.th

**Abstract:** Despite nearly free health services offered by the Universal Coverage Scheme (UCS), the UCS services have been found to be underutilized. Thus, this study, employing the concept of unmet health needs, investigated factors and reasons for the underutilization. Specifically, performing logistic models with the national health survey of 2015, we analyzed who and why did not utilize the UCS services in availability, accessibility, and acceptability perspectives of the services. The study results indicated that among UCS beneficiaries who needed care, about 45% and 7% did not utilize the UCS outpatient and inpatient services, respectively. These non-users had a relatively higher socioeconomic status. Specifically, they were more likely to be high-income, employed, not chronically-ill, or urban people. Availability-related (e.g., long wait-time and unavailability due to emergencies) and acceptability-related reasons (e.g., time constraints and uncertainty of service quality) were major barriers of access to the UCS services. Although the UCS, by this study, was found to work better for socially vulnerable people, there are still concerns that some people, who actually wanted to use the UCS services, might be ultimately forced to use other private services due to such barriers. Particularly, employed people who have time constraints during daytime and people who need inpatient services due to emergencies are our main concerns. In the short term, the public-private partnership should be strengthened to support the urgent needs of emergency cases. In the long term, the expansion of the UCS services boundary should be continued by the National Health Development Plan.

**Keywords:** underutilization, unmet health needs, health-seeking behavior, health insurance, Universal Coverage Scheme

Universal Coverage Scheme (UCS) is the largest national health insurance program in Thailand. Since its implementation in 2002, about 75% of the whole population have used nearly free health services by the UCS. These beneficiaries are mostly informal sector employees, who are not government sector employees or formal private-sector employees. The UCS offers a comprehensive benefits package, including curative

and preventive services. The benefits package is available for only 30 Thai Baht (about US\$1) in health facilities that the UCS designates for each beneficiary (i.e., designated facilities). For beneficiaries who use services out of their designated facilities, the full costs of the services should be paid out of pocket (Health Insurance System Research Office [HISRO], 2012).

The UCS implementation has been found to have a positive impact on the use of designated facility care (i.e., use of the UCS services). Some studies, performing a pattern analysis, showed an increase in the amount of inpatient and outpatient services in designated facilities after the UCS implementation (HISRO, 2012; Tangcharoensathien et al., 2007). Other studies, examining changes of health-seeking behavior, indicated an increase in the use of designated facility care and at the same time, a decrease in the use of informal care (e.g., over-the-counter [OTC] medicines in pharmacies; Limwattananon et al., 2015; Meemon & Paek, 2018) or private facility care (e.g., health services in private hospitals; Gruber et al., 2014) after the UCS implementation.

Interestingly, however, although the UCS has offered nearly free health services, other prior studies have indicated that the UCS services, especially outpatient care services, were underutilized (Kirdruang, 2011; Meemon & Paek, 2018; Paek et al., 2016). For instance, a study conducted by Meemon and Paek (2018) showed that among UCS beneficiaries who sought care, only 45% used the UCS services, whereas the other 55% used either informal care or private facility care. Additionally, these beneficiaries who used the UCS services were found to have relatively lower socioeconomic conditions than those who did not. Specifically, they were more likely to be lower-income, lower-educated, and unemployed beneficiaries.

In fact, there can be two conflicting views about the underutilization of the UCS services. One view is that the use of private health services may be seen as appropriate use because people have different preferences and choices for health services. As the previous results indicated that people with relatively higher socioeconomic conditions (e.g., higher income) preferred private health services to the UCS services, if the private services were used by such people due to better financial considerations and more convenient access, the underutilization of the UCS services may not be an issue.

Meanwhile, another view is that the underutilization may indicate a possibility that although beneficiaries want to use the UCS services, system issues (e.g., long wait-time in designated facilities) together with individual issues (e.g., time constraints) may ultimately force them to use other private health services instead of the UCS services. If so, the underutilization may indicate a gap between beneficiaries' needs for and

actual use of the UCS services from the policy point of view.

As the stated goal of the UCS is to “equally entitle all Thai citizens to quality healthcare according to their needs, regardless of their socioeconomic status” (HISRO, 2012, p. 37), the UCS is not the policy only for socially vulnerable people. Rather, it has emphasized universal access to UCS services. In this sense, it may be important to understand where and why such a gap occurs. In addition, such underutilization has been similarly observed in other Southeast Asian countries that have implemented national health insurance programs (e.g., Indonesia, the Philippines, and Viet Nam), though some of the countries have not yet fully achieved universal health coverage (Badan Pusat Statistik, 2018; Dayrit et al., 2018; Giang et al., 2019; Nguyen, 2010; World Health Organization [WHO], 2006). However, specific factors and reasons for the underutilization have not been examined systematically. Thus, this study investigated factors associated with and reasons for underutilization of the UCS services. Specifically, we examined health-seeking behavior and reasons for each behavior (i.e., reasons why the UCS services were not utilized) among UCS beneficiaries.

