

พฤติกรรมการใช้สิทธิสวัสดิการรักษายาบาล การซื้อประกันสุขภาพเอกชน และรายจ่ายทางสุขภาพที่ต้องจ่ายด้วยตัวเองของข้าราชการในจังหวัดสงขลา

Behavior in Using Health Benefit Scheme, Purchasing Private Health Insurance and Out-of-pocket Direct Medical Costs of Beneficiaries under the Civil Servant Medical Benefits Scheme

นิพนธ์ต้นฉบับ

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาพฤติกรรมการใช้สิทธิสวัสดิการรักษายาบาล ข้าราชการ การซื้อและการใช้ประกันสุขภาพเอกชนของข้าราชการในจังหวัดสงขลา **วิธีการศึกษา:** สุ่มตัวอย่างแบบหลายขั้นตามสัดส่วนข้าราชการ เก็บข้อมูลโดยใช้แบบสอบถามที่ผู้วิจัยสร้างขึ้น และรวบรวมข้อมูลผู้ใช้สิทธิในโรงพยาบาลสงขลานครินทร์ พ.ศ. 2563 ทุกรายที่มีรายจ่ายทางสุขภาพที่จ่ายด้วยตัวเอง (Out-of-pocket expenditures; OOPs) สรุปข้อมูลโดยใช้สถิติเชิงพรรณนา **ผลการศึกษา:** จากข้าราชการ 313 ราย พบว่าร้อยละ 72.00 ใช้สิทธิใน 3 เดือนย้อนหลัง ส่วนใหญ่ (ร้อยละ 53.95) ใช้บริการผู้ป่วยนอกในเวลาราชการ ร้อยละ 34.50 เกิด OOPs สำหรับตนเอง โดยส่วนใหญ่ซื้อยาจากร้านยา (ร้อยละ 25.88) ข้าราชการซื้อประกันสุขภาพเอกชนร้อยละ 31.95 โดยร้อยละ 96.00 ซื้อประกันโรคร้ายแรง ผู้ซื้อร้อยละ 54.00 ไม่ได้ใช้ประกันเอกชนในช่วง 3 เดือนย้อนหลัง ข้อมูลโรงพยาบาลแสดงว่าผู้ใช้สิทธิ มี OOPs เฉลี่ย 6,437.09 บาท/ปี สัดส่วน OOPs สูงสุดของผู้ป่วยนอก คือ ค่ายา/สารอาหารทางเส้นเลือด (ร้อยละ 44.86, เฉลี่ย 2,247.50 บาท/ราย/ปี) เป็นยาเคมีร้อยละ 32.22 และ OOPs สูงสุดของสิทธิผู้ป่วยใน คือ ค่าห้อง/ค่าอาหาร (ร้อยละ 27.61, เฉลี่ย 6,095.06 บาทต่อรายต่อปี) ภาวะที่ OOPs เฉลี่ยสูงสุดเกี่ยวข้องกับความเสี่ยงของมะเร็งทั้งผู้ป่วยนอก (106,046 บาท) และผู้ป่วยใน (194,199 บาท) ยา Tagrisso (osimertinib 80 mg) (ยามุ่งเป้าโรคมะเร็ง) มี OOPs เฉลี่ยสูงสุดทั้งผู้ป่วยนอกและผู้ป่วยใน อายุ 61 ปีขึ้นไปเกิด OOPs เฉลี่ยสูงสุดในการบริการผู้ป่วยนอก (2,006.94 บาท/ราย/ปี) สรุป: แม้ว่าสิทธิรักษายาบาลข้าราชการเป็นประกันสุขภาพภาครัฐที่ครอบคลุมสิทธิประโยชน์สูงสุด ผู้ใช้สิทธิยังมี OOPs โดยเฉพาะผู้ป่วยโรคมะเร็งและสูงอายุ ผลการวิจัยสามารถช่วยประกอบการพัฒนาสิทธิประโยชน์ของกรมบัญชีกลาง และเป็นข้อมูลประกอบการเลือกซื้อประกันสุขภาพเอกชนแก่ข้าราชการที่มีความเสี่ยง

คำสำคัญ: ข้าราชการ; ประกันสุขภาพเอกชน; รายจ่ายทางสุขภาพที่ต้องจ่ายด้วยตัวเอง; ความครอบคลุม; สิทธิประโยชน์ด้านยา

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Abstract

Objective: To determine use of healthcare benefits, purchase of additional private health insurance, and use of private health insurance among government official beneficiaries under Civil Servant Medical Benefit Scheme (CSMBS) in Songkhla province, Thailand. **Methods:** The study used a multi-stage sampling was used corresponding to the proportion of civil servant beneficiaries and a questionnaire developed by the researcher. The database of Songklanagarind Hospital in the year 2020 was reviewed for healthcare benefit usage among beneficiaries regarding out-of-pocket expenditures (OOPs). Data were analyzed using descriptive statistics. **Results:** Of the 313 beneficiaries, 72.00% used their health benefits in the past three months. 53.95% accessed outpatient services during working hours. 34.50% incurred OOPs, mostly for purchasing medications from pharmacies (25.88%). 31.95% of them purchase additional private health insurance. The most purchased insurance was for critical illness (96.00%). 54.00% of beneficiaries did not use private health insurance in the past three months. From the hospital database, beneficiaries incurred an average OOPs of 6,437.09 baht per year. The highest proportion of OOPs for outpatient services was for medications and parenteral nutrition (44.86%, averaging 2,247.50 baht/person/year), with chemotherapy accounting for 32.2%. Expenses for room/food accounted for the highest proportion of inpatient services (27.61%, averaging 6,095.06 baht/person/year). The highest average OOPs was associated with cancer for outpatients (106,046 baht) and inpatients (194,199 baht). Tagrisso (osimertinib 80 mg), a targeted cancer therapy, incurred the highest average OOPs for outpatients and inpatients. Individuals aged 61 years and older incurred the highest average OOPs for outpatient (2,006.94 baht per/case/year). **Conclusion:** Despite the highest coverage benefits by CSMBS, beneficiaries still incurred certain OOPs, especially cancer patients and the elderly. This research could help the Comptroller General's Department improve CSMBS coverage for essential needs and provide beneficiaries with valuable insights for purchasing additional private health insurance for those at risk.

Key words: civil servant; private health insurance; out-of-pocket expenditures (OOPs); coverage; medicine benefits

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Introduction

The healthcare insurance system is a fundamental right guaranteed to all Thai citizens. Since 2002, Thailand has become a society with universal health coverage.¹ Every Thai

citizen is entitled to one of three government-sponsored health insurance schemes namely the Universal Health Coverage Scheme (UCS), the Social Security Scheme (SSS), and the

Civil Servant Medical Benefit Scheme (CSMBS).² According to data from 2021, the proportion of the Thai population covered by each scheme was 74.50%, 18.21%, and 6.97%, respectively. Although the proportion of people using the CSMBS is the smallest³, it is considered the best government-sponsored healthcare scheme in Thailand.¹ This is because it covers the highest medical expenses compared to other public healthcare schemes. The CSMBS is a welfare program provided by the government for civil servants, permanent employees, and pensioners, ensuring they receive medical care when needed. Beneficiaries of the CSMBS can claim medical expenses for themselves, their parents, spouses, and children (limited to three children aged 7 – 20 years). The scheme covers both outpatient and inpatient care. Outpatient services follow a fee-for-service model, while inpatient care operates under the Diagnosis Related Group (DRG) system.⁴

Since the CSMBS is considered the best government-sponsored healthcare scheme, beneficiaries are expected to have little to no out-of-pocket expenditures (OOPs).⁵ However, a review of the literature indicated that some beneficiaries still incur healthcare expenses that they must pay out-of-pocket and cannot reimburse. This may be due to cost-control measures set by the Comptroller General's Department.⁴ These measures include restrictions on reimbursement for non-essential drugs off of the National List of Essential Medicines (NLEM), partial coverage of hospital room charges, restrictions on the number of eligible children, and restrictions on direct billing for certain cancer treatments under the Oncology Prior Authorization (OCA) system.⁶ For expenses beyond the specified coverage, beneficiaries must pay out-of-pocket. These limitations suggest that the CSMBS may not fully meet the healthcare needs of all its beneficiaries.⁴ Moreover, there is currently insufficient research on the OOPs incurred by civil servants, including the causes of these expenses and their financial impact. Such data would be valuable in highlighting the risks civil servants face regarding OOPs, identifying gaps in coverage, and assessing the need for civil servants to consider purchasing private health insurance to mitigate these risks.

Thailand's private health insurance system is diverse, typically covering individuals aged 20 – 65. Premiums range from thousands to hundreds of thousands of Thai baht (THB), depending on coverage, age, and policy benefits. Common types include annual lump-sum, critical illness, children, and senior citizen insurance. Most plans start with life insurance

as primary coverage, with optional supplementary health coverage for additional medical benefits. Inpatient care is standard, while outpatient coverage usually requires higher premiums.⁷⁻³²

In Thailand, private health insurance is mainly purchased by higher-income individuals for access to private hospitals, which offer faster services and more treatment options.³³ It helps reduce financial risks from out-of-pocket expenses (OOPs). Research by Duangthipsirikul (2018) shows Thai households' OOPs on medicine and medical supplies rose from 21% in 1990 to 37% in 2015, with medicine alone accounting for 49%.⁷ Private insurance provides broader medication coverage, including drugs off of the NLEM⁵, and offers tax deductions.³³ According to Munpuk and Chaiyasoonthorn (2022), Thais over 30 are more likely to buy health insurance than those aged 20 – 30, with insurance agents being the most influential factor in purchasing decisions.³³

Songkhla province has a total of 9,750 civil servants working within its jurisdiction.³⁴ The province has healthcare facilities at all levels, including one regional hospital, one general hospital, 21 other government/community hospitals, and five private hospitals.³⁵ Additionally, Songklanagarind Hospital, affiliated with Prince of Songkla University, serves as the only high-level tertiary care (Excellence Center) medical school hospital in southern Thailand. It offers specialized treatment centers for various complex diseases.^{36,37} This research aimed to examine the behavior of civil servants in Songkhla Province regarding the utilization of the CSMBS and the purchase of private health insurance. Additionally, it sought to analyze the average OOPs among CSMBS beneficiaries and the specific sources of these expenses. The study included a breakdown of direct medical costs classified as OOPs, along with details on non-reimbursable medications and disease categories contributing to these out-of-pocket expenses. This information could be beneficial for civil servants in making informed decisions about planning and assessing the necessity of purchasing private health insurance based on potential OOPs. Additionally, it could provide valuable insights for the Comptroller General's Department and private health insurance companies to improve benefit packages, ensuring they better align with the needs of civil servants.