### **Concept of Unmet Health Needs**

This study employed the concept of unmet health needs to explore reasons why the UCS services were not utilized. Assuming that health access or utilization is an interactive process between a health system offering care and an individual seeking care, unmet health needs can occur due to any gaps in the process. The gaps are clustered into three categories, which are availability, accessibility, and acceptability (Chen & Hou, 2002; Sibley & Glazier, 2009), though the categories overlap each other to some degree.

Unmet needs caused by the availability-related gap can occur due to the features of a health system that provides care. Long wait time in health facilities or unavailability of health services where or when the services are required can be typical reasons for the availability-related gap. Unmet needs by accessibility-related or acceptability-related gaps can occur due to circumstances of an individual who seeks care. Costs of health services or transportations to health facilities can be typical reasons of the accessibility-related gap, and attitude toward or knowledge of health care can

be those of the acceptability-related gap (Chen & Hou, 2002; Hwang, 2018; Pappa et al., 2013; Sibley & Glazier, 2009).

In addition, types of unmet health needs may be diverse. For instance, expensive services in health facilities may force some individuals to give up receiving care (i.e., forgone care). Meanwhile, expensive services may force others to utilize other types of health services, such as OTC medicines. In some settings, traditional healers or medicines may be an alternative to expensive services. In this sense, the concept of unmet needs can be applicable to not only forgone care but also different health-seeking behaviors if the behaviors are chosen due to gaps in the process.

Thus, the concept of unmet health needs was employed in this study to examine the reasons why UCS services were not utilized. By the concept, the UCS can be considered a policy to improve the accessibility-related gaps because it has decreased costs of designated facility care. Additionally, considering the previous results that relatively higher-income beneficiaries preferred private health services to the UCS services, we expected that underutilization of the UCS services is more likely to occur due to availability-related or acceptability-related gaps, rather than accessibility-related ones.

## Methods

### *Data and Sample*

The Health and Welfare Survey (HWS) of 2015 was utilized as the main data in the study. The HWS is a nationwide cross-sectional survey data with wide-ranging social health statistics of Thailand, such as socioeconomic features and health-seeking behavior. The National Statistical Office of Thailand yearly performs this survey and compiles the data (National Statistical Office of Thailand, 2018). This study aimed at examining health-seeking behavior and reasons why the UCS services were not utilized among UCS beneficiaries. Thus, we chose UCS beneficiaries who reported an illness experience as the study sample. Specifically, for outpatient care analysis, UCS beneficiaries who had experienced illness within the last one month from the survey date were chosen. For inpatient care analysis, those who had had a hospitalization within the last one year from the survey date were chosen as the study sample.

Additionally, the study sample was divided into two parts, which are the sample over and under the age of 18, because some variables can be misinterpreted in the analysis. For instance, we measured marital status as a categorical variable with three levels, which are “single,” “married,” and “divorced/separated/widowed.” As people under the age of 18 were single in general, it may cause a misinterpretation of the analysis results if we use the sample without a separation between people over and under the age of 18. Thus, we ultimately divided the study sample into two parts and analyzed them separately.

### *Variables and Measurements*

There were two dependent variables in this study—health-seeking behavior and reasons for each behavior. For health-seeking behavior, it was classified into three categories, which are informal care, designated facility care, and private facility care. Informal care meant the use of non-institutional health services. The category of informal care specifically comprised the use of OTC and traditional medicines. Designated facility care meant the use of UCS services. Lastly, private facility care meant the use of health services in private hospitals and clinics.

For reasons for each behavior, the HWS 2015 data had a relevant question, which was “If you did not use the UCS services, then please choose one of the given reasons.” If the chosen reasons were related to service availability issues (e.g., “wait time too long” or “needed services were not covered by the UCS”), then they were classified into the availability category. If the chosen reasons were related to cost or transportation issues (e.g., “too far to travel” or “could not afford treatment”), then they were classified in the accessibility category. Lastly, all the other reasons (e.g., “too busy to seek care” or “not sure of diagnosis accuracy or treatment effectiveness”) were classified in the acceptability category (Chen & Hou, 2002; Sibley & Glazier, 2009).

A total of eight independent variables were chosen by employing Andersen’s behavioral model for health services use (Aday & Andersen, 1974; Bradley et al., 2002). By the model, two demographic variables (age and gender) as predisposing factors, five socioeconomic variables (income, education, marital status, employment, and region) as enabling factors, and one variable (chronic disease status) as a need-for-care factor were ultimately used in the study.

Particularly for income, the HWS 2015 offered household-level income, whereas the unit of analysis of this study was individual. Thus, the household-level income was changed to individual-level income by dividing total income by the square root of the number of total household members in each household (Organisation for Economic Co-operation and Development [OECD], 2009). Additionally, the individual income was found to be skewed to the right; thus, we ultimately utilized log-transformed income for the study analysis. Chronic disease status was used as a dichotomous variable (yes and no). In the HWS 2015, 32 diseases (e.g., diabetes and hypertension) were specified as non-communicable chronic diseases. We classified beneficiaries into the “yes” or “no” groups by examining their possession or not of any specified ones, respectively.