Methods

This study was structured into two components of which part 1 was a cross-sectional survey and part 2 was a retrospective cohort study. Ethical approval for Part 1 was granted by the the Human Research Ethics Committee, Health Science Section, Prince of Songkla University, in 2022 (Approval Code: HSc-HREC-64-045-1-3). Part 2 received approval from the Human Research Ethics Committee, Faculty of Medicine, Prince of Songkla University, in 2021 (Approval Code: 64-563-19-5).

In this study, out-of-pocket expenditures (OOPs) was defined as healthcare expenses that patients must pay out of their own pockets and cannot be reimbursed. Direct Medical Costs was defined as costs and resources spent on diagnosis, treatment, follow-up, rehabilitation, and end-of-life care. These included expenses such as medication costs, medical supplies, diagnostic tests, and X-ray fees.³⁸

Part 1: Survey on the utilization of the CSMBS, benefit coverage, and private health insurance purchasing behavior

This section surveys CSMBS usage among Songkhla Province civil servants, examining private health insurance purchases and out-of-pocket expenditures (OOPs)—unreimbursed healthcare costs. It aimed to assess the need for additional private insurance to mitigate financial risks. The study employed multistage sampling to ensure a representative sample.

In this first part, the study population consisted of civil servants working in Songkhla province. The researcher selected the participants based on the proportion of civil servants in Thailand, categorized into four main groups as follows.³⁴ For the first group, we recruited civilian government official beneficiaries (35.3%) including ministries with the highest proportion of civil servants (i.e., Ministry of Public Health, Ministry of Agriculture and Cooperatives, Ministry of Finance, Ministry of Interior, and other ministries). The second group consisted of teachers and educational personnel (33.2%). The third group was military personnel (17.0%) and the fourth group was police officers (14.5%). The sample size was determined using Cochran's formula³⁹, yielding 272 participants. To enhance data reliability regarding questionnaire completion, an additional 30% (82 participants) were included, leading to a final actual sample size of 354 participants.

Data collection procedure

We selected government agencies for data collection using convenience sampling considering the proportion of each affiliation. Questionnaires were distributed personally or through agency representatives until the target number of respondents was met, with a limit of ten respondents per agency to ensure evenly distributed characteristics of the participants. To be eligible, participants were volunteers who could read Thai, complete the questionnaire, and consent to the research. Follow-ups were conducted about seven days later to collect completed questionnaires, excluding those with less than 50% response. Data collection took place over one month in September 2022.

Research instruments

In this first part, a questionnaire with two sections developed by the researcher was used. In section 1, a survey on general information and CSMBS usage behavior contained 16 multiple-choice questions covering demographic characteristics (i.e., gender, age, education level, department, years of service, average monthly income, marital status) and the utilization of CSMBS for themselves and their families. Questions were, for example, "In the past three months, which aspects of the CSMBS have you used?" and "What are the reasons for out-of-pocket healthcare expenses for yourself or your family members that cannot be reimbursed?"

Section 2 contained seven multiple-choice questions on private health insurance purchasing behavior to assess the necessity of additional private health insurance for civil servants. Questions were, for example, "Have you purchased private health insurance?" and "In the past year, which aspects of private health insurance services have you or your family members used?" Additionally, respondents were asked to rate the importance of external factors influencing their decision to purchase private health insurance. The response was a 5-point rating scale ranging from 0-no influence on the decision to purchase at all to 5-the most significant influence on the decision to purchase.

Instrument quality assurance

Content validity of the questionnaire was evaluated by three faculty members from the Department of Social and Administrative Pharmacy according to research objectives, clarity, and comprehensiveness. A think-aloud method was conducted with 4 – 5 target-group participants to assess their

understanding of questions and response methods. Feedback from experts and participants was used to revise the questionnaire before further testing. The revised questionnaire was pilot tested with 30 civil servants in Songkhla province. The pilot test aimed to evaluate question comprehension, ease of response, and response trends. Data were used to test coding, analysis methods, and further refine the questionnaire before full implementation.

Part 2: Direct medical costs not eligible for reimbursement (out-of-pocket expenditures; OOPs) among civil servants utilizing CSMBS

This second part assessed the average per capita direct medical costs incurred by civil servants under CSMBS that were not reimbursable. We categorized non-reimbursable medical expenses including medications and disease groups from hospital databases using the patient perspective. We also identified characteristics of beneficiaries with high OOPs which could be useful in identifying the need for additional private health insurance.

The researcher reviewed the treatment records database of all civil servants under the CSMBS at Songklanagarind Hospital from January to December 2020. The data were obtained through the hospital's information technology department, which de-identified patient records by converting patient identifiers into coded data to ensure confidentiality and prevent personal identification.

Researcher instruments

We developed two data recording forms as follows. The first part was the hospital resource utilization and cost recording form, including both outpatient and inpatient services. The second part collected the medication usage and associated costs including reimbursable and non-reimbursable (out-of-pocket) medication expenses for both outpatient and inpatient services. The cost recording forms captured comprehensive data on patient demographics, healthcare resource utilization, and medication expenditures, etc. All costs are reported in THB in 2020.

Data analysis

In the first part, descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize demographic characteristics behavior in using CSMBS, and behavior in purchasing private health insurance.

Stepwise multiple linear regression was used to determine the relationship between relevant factors and the decision to purchase private health insurance. The independent variables included gender, education level, age, government affiliation, years of government service, average monthly income, and marital status. Statistical analyses were performed using the software program SPSS.⁴⁰

In the second part, data regarding diseases, service type (outpatient/inpatient), service category, prescribed medications, public health insurance reimbursement method, direct out-of-pocket medical costs, were summarized using descriptive statistics as appropriate. Due to the right-skewed cost distribution, alternative reporting methods were insufficient for estimating population-level costs, crucial for policy decisions.⁴¹ Thus, the mean was the primary metric. Total direct medical costs were calculated by multiplying service usage by unit costs and summing the products.⁴²

Results

Part 1: Survey on CSMBS utilization, entitlement coverage, and private health insurance purchasing behavior among government officials

The study included 313 government officials in Songkhla province who completed over 50% of the survey questions. Most respondents were female (57.51%), aged 30 – 40 years (36.74%), and had less than 10 years of government service (35.77%). The majority were married (53.04%), held at least a bachelor's degree (53.04%), and reported an average monthly income of 20,001 – 40,000 THB (50.16%) (Table 1).

CSMBS use and entitlement coverage

Of the 313 government officials, 72.20% used their benefits over the past three months, primarily for themselves (44.41%), with outpatient services during working hours being the most common (53.95%) (Table 2). However, 27.80% did not use the benefits at all, whether for themselves or for family members. The main reason (96.55%) was the absence of illness during the survey period. Additionally, 34.50% experienced OOPs for healthcare services for themselves, largely for purchasing medication from pharmacies (25.88% for self and 22.04% for family) (Table 2).

Table 1 Characteristics of beneficiaries under Civil Servant

Medical Benefit Scheme (CSMBS) (N = 313).

Characteristics		N	%	
Gender	Male	128	40.89	
	Female	180	57.51	
	Unspecified	5	1.60	
Marital status	Single	127	40.58	
	Married	166	53.04	
	Divorced/Separated	13	4.14	
	Widowed	7	2.24	
Age (years)	Below 30	55	17.57	
	30 - 40	115	36.74	
	40 -50s	82	26.20	
	50 and above	60	19.17	
	Unspecified	1	0.32	
Highest education	Below high school	5	1.60	
	High school	22	7.03	
	Diploma	25	7.99	
	Bachelor's Degree	166	53.04	
	Postgraduate Degree	94	30.02	
	Others	1	0.32	
Government affiliation	Ministry of Public Health	45	14.38	
	Ministry of Agriculture and Cooperatives	30	9.58	
	Ministry of Interior	27	8.63	
	Ministry of Finance	10	3.19	
	Ministry of Education and Science	90	28.76	
	Ministry of Defense	53	16.93	
	Royal Thai Police	43	13.74	
	Others	15	4.79	
	Years of employment	Below 10 years	112	35.77
		10-19 years	97	31.00
20-29 years		67	21.41	
Monthly Income	30 years and above	37	11.82	
	Below 20,000 THB	64	20.45	
	20,001 – 40,000 THB	157	50.16	
	40,001 – 60,000 THB	78	24.92	
60,001 and above THB	14	4.47		

Table 2 proportion of CSMBS utilization over the past three months the beneficiaries and their family members (N = 313).

CSMBS utilization	N	%
Family members eligible for CSMBS (n = 313)		
Spouse	110	35.14
Mother	193	61.66
Father	150	47.92
Child / Children	118	37.70
Individuals who have utilized your CSMBS in the past 3 months (n = 313)		
Did not use the CSMBS at all	87	27.80
Use for self	139	44.41
Mother	64	20.45
Father	52	16.61
Child / Children	37	11.82
Spouse	35	11.18
Reasons why the beneficiaries and their family members did not use CSMBS in the past 3 months (n = 87)		
No illness	84	96.55
Used private health insurance	12	13.79
Other reasons (e.g., visited private clinics, bought medicine from drugstores, parents used other family members' benefits)	6	6.90
Used Other Healthcare Benefits (e.g., UCS, SSS)	5	5.75
Types of services utilized under CSMBS by beneficiaries or their family members (n = 228)		
Outpatient services during office hours	123	53.95
Outpatient services off office hours	65	28.51
Annual health check-up	38	16.67
Inpatient services	32	14.04
Other health examinations	17	7.46
Surgery	13	5.70
Emergency accidents	11	4.82
Others	6	2.63

Note: Results are shown with duplicate counts as respondents could select more than one option.

The purchase and use of private health insurance

In Songkhla province, 31.95% of government officials purchased private health insurance for themselves or their family members, primarily for their children (49.00%) (Table 3). The main reason was to cover medical treatment or critical illness (96.00%). The majority of those who decided to purchase private health insurance were women (69.00%), aged 31 - 40 years (34.00%), married (38.00%), and earned 20,001 - 30,000 THB monthly (21.00%).

Table 3 The purchasing and utilization behavior of private health insurance among CSMBS beneficiaries in Songkhla province (N = 313).