### ***Statistical Analysis***

This study performed logistic regression models to analyze the association between selected independent variables and health-seeking behavior. Specifically, multinomial and binomial logistic regression models were performed for outpatient and inpatient care analysis, respectively (Hosmer & Lemeshow, 2000). Then, among beneficiaries who did not use the UCS services (or used either private facility care or informal care), the prevalence rate of reasons for not using the UCS services was estimated by the three categories grouped by the concept of unmet needs. In fact, we initially planned to perform only logistic models for investigating the relationship between health-seeking behavior and the classified reasons for each behavior. However, due to some zero cell counts in the contingency table across the variables, the analyses did not properly estimate regression coefficients together with multicollinearity issues. Thus, health-seeking behavior and classified reasons for each behavior were analyzed separately.

## **Results**

### ***Descriptive Statistics***

Descriptive statistics of the study sample and variables are presented in Table 1. For outpatient care, among the sample aged over 18, 42.5% used private health services, and 57.5% used the UCS services. Among the beneficiaries who used private services, 28.4% and 14.1% used informal care and private

facility care, respectively. Among the sample aged under 18, 47.5% used private health services, and 52.5% used the UCS services. Among the beneficiaries who used private services, 27.3% and 25.2% used informal care and private facility care. For inpatient care, 6.5% and 7.3% used private facility care among the sample aged over and under 18, respectively.

The utilization rate of the UCS services found in this study was relatively higher than previous results. Specifically, the previous results indicated that utilization of the UCS services was about 45–48% for outpatient care (Kirdruang, 2011; Meemon & Paek, 2018) and 90–92% for inpatient care (Paek et al., 2016). Meanwhile, the study results indicated about 55% for outpatient care and 93% for inpatient care. The increased utilization may be partially due to the government’s effort to expand the services boundary of the UCS through the National Health Development Plan, particularly the expansion of the benefits package and encouragement of the private-sector involvement in the scheme.

### ***Results of Logistic Regression Analysis***

Tables 2 and 3 present the results of logistic regression models for outpatient and inpatient care, respectively. Overall, the study results, as consistent with previous studies, indicated that the UCS services were more likely to be used by beneficiaries with lower socioeconomic conditions, whereas private health services were more likely to be used by those with higher socioeconomic conditions (Gruber et al., 2014; Kirdruang, 2011; Limwattananon et al., 2015; Meemon & Paek, 2018; Paek et al., 2016).

For outpatient care for the sample aged over 18 (Table 2), four variables (income, employment, chronic disease status, and region) were significantly related to both informal care and private facility care. Specifically, beneficiaries who had higher income, were employed, had no specified chronic diseases, or lived in urban areas were more likely to prefer both informal care and private facility care to the UCS services.

Additionally, three more variables (age, education, and marital status) were partially related to informal care or private facility care. For age, private facility care was more likely to be used by older beneficiaries, whereas the UCS services were more likely to be used by than younger ones. However, the use of informal care was not different across ages. For education,

**Table 1***Descriptive Statistics of the Study Sample and Variables*

Variables	Outpatient care				Inpatient care			
	Age 18+ (n = 11,293)		Age 18- (n = 3,569)		Age 18+ (n = 3,628)		Age 18- (n = 762)	
	M or %	SD	M or %	SD	M or %	SD	M or %	SD
Health-seeking behavior								
Informal care	28.4		27.3					
Designated-facility care	57.5		47.5		93.6		92.7	
Private facility care	14.1		25.2		6.5		7.3	
Out-of-pocket payment								
Informal care	83.8	130.1	83.9	94.7				
Designated facility care	33.0	329.7	30.5	321.9	134.2	670.5	79.5	651.5
Private facility care	677.5	1327.2	510.3	1044.9	5116.8	6581.2	4187.4	7314.8
Average length of stay								
Designated facility care					5.4	7.9	4.2	5.4
Private facility care					5.6	8.6	4.2	4.5
Income	9131.5	8901.4	9523.3	9389.1	8991.9	8200.4	8951.9	6381.1
Log-transformed income	8.8	0.8	8.9	0.7	8.8	0.7	8.9	0.7
Age	56.4	16.4	6.7	4.8	51.6	19.4	7.5	5.7
Gender								
Male	37.4		50.8		38.3		49.1	
Female	62.6		49.2		61.7		50.9	
Education								
Low	80.6				70.2			
Middle	17.6				26.8			
High	1.9				3.0			
Marital status								
Single	9.8				9.8			
Married	64.8				69.6			
Divorced/Widowed/Separated	25.4				20.6			
Employment								
Yes	58.4				50.3			
No	41.6				49.7			
Chronic disease status								
Yes	58.4				50.8			
No	41.6				49.2			
Region								
Rural	53.7		54.0		54.5		54.5	
Urban	46.3		46.0		45.5		45.5	

Note: M and SD = mean and standard deviation; Education Low, Middle, and High = primary school level or below, middle or high school level, and college level or above; Age 18+ and 18- = people aged 18 or older and aged 17 or younger.



**Table 2***Results of Multinomial Logistic Regression Analysis for Outpatient Care*

Variables	Age 18+		Age 18-	
	Informal care	Private facility care	Informal care	Private facility care
	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	-0.59 (0.38)	-2.52 (0.47)***	-5.54 (0.56)***	-5.11 (0.57)***
Log-transformed income	0.14 (0.03)***	0.24 (0.04)***	0.49 (0.06)***	0.54 (0.06)***
Age	<0.01 (0.00)	<0.01 (0.00)*	0.09 (0.01)***	-0.03 (0.01)***
Gender				
Female	-0.04 (0.05)	-0.01 (0.06)	0.06 (0.08)	-0.20 (0.08)**
Male	0.00	0.00	0.00	0.00
Education				
Low	-0.34 (0.18)*	-0.44 (0.21)**		
Middle	-0.38 (0.18)**	-0.14 (0.21)		
High	0.00	0.00		
Marital status				
Single	0.16 (0.09)*	-0.04 (0.11)		
Divorced/Widowed/Separated	0.14 (0.06)**	0.03 (0.08)		
Married	0.00	0.00		
Employment				
Yes	0.34 (0.06)***	0.42 (0.07)***		
No	0.00	0.00		
Chronic disease				
Yes	-1.82 (0.05)***	-0.94 (0.06)***		
No	0.00	0.00		
Region				
Rural	-0.25 (0.05)***	-0.10 (0.06)*	-0.14 (0.08)*	-0.15 (0.08)*
Urban	0.00	0.00	0.00	0.00
Pearson goodness-of-fit statistics				
Chi-square (df) and p-value	22,199.07 (22,176) and 0.46		6,632.65 (6,602) and 0.39	

Note: Reference = designated facility care; \* =  $p < 0.10$ ; \*\* =  $p < 0.05$ ; \*\*\* =  $p < 0.01$ ; Education Low, Middle, and High = primary school level or below, middle or high school level, and college level or above; Age 18+ and 18- = people aged 18 or older and aged 17 or younger.

informal care was more likely to be used by higher-educated beneficiaries (college level or above), whereas the UCS services were more likely to be used by lower ones (both primary school level or below and middle or high school level).

For private facility care, it was more likely to be used by higher-educated beneficiaries (college level or above) than those with middle or high school level, but

not primary school level or below. For marital status, informal care was more likely to be used by single and divorced/separated/widowed beneficiaries, whereas the UCS services were more likely to be used by married ones. However, the use of private facility care was not different across marital status.

For the sample aged under 18, similar patterns were also observed. Specifically, two variables, which

are income and region, were significantly associated with both informal care and private facility care. Like the results of the sample aged over 18, the results indicated that beneficiaries who had higher income or lived in urban areas were more likely to use informal care and private facility care instead of the UCS services. Additionally, two more variables (age and gender) were partially related to either informal care or private facility care. For age, older beneficiaries were more likely to use informal care, whereas younger

ones were more likely to use private facility care. For gender, a male was more likely to use private facility care. However, the use of informal care did not differ between males and females.

For inpatient care for the sample aged over 18 (Table 3), the results indicated that higher-income or higher-educated beneficiaries (college level or above) were more likely to use private facility care than lower-income or lower-educated ones (both primary school level or below and middle or high school

**Table 3**  
*Results of Binomial Logistic Regression Analysis for Inpatient Care*

Variables	Age 18+	Age 18-
	Private facility care Estimate (SE)	Private facility care Estimate (SE)
Intercept	-8.23 (1.04)***	-8.11 (2.09)***
Log-transformed income	0.68 (0.10)***	0.65 (0.22)***
Age	0.01 (0.01)	-0.06 (0.03)**
Gender		
Female	-0.10 (0.15)	0.17 (0.28)
Male	0.00	0.00
Education		
Low	-1.19 (0.30)***	
Middle	-0.78 (0.28)***	
High	0.00	
Marital status		
Single	0.34 (0.22)	
Divorced/Widowed/Separated	-0.13 (0.21)	
Married	0.00	
Employment		
Yes	0.15 (0.15)	
No	0.00	
Chronic disease		
Yes	0.04 (0.17)	
No	0.00	
Region		
Rural	-0.11 (0.14)	<0.01 (0.28)
Urban	0.00	0.00
Hosmer-Lemeshow goodness-of-fit statistics		
Chi-square (df) and p-value	11.22 (8) and 0.19	5.94 (8) and 0.19

Note: Reference = designated facility care; \* = p < 0.10; \*\* = p < 0.05; \*\*\* = p < 0.01; Education Low, Middle, and High = primary school level or below, middle or high school level, and college level or above; Age 18+ and 18- = people aged 18 or older and aged 17 or younger.

level), as compared to designated facility care. For the sample aged under 18, higher-income and younger beneficiaries were more likely to prefer private facility care to the UCS services.

### ***Reasons for Underutilization of the UCS Services***

The reasons for not utilizing the UCS services are presented in Table 4. As expected, underutilization of the UCS services was more likely to occur due to availability-related and acceptability-related reasons, rather than accessibility-related ones. Specifically, for outpatient care, about 90% of the informal care users did not utilize the UCS services due to acceptability-related reasons. “Minor illness” was the most frequently cited reason, which accounted for more than 90% of all reasons in the acceptability category. Additionally, about 9% of the users did not utilize the UCS services due to availability-related reasons. “Wait-time too long” was the most frequently cited reason, which accounted for approximately 85% of all reasons in the availability category.