Behavior of purchasing and using private health insurance	N	%
Purchasing private health insurance for oneself or family members (n = 313)		
Purchase	100	31.95
No purchase	206	65.81
No answer	7	2.24
Reasons for not purchasing private health insurance for oneself or family members (Multiple responses allowed, results displayed in descending order of frequency) (n = 206)		
CSMBS fully covers potential healthcare expenses	133	64.56
Perceived as an unnecessary expense	74	35.92
Willing to pay out-of-pocket for uncovered medical expenses	68	33.01
Do not see the necessity of purchasing	45	21.84
Others	10	4.85
Individuals who were the beneficiaries (Multiple responses allowed, results displayed in descending order of frequency) (n = 100)		
Child / Children	49	49.00
Self	34	34.00
Spouse	23	23.00
Mother	17	17.00
Others include siblings, etc.	17	17.00
Father	12	12.00
Source of information influencing the decision to purchase private health insurance (Multiple responses allowed, results displayed in descending order of frequency) (n = 313)		
Insurance agent	109	34.82
Relatives or friends	91	29.07
Online media	47	15.02
Television media	19	6.07
Others, including self-study, etc.	17	5.43
Radio media	0	0
The coverage of private health insurance purchased for oneself or family members (Multiple responses allowed, results displayed in descending order of frequency) (n = 100)		
Medical expenses/Critical illness insurance	96	96.00
Accident insurance	92	92.00
Compensation for hospitalization	74	74.00
Inpatient and outpatient medical expenses within the specified coverage limit (excluding critical illnesses)	64	64.00
Inpatient medical expenses within the specified coverage limit (excluding critical illnesses)	60	60.00
Others	15	15.00
Services from private health insurance used by oneself or family in the past year (Multiple responses allowed, results displayed in descending order of frequency) (n = 100)		
Not used	54	54.00
Accident insurance coverage	40	40.00
Inpatient and outpatient medical expenses within the specified coverage limit (excluding critical illnesses)	37	37.00
Inpatient medical expenses within the specified coverage limit (excluding critical illnesses)	32	32.00
Compensation for hospitalization	20	20.00
Medical expenses or critical illness insurance	16	16.00
Others	6	6.00

Note: Results are shown with duplicate counts as respondents could select more than one option from the 100 participants who purchased private health insurance

Regarding the use of benefits, accident insurance was the most used compared to other services in the past year (40.00%). However, a significant portion of government officials (54.00%) did not use their private health insurance benefits, whether for themselves or their family. Insurance agents were the primary information source (34.82%), while the main reason for not purchasing was confidence in government health coverage (64.56%). Key factors in choosing private insurance included service accessibility (average score of 3.75 out of 5 points), coverage for non-reimbursed treatments (3.62 points), tax deductions (3.49 points), aging (3.48 points), frequent illness (3.38 points), reasonable costs (3.27 points), and agent influence (2.79 points). The least important factor was following social trends (2.13 points) (Table 3).

Based on the multiple linear regression analysis, gender was the only statistically significant predictor (P -value < 0.05) influencing government officials' decision to purchase private health insurance, with an adjusted R^2 of 0.017. This indicates that gender explained only 1.70% of the variation in purchasing behavior, suggesting the model has low predictive efficiency. Other variables were not significant determinants. Further studies should explore additional factors to improve the model's effectiveness.

Part 2: Direct medical costs not eligible for reimbursement (out-of-pocket expenditures; OOPs) among civil servants utilizing CSMBS

In 2020, Songklanagarind Hospital recorded 51,774 government officials (57.07% of 90,724 total users) incurring out-of-pocket (OOP) expenses across services. This included 43,971 users for outpatient department (OPD), 13,620 users for inpatient department (IPD), and 5,817 combined OPD/IPD users. The age range of beneficiaries ranged from newborns to 106 years old. For adults, the age group of 66 and older had the highest number of users (17,280), while for children, the age group of 0 - 5 years had the highest number of users incurring OOPs (2,429) (Table 4). The leading diseases causing OOPs were hypertension (10.32%) for OPD and cataracts in the elderly (5.77%) for IPD (Table 5).

Table 4 CSMBS beneficiaries with out-of-pocket health expenditures (OOPs) at Songklanagarind Hospital in 2020.

Characteristics	N (%)		
	OPD	IPD	Total*
Gender			
Male	18,208 (58.59)	5,605 (41.15)	21,113 (40.80)
Female	25,762 (41.41)	8,016 (58.84)	30,659 (59.20)
Unknown	1 (0.00)	1 (0.01)	1 (0.00)
Age (Years)			
0 - 5	1,261 (2.87)	1,461 (10.71)	2,429 (4.69)
6 - 10	715 (1.63)	190 (1.39)	841 (1.62)
11 - 15	681 (1.55)	140 (1.03)	771 (1.49)
16 - 20	896 (2.04)	134 (0.98)	981 (1.89)
21 - 25	152 (0.35)	156 (1.15)	293 (0.57)
26 - 30	823 (1.87)	705 (5.18)	1,409 (2.72)
31 - 35	1,322 (3.01)	1,094 (8.03)	2,197 (4.24)
36 - 40	1,577 (3.59)	793 (5.82)	2,172 (4.19)
41 - 45	2,284 (5.19)	510 (3.74)	2,577 (4.98)
46 - 50	3,084 (7.01)	537 (3.94)	3,355 (6.48)
51 - 55	3,838 (8.73)	672 (4.93)	4,186 (8.08)
56 - 60	5,728 (13.03)	1,112 (8.16)	6,265 (12.10)
61 - 65	6,398 (14.55)	1,390 (10.21)	7,037 (13.59)
66 and above	15,212 (34.60)	4,726 (34.70)	17,280 (33.36)
Total number of beneficiaries	43,971 (100)	13,620 (100)	51,774 (100)

* Some beneficiaries received both OPD and IPD services.

Table 5 CSMBS beneficiaries with out-of-pocket health expenditures (OOPs) at Songklanagarind Hospital in 2020 by diagnoses, clinics/wards, and type of service.

Diseases/Services		OPD	IPD	N (%)
Primary diagnosis				
First	Essential primary hypertension	✓		4,555 (10.32)
Second	Hyperlipidemia, unspecified	✓		1,929 (4.37)
Third	Allergic rhinitis, unspecified	✓		1,285 (2.91)
Fourth	Hyperplasia of prostate	✓		1,211 (2.74)
Fifth	Atherosclerotic heart disease	✓		925 (2.10)
Others	Others	✓		34,238 (77.56)
First	Senile cataract, unspecified		✓	903 (5.77)
Second	Maternal care due to uterine scar from previous surgery		✓	484 (3.09)
Third	Spontaneous vertex delivery		✓	305 (1.95)
Fourth	Other specified complications of labor and delivery		✓	205 (1.31)
Fifth	Maternal care for disproportion, unspecified		✓	184 (1.18)
Others	Others		✓	13,571 (86.70)
Clinics/wards				
First	Internal medicine (off office hours)	✓		6,925 (15.75)
Second	Internal medicine (during office hours)	✓		4,569 (10.39)
Third	Orthopedics (cast) (off office hours)	✓		4,523 (1.29)
Fourth	Ophthalmology (off office hours)	✓		3,810 (8.66)
Fifth	Otolaryngology (ENT) (off office hours)	✓		2,979 (6.77)
Others	Others	✓		21,165 (48.13)
First	Special obstetrics		✓	1,374 (8.70)
Second	Rattanaachiwarak 11 premium		✓	1,314 (8.32)
Third	General special ward		✓	957 (6.06)
Fourth	Special gynecology		✓	689 (4.36)
Fifth	Rattanaachiwarak 10 premium		✓	653 (4.13)
Others	Others		✓	10,808 (68.43)
Total number of beneficiaries utilizing CSMBS		43,971	13,620	51,774

* Each beneficiary may receive treatment for their primary diagnosed condition or visit different clinics/wards during each visit.

Out-of-pocket health expenditures by service type

For OPD services, the highest average OOPs per user were for medical food/enteral feeding (average 4,796.00 THB, maximum 66,637.00 THB), followed by prosthetic devices (average 2,884.03 THB, maximum 93,400.00 THB), and medications and intravenous nutrients used in the hospital (average 2,247.50 THB, maximum 821,940 THB) (Table 6). Total annual OOPs reached 88,247,086.00 THB, with medications and intravenous nutrients used in the hospital accounting for 44.86% (39,590,380.00 THB) (Figure 1). The majority of these OOPs were for medications not listed in the NLEM, comprising 99.81% of all medications and intravenous nutrients.

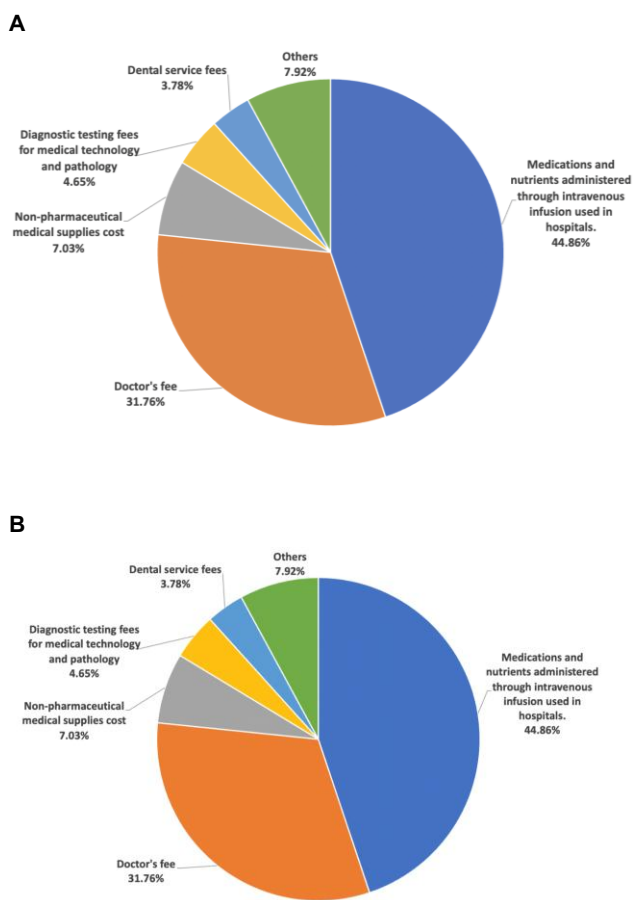


Figure 1 The proportion of out-of-pocket expenditures (OOPs) among CSMBs beneficiaries who accessed services at Songklanagarind Hospital in 2020, classified by service type: A) Outpatient (OPD) and B) Inpatient (IPD).