For private facility care, the users did not utilize the UCS services due to both acceptability- and availability-related reasons. For the sample aged over 18, 48.7% and 47.4% of the users reported acceptability-related and availability-related reasons as the main problems of access to the UCS services, respectively. For the sample aged under 18, 43.8% and 51.9% of the users reported acceptability-related and availability-related reasons as the main barriers of access to the UCS services. Among the reasons in the acceptability category, “minor illness,” “too busy to seek care,” “not sure of medicine quality,” and “not sure of diagnosis accuracy or treatment effectiveness” were the frequently cited reasons, which accounted for more than 95% of all reasons in the category. Among the reasons in the acceptability category, “wait time too long” was the most frequently cited reason, which accounted for more than 85% of all reasons in the category.

For inpatient care, about 65% and 35% of the private-facility-care users reported availability-related and acceptability-related reasons as the main problems of accessing UCS service, respectively. Among the reasons in the availability category, the most frequently cited reason was “wait time too long,” followed by “not available due to accident or emergency,” and “needed services were not covered by UCS insurance.” Among the reasons in the acceptability category, “not sure of

diagnosis accuracy or treatment effectiveness” was the most frequently cited reason, followed by “others,” and “not sure of medicine quality.”

### **Discussion**

Although the UCS has offered nearly free health services, underutilization of the UCS services has been found in previous studies. Assuming that the underutilization may be caused by a gap between needs and actual use of the UCS services in the policy point of view, this study assessed where and why such gap occurs by employing the concept of unmet health needs. The study results, as consistent with previous studies, indicated that underutilization of the UCS services was more likely to occur in higher socioeconomic groups, particularly higher-income beneficiaries (Gruber et al., 2014; Kirdruang, 2011; Limwattananon et al., 2015; Meemon & Paek, 2018; Paek et al., 2016). In addition, the underutilization, as expected, occurred mainly due to availability-related and acceptability-related reasons, rather than accessibility-related ones, because the UCS, by the concept of unmet needs, can be seen as a policy to improve only the accessibility component, especially costs of designated facility care.

For outpatient care, about 50% of all beneficiaries who needed care utilized informal care or private facility care. Among them, the informal-care users reported minor illness in the acceptability category and long wait-time in the availability category as the major reasons for not utilizing the UCS services. If we consider that respondents were asked to choose only one primary reason among the given reasons in the HWS 2015, the result implies that the informal care users were mostly patients with minor and non-urgent symptoms who nevertheless needed immediate medication or treatment. However, a long wait time in designated facilities might push them to use informal care.

The private facility care users, like the informal care users, reported a long wait time as the major reason in the availability category. However, their acceptability-related reasons were more diverse, which included minor illness, time constraints, and uncertainty of quality of care in designated facilities. For some of the users who had minor symptoms or time constraints, long wait time in designated facilities might be the major reason. For others who had moderate or severe symptoms, their perceived low quality of the UCS



**Table 4***Prevalence Rate of Specific Reasons for Each Health-Seeking Behavior (%)*

Reasons	Outpatient care			
	Age 18+		Age 18-	
	Informal care	Private facility care	Informal care	Private facility care
<b>Accessibility</b>	<b>2.2</b>	<b>3.9</b>	<b>0.4</b>	<b>4.3</b>
Too far to travel	2.0	3.8	0.4	4.2
Could not afford transportation	0.2	0.1	0.0	0.1
<b>Availability</b>	<b>9.7</b>	<b>47.4</b>	<b>8.2</b>	<b>51.9</b>
Not available due to accident or emergency	0.3	1.9	1.6	1.2
Wait time too long	8.2	41.0	6.1	47.0
My designated facility is not in the area where I live	0.6	1.8	0.1	1.7
Needed services were not covered by UCS insurance	0.6	2.7	0.4	2.0
<b>Acceptability</b>	<b>88.2</b>	<b>48.7</b>	<b>91.4</b>	<b>43.8</b>
Minor illness	80.8	13.2	84.9	8.8
Too busy to seek care	3.4	11.7	3.1	13.4
Not sure of medicine quality	1.8	13.0	1.7	11.1
Discrimination	0.1	0.4	0.0	0.1
Staff is not friendly	0.1	0.4	0.0	0.6
Doctors are too busy to communicate with patients	0.1	0.3	0.1	0.2
Not sure of diagnosis accuracy or treatment effectiveness	0.7	7.9	0.9	7.9
Others	1.3	1.9	0.6	1.7
	Inpatient care			
<b>Accessibility</b>		<b>5.6</b>		<b>0.0</b>
Too far to travel		5.6		0.0
Could not afford transportation		0.0		0.0
<b>Availability</b>		<b>61.1</b>		<b>67.9</b>
Not available due to accident or emergency		15.0		17.9
Wait time too long		23.9		33.9
Not available in the area where I live		8.6		1.8
Needed services were not covered by UCS insurance		13.7		14.3
<b>Acceptability</b>		<b>33.3</b>		<b>32.2</b>
Not sure of medicine quality		8.6		3.6
Discrimination		0.4		1.8
Staff is not friendly		0.9		0.0
Doctors are too busy to communicate with patients		0.9		0.0
Not sure of diagnosis accuracy or treatment effectiveness		13.3		17.9
Others		9.4		8.9

Note: Age 18+ and 18- = people aged 18 or older and aged 17 or younger.

services might be the major reason for seeking for private facility care.