For IPD services, the top three OOPS categories per user are medical fees (average 23,906.68 THB, maximum 141,967.00 THB), followed by surgery, childbirth, procedures, and anesthesiology services (average 9,097.33 THB,

maximum 193,320 THB), and prosthetic devices/medical equipment (average 8,134.64 THB, maximum 933,900 THB) (Table 6). The costs for room/food fees, doctor fees, and prosthetic devices/medical equipment accounted for 27.61%, 21.71%, and 15.43% of the total IPD OOPs, respectively (Figure 1).

Out-of-pocket health expenditures by diseases

The disease resulted in the highest average OOPs for OPD services was ulcerative chronic, with only 1 beneficiary incurring OOPs for this condition (106,046 THB). The second-highest disease was Crohn's disease of the small intestine (average 77,424.50 THB, maximum 213,072.00 THB, 4 beneficiaries), and the third was monoclonal gammopathy (average 53,322.00 THB, 1 beneficiary).

At the same time, for IPD services, the disease group that resulted in the highest average OOPs per user was neoplasm of uncertain or unknown behavior of the brain and central nervous system (supratentorial brain tumors) (194,199.00 THB, 1 beneficiary), followed by aortic valve stenosis with insufficiency (average 119,059.13 THB, maximum 834,245.00 THB, 8 beneficiaries), and aortic valve stenosis (average 112,634.88 THB, maximum 829,164 THB, 33 beneficiaries) as shown in Table 7.

Health expenditures paid by the beneficiaries in 2020

In 2020, OPD beneficiaries had an average out-of-pocket (OOP) expenditure of 2,006.94 THB per person, with the highest OOP reaching 821,940 THB (Table 6). This case involved a 67-year-old patient treated for two conditions specifically descending colon malignant neoplasm and chronic viral hepatitis B without delta-agent, along with follow-up examinations after combined treatment for malignant neoplasm. The primary expense was attributed to off-label medications.

For IPD services, the average annual OOP per beneficiary was 17,990.21 THB, with the highest OOP reaching 949,636.00 THB (Table 6) for the treatment of mitral valve insufficiency. The majority of this expense was due to a non-reimbursable prosthetic valve. The top three IPD wards with the highest average OOPs per beneficiary were all from premium wards.

Table 6 Out-of-pocket health expenditures (OOPs) among CSMBS beneficiaries who accessed services at Songklanagarind Hospital in 2020, categorized by type of service: outpatient (OPD) and inpatient (IPD), with the top 5 highest average costs per patient.

Type of Service	Out-of-pocket expenditures (OOPs) per beneficiary, THB						Total OOPs, THB	Number of beneficiaries
	Mean	SD	Median	IQR	Max	Min		
Outpatient services (OPD) (Total number of beneficiaries: 43,971)								
Medical/food via tube feeding	4,796.00	7,753.07	1,749.00	4,494.00	66,637.00	40.00	2,599,451.00	542
Prosthetic devices	2,884.03	6,877.28	900.00	2,240.00	93,400.00	4.00	3,241,646.00	1,124
Medications and intravenous nutrition used in the hospital	2,247.50	16,217.12	373.00	753.00	821,940.00	1.00	39,590,380.00	17,615
Diagnostic procedures using specialized techniques	2,216.10	2,424.84	530.00	3,495.00	7,350.00	30.00	97,510.00	44
Non-drug medical supplies	1,227.20	2,651.10	520.00	1,341.75	63,219.00	2.00	6,207,371.00	5,058
OOPs for all types of services received under OPD throughout the year 2020	2,006.94	10,699.41	710.00	1,273.00	821,940.00	2.00	88,247,086.00	43,971
Inpatient services (IPD) (Total number of beneficiaries: 13,620)								
Doctor's fees	23,906.68	16,068.19	19,410.00	21,382.00	141,967.00	100.00	53,192,370.00	2,225
Surgery, delivery, procedures, and anesthesia services	9,097.33	11,553.64	6,900.00	9,120.00	193,320.00	60.00	25,936,481.00	2,851
Prosthetic devices / medical treatment equipment	8,134.64	36,441.85	1,768.00	5,063.00	933,900.00	4.00	37,817,956.00	4,649.00
Room and meal charges	6,095.06	9,972.57	3,300.00	4,410.00	183,410.00	7.00	67,649,047.00	11,099
Radiology diagnosis and treatment fees	3,192.83	7,342.08	940.00	1,750.00	127,500.00	140.00	2,538,296.00	795
OOPs for all types of services received under IPD throughout the year 2020	17,990.21	36,847.56	6,400.00	17,830.50	949,636.00	2.00	245,026,716.00	13,620
OOPs for all types of services throughout the year 2020	6,437.09	22,821.75	1,000.00	2,897.00	951,286.00	2.00	333,273,802.00	51,774

Note: SD = Standard deviation, IQR = Interquartile range, Max = Maximum, Min = Minimum.

Table 7 Out-Of-pocket health expenditures (OOPs) among CSMBS beneficiaries who accessed services at Songklanagarind Hospital in 2020, categorized by diseases for both outpatient and inpatient services (OPD and IPD), with the top 5 highest average expenditures per patient.