For inpatient care, about 7% of all beneficiaries utilized private facility care. The major reasons in the availability category were long wait time, a limited benefits package, and unavailability of the UCS services due to emergencies or accidents. In the acceptability category, the uncertainty of the quality of care in designated facilities was the major reason. For the users who needed inpatient care services due to emergency or accident issues, long wait time or unavailable inpatient rooms in designated facilities might be the major reason. For others, low perceived service quality and limited coverage of the benefits package might be the major reason for seeking private facility care.

We believe that the underutilization is mainly due to limited financing and resources for the UCS program that previous studies have cited as factors decreasing access and quality of the UCS services. Low participation of private health facilities in the UCS program due to inadequate profit margin and the movement of health personnel from public to private sectors due to low wages and heavy workload have been stated as supply-side issues of the UCS services (Sakunphanit, 2006; Sakunphanit & Suwanrada, 2011; World Bank, 2007). Due to these issues, public health facilities are quite congested in general, and it accordingly causes long wait time and other inconveniences of utilizing the UCS services.

Thailand's total health expenditure in 2010 was 3.6% of GDP, in which the public sector accounted for around 85%. In the same year, the ratio of doctor, nurse, and hospital bed to population was 0.4, 2.1, and 2.1 per 1,000 people, respectively (World Bank, 2018). These statistics are relatively lower than those among the OECD countries. For the OECD countries, total health expenditure in 2011 was 9.4% of GDP on average, in which the public sector accounted for around 72%. In the same year, the ratio of doctor, nurse, and hospital bed to population was 3.2, 8.8, and 5.0 per 1,000 people, respectively (OECD, 2013).

For such limited public health financing and resources, the Thai government has continuously invested in wide-ranging health policy programs and interventions through the National Health Development Plan (NHDP), which is accompanied by the nation's sustainable development plan. By the NHDP, the national plans and directions for enhancing population

health have been established and accomplished in every five years since 1960. Developments of public health infrastructure and human resources are one of the major indicators of the NHPD. Actually, the implementation of the UCS program was a part of the accomplishments in the 9th NHDP from the year 2002 to 2006. At present, the 12th NHDP has been ongoing from the year 2017 to 2021 (Pagaiya & Noree, 2009; WHO, 2017). We do believe that such a government's effort would alleviate the underutilization issue of the UCS services in the long term.

In addition, we aim to discuss three specific issues and possible interventions from the study results. First, for outpatient care, we performed a posthoc analysis and found that about 90% of beneficiaries who used private facility care received services from private clinics, although only 10% received those from private hospitals. In 2007, the public sector included a total of 1,020 hospitals (with 156,494 beds) and 9,758 clinics (called public health centers). The private sector included a total of 318 hospitals (with 30,564 beds) and 16,800 clinics. Among the private clinics, the majority are owned by physicians who are employed fully in public health facilities, and the physicians run their clinics after working hours (Sakunphanit & Suwanrada, 2011).

It can be linked to the study result that employed beneficiaries were more likely to use private facility care, and long wait time and time constraints were the major reasons for using private facility care. For the employed beneficiaries, time constraints during daytime and long wait time in designated facilities might be a substantial barrier to access UCS services. Accordingly, the barrier might probably force them to receive services from private clinics after their working hours. In addition, the average out-of-pocket (OOP) cost of private facility care, as shown in Table 1, was found to be about 8% of the monthly average income, which could be considered outside of the range of affordability for most beneficiaries. In this sense, if the UCS can include such private-clinic practices into the benefits package, it may be a potential intervention for employed beneficiaries who generally have time-constraint problems together with limited service hours of designated facilities.

Second, for inpatient care, about 50% of beneficiaries did not use the UCS services due to an emergency situation or long wait time. It may reflect that the UCS did not adequately meet beneficiaries' needs in

a timely manner. Although the overall utilization of inpatient care services in private facilities was found to be quite low, a policy gap in access to inpatient care can bring more serious problems than that in access to outpatient care. This is especially plausible in cases of emergency situations such as a heart attack where a delay in access to care can lead to not only severe health conditions but also high treatment costs. Additionally, as shown in Table 1, the average per-day OOP cost of private facility care was around 60% of the monthly average income, which could be outside of the range of affordability for almost all beneficiaries regardless of income level. In this sense, for people who are compelled to utilize private facility care due to emergency or accident situations, how OOP costs can be supported by the UCS may be one of the policy priorities.

Third, for informal care, the users were mostly patients with minor symptoms, but long wait time in designated facilities was the major reason for seeking informal care. Thus, if the UCS can include frequently used medicines into the benefits package, it may be a potential intervention for beneficiaries who often depend on informal care. However, informal care can bring a harmful effect on health because of inaccurate self-diagnosis and treatment choice (Ruiz, 2010); thus, how the medicines can be prescribed and delivered to beneficiaries would be another technical issue to be considered.

### ***Limitations of the Study***

As stated previously, the HWS did not allow respondents to choose multiple reasons for using private health services. Thus, this study might have an over-generalization of the study results. In reality, actual barriers of access to the UCS services may be various and happen concurrently. For example, long wait time or time constraints could be a direct reason, whereas the uncertainty of service quality could be an indirect reason for not using the UCS services. However, this study, which utilized secondary data, did not investigate such details. It suggests that future studies should be performed with qualitative research approaches in order to address this methodological issue.

In addition, the cross-sectional design employed in this study could not consider health-seeking behavior in a continuous manner. That is, some beneficiaries might change health-seeking behavior from designated

facility care to private facility care and, likewise, from private facility care to designated facility care. For those who changed their health-seeking behavior, reasons for not using the UCS services may be different from those who did not. For that, longitudinal analysis, which can capture such changes and relevant reasons, is encouraged for a more precise assessment of the UCS impact.

### **Conclusion**

The study results indicated that the underutilization of the UCS services occurred in relatively high socioeconomic groups, particularly higher-income people. Availability-related (e.g., long wait time in designated facilities and unavailability during emergency situations) and acceptability-related reasons (e.g., time constraints and uncertainty of service quality) were the major barriers of access to the UCS services. For that, the government should continue improving the limited public health financing and resources through the NHDP in the long term. In the short term, the study results suggest that employed people who generally have time constraints during daytime and people who need inpatient services due to emergency or accident situations would be the policy priority that the UCS must consider.

In addition, preliminary analyses that we performed indicated that for outpatient care, about 5% of beneficiaries who needed care did not use any health services. However, the HWS 2015 did not offer relevant information such as reasons for forgone care; thus, we ultimately excluded this group from the study. Considering previous results that forgone care was more likely to occur among beneficiaries with lower socioeconomic conditions (Paek et al., 2016), it is essential to assess and monitor where and why such forgone care occurs regularly in the policy point of view. For that, restructuring the survey system of the HWS by the National Statistical Office of Thailand would be the first step.

### **Acknowledgment**

This study was funded by the Faculty of Social Sciences and Humanities, Mahidol University. Given that the funding was not a competitive grant, it does not have a grant number. We deeply thank Dr. Luechai Sringernyuang, the dean of the Faculty of

Social Sciences and Humanities, Mahidol University, for research support and assistance. Additionally, the National Statistical Office of Thailand must be appreciated for data availability.

### Declaration of ownership:

This report is our original work.

### Conflict of interest:

None.

### Ethical clearance:

This study was approved by the institution.

### References

- Aday, L. A., & Andersen, R. M. (1974). A framework for the study of access to medical care. *Health Services Research, 9*(3), 208–220.
- Bradley, E. H., McGraw, S. A., Curry, L., Buckser, A., King, K. L., Kasl, S. V., & Andersen, R. (2002). Expanding the Andersen model: The role of psychosocial factors in long-term care use. *Health Services Research, 37*(5), 1221–1242. <https://doi.org/10.1111/1475-6773.01053>
- Badan Pusat Statistik. (2018). *Statistik Kesejahteraan Rakyat 2018* (Welfare Statistics 2018). Jakarta, Indonesia: BPS (in Indonesian). <https://www.bps.go.id/publication/2018/11/26/81ede2d56698c07d510f6983/statistik-kesejahteraan-rakyat-2018.html>
- Chen, J., & Hou, F. (2002). Unmet needs for health care. *Health Reports, 13*(2), 23–34.
- Dayrit, M. M., Lagrada, L. P., Picazo, O. F., Pons, M. C., & Villaverde, M. C. (2018). *The Philippines health system review*. WHO, Regional Office for South-East Asia. <https://apps.who.int/iris/handle/10665/274579>
- Giang, N. H., Oanh, T. T. M., Tuan, K. A., Van, P. H., & Jayasuriya, R. (2019). Is health insurance associated with health service utilization and economic burden of non-communicable diseases on households in Vietnam? *Health Systems & Reform, 6*(1), 1–35. <https://doi.org/10.1080/23288604.2019.1619065>
- Gruber, J., Hendren, N., & Townsend, R. M. (2014). The great equalizer: Health care access and infant mortality in Thailand. *American Economic Journal: Applied Economics, 6*(1), 91–107. <https://doi.org/10.1257/app.6.1.91>
- Health Insurance System Research Office. (2012). *Thailand's universal coverage scheme: Achievements and challenges. An independent assessment of the first 10 years (2001-2010)*. HISRO. [http://www.hisro.or.th/main/download/10UCS\\_Eng.pdf](http://www.hisro.or.th/main/download/10UCS_Eng.pdf)
- Hosmer, D. W., & Lemeshow, S. (2000). *Applied logistic regression* (2nd ed.). Wiley.
- Hwang, J. (2018). Understanding reasons for unmet health care needs in Korea: What are health policy implications? *BMC Health Services Research, 18*, 1–9. <https://doi.org/10.1186/s12913-018-3369-2>
- Kirdruang, P. (2011). *Essays in economics of public health insurance in developing countries: Evidence from Thailand and Vietnam* [Unpublished doctoral dissertation]. University of Minnesota, Minneapolis. <http://hdl.handle.net/11299/119863>
- Limwattananon, S., Neelsen, S., O'Donnell, O., Prakongsai, P., Tangcharoensathien, V., Van Doorslaer, E., & Vongmongkol, V. (2015). Universal coverage with supply-side reform: The impact on medical expenditure risk and utilization in Thailand. *Journal of Public Economics, 121*, 79–94. <https://doi.org/10.1016/j.jpubeco.2014.11.012>
- Meemon, N., & Paek, S. C. (2018). Health-seeking behavior of the uninsured before and after the Universal Coverage Scheme in Thailand. *Asia-Pacific Social Science Review, 18*(1), 1–14.
- National Statistical Office of Thailand. (2018). *Health and welfare survey 2015* [Data file and codebook]. [http://web.nso.go.th/en/survey/hw/hw\\_11.htm](http://web.nso.go.th/en/survey/hw/hw_11.htm)
- Nguyen, V. C. (2010). *Public health services and health care utilization in Vietnam* (MPRA Paper No. 33610). University Library of Munich. [https://mpra.ub.uni-muenchen.de/33610/1/Health\\_care\\_services\\_in\\_Vietnam.pdf](https://mpra.ub.uni-muenchen.de/33610/1/Health_care_services_in_Vietnam.pdf)
- Organisation for Economic Co-operation and Development. (2009). *What are equivalence scales?* OECD Publishing. <http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf>
- Organisation for Economic Co-operation and Development. (2013). *Health at a glance 2013: OECD indicators*. OECD Publishing. [https://doi.org/10.1787/health\\_glance-2013-en](https://doi.org/10.1787/health_glance-2013-en)
- Paek, S. C., Meemon, N., & Wan, T. T. (2016). Thailand's universal coverage scheme and its impact on health-seeking behavior. *Springerplus, 5*, 1–16. <https://doi.org/10.1186/s40064-016-3665-4>
- Pagaiya, N., & Noree, T. (2009). *Thailand's health workforce: A review of challenges and experiences* (HNP Discussion Paper 54633). World Bank. <http://documents.worldbank.org/curated/en/453661468171879780/Thailands-health-workforce-a-review-of-challenges-and-experiences>
- Pappa, E., Kontodimopoulos, N., Papadopoulos, A., Tountas, Y., & Niakas, D. (2013). Investigating unmet health needs in primary health care services in a representative sample of the Greek population. *International Journal*

- of Environmental Research and Public Health*, 10, 2017–2027. <https://doi.org/10.3390/ijerph10052017>
- Ruiz, M. E. (2010). Risks of self-medication practices. *Current Drug Safety*, 5(4), 315–323.
- Sakunphanit, T. (2006). *Thailand: Universal health care coverage through pluralistic approaches*. ILO Subregional Office for East Asia. [http://www.ilo.org/secsoc/information-resources/publications-and-tools/Workingpapers/WCMS\\_SECSOC\\_6612/lang--en/index.htm](http://www.ilo.org/secsoc/information-resources/publications-and-tools/Workingpapers/WCMS_SECSOC_6612/lang--en/index.htm)
- Sakunphanit, T., & Suwanrada, W. (2011). The universal coverage scheme. In International Labour Organization, Special Unit for South-South Cooperation, & United Nations Development Programme (Eds.), *Sharing innovative experiences: Successful social protection floor experiences* (pp. 385–400). UNDP. [http://www.ilo.org/secsoc/information-resources/publications-and-tools/books-and-reports/WCMS\\_SECSOC\\_20840/lang--en/index.htm](http://www.ilo.org/secsoc/information-resources/publications-and-tools/books-and-reports/WCMS_SECSOC_20840/lang--en/index.htm)
- Sibley, L. M., & Glazier, R. H. (2009). Reasons for self-reported unmet healthcare needs in Canada: A population-based provincial comparison. *Healthcare Policy*, 5(1), 87–101.
- Tangcharoensathien, V., Prakongsai, P., Limwattananon, S., Patcharanarumol, W., & Jongudomsuk, P. (2007). *Achieving universal coverage in Thailand: What lessons do we learn?* Health System Knowledge Network, WHO Commission on Social Determinants of Health. <http://doi.org/10.2139/ssrn.1111870>
- World Bank. (2007). *Health care financing in Thailand: Modeling and sustainability*. World Bank. <http://documents.worldbank.org/curated/en/875351468305329741/Health-care-financing-in-Thailand-modeling-and-sustainability>
- World Bank. (2018). *The World Bank: Open data*. <https://data.worldbank.org/>
- World Health Organization. (2006). *Health service utilization and the financial burden on households in Vietnam: The impact of social health insurance*. WHO. [https://apps.who.int/iris/bitstream/handle/10665/85632/EIP\\_HSF\\_DP.06.6\\_eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/85632/EIP_HSF_DP.06.6_eng.pdf)
- World Health Organization. (2017). *WHO country cooperation strategy, Thailand: 2017–2021*. WHO, Regional Office for South-East Asia. <https://apps.who.int/iris/bitstream/handle/10665/255510/9789290225829-eng.pdf?sequence=1>