Diseases	Out-of-pocket expenditures (OOPs) per beneficiary, THB						Total OOPs, THB	Number of beneficiaries
	Mean	SD	Median	IQR	Max	Min		
Outpatient services (OPD) (Total number of beneficiaries: 43,971)								
Ulcerative chronic rectosigmoiditis	106,046.00	0	106,046.00	0	106,046.00	106,046.00	106,046.00	1
Crohn's disease of small intestine	77,424.50	87,421.57	48,123.00	124,457.50	213,072.00	380.00	309,698.00	4
Monoclonal gammopathy	53,322.00	0	53,322.00	0	53,322.00	53,322.00	53,322.00	1
Bone and articular cartilage of limb malignant neoplasm unspecified	36,678.60	72,412.63	365.00	906.00	181,502.00	100.00	183,393.00	5
Keratoconus	20,700.00	0	20,700.00	0	20,700.00	20,700.00	20,700.00	1
OOPs for all diseases received under OPD throughout the year 2020	2,006.94	10,699.41	710.00	1,273.00	821,940.00	2.00	88,247,086.00	43,971
Inpatient services (IPD) (Total number of beneficiaries: 13,620)								
Neoplasm of uncertain or unknown behavior of brain and central nervous system, Brain supratentorial	194,199.00	0	194,199.00	0	194,199.00	194,199.00	194,199.00	1
Aortic valve stenosis with insufficiency	119,059.13	289,905.45	11,700.50	0	834,245.00	235.00	952,473.00	8
Aortic valve stenosis	112,634.88	265,835.99	4,750.00	10,971.00	821,614.00	155.00	3,716,951.00	33
Discitis, unspecified Lumbosacral region	105,279.00	0	105,279.00	0	105,279.00	105,279.00	105,279.00	1
Aneurysm and dissection of vertebral artery	93,841.50	132,570.50	93,841.50	93,841.50	187,583.50	100.00	187,685.50	2
OOPs for all diseases received under IPD throughout the year 2020	17,990.21	36,847.56	6,400.00	17,830.50	949,636.00	2.00	245,026,716.00	13,620
OOPs for all diseases throughout the year 2020	6,437.09	22,821.75	1,000.00	2,897.00	951,286.00	2.00	333,273,802.00	51,774

Note: SD = Standard deviation, IQR = Interquartile range, Max = Maximum, Min = Minimum.

Table 8 Out-of-pocket health expenditures (OOPs) among CSMBS beneficiaries who accessed services at Songklanagarind Hospital in 2020, categorized by ages for both outpatient and inpatient services (OPD and IPD)

Ages	Mean OOPs, THB	Total OOPs, THB	Number of beneficiaries
Outpatient Services (OPD) (years)			
0 – 20 s	1,382.50	4,912,105.00	3,553
21 – 40 s	1,844.50	7,145,474.00	3,874
41 – 60 s	1,821.00	27,194,106.00	14,934
61 and above	2,267.30	48,995,401.00	21,610
OOPs for all ages received under OPD throughout the year 2020	2,006.94	88,247,086.00	43,971
Inpatient Services (IPD) (years)			
0 – 20	5,698.88	10,970,338.00	1,925
21 – 40	17,140.70	47,102,653.00	2,748
41 – 60	22,440.56	63,529,226.00	2,831
61 and above	20,180.59	123,424,499.00	6,116
OOPs for all ages received under IPD throughout the year 2020	17,990.21	245,026,716.00	13,620

Table 9 Out-of-pocket health expenditures (OOPs) on medications among CSMBS beneficiaries who accessed services at Songklanagarind Hospital in 2020, categorized by medications for both outpatient and inpatient services (OPD and IPD), with the top 5 highest average expenditures per patient.

Medications	Out-of-pocket expenditures (OOPs) on medications per beneficiary, THB						Total OOPs, THB	Number of beneficiaries
	Mean	SD	Median	IQR	Max	Min		
Outpatient services (OPD) (Total number of beneficiaries: 17,614)								
Tagrisso 80 mg tablet	229,950.00	0	229,950.00	0	229,950.00	229,950.00	459,900.00	2
Xalkori 250 mg capsule	186,120.00	0	186,120.00	0	186,120.00	186,120.00	186,120.00	1
Afinitor 10 mg tablet	111,390.00	0	111,390.00	0	111,390.00	111,390.00	111,390.00	1
Fasenra 30 mg/ml	95,398.00	0	95,398.00	0	95,398.00	95,398.00	95,398.00	1
Entyvio 300 mg	95,186.00	0	95,186.00	0	95,186.00	95,186.00	95,186.00	1
OOPs on medications for OPD services throughout the year 2020	2,247.67	16,218.03	373.00	753.00	821,940.00	1.00	39,590,380.00	17,614
Inpatient services (IPD) (Total number of beneficiaries: 6,010)								
Tagrisso 80 mg tablet	471,397.50	634,136.90	471,397.50	448,402.50	919,800.00	22,995.00	942,795.00	2
Factor VII a (1 mg/ml)	154,320.00	0	154,320.00	0	154,320.00	154,320.00	154,320.00	1
Tafinlar 75mg capsule	133,952.00	0	133,952.00	0	133,952.00	133,952.00	133,952.00	1
Opdivo 100mg/10ml Injection	129,592.00	0	129,592.00	0	129,592.00	129,592.00	129,592.00	1
Mekinist 2mg tablet	128,828.00	0	128,828.00	0	128,828.00	128,828.00	128,828.00	1
OOPs on medications for IPD services throughout the year 2020	2,173.50	17,784.94	345.00	905.00	924,468.00	1.00	13,062,706.00	6,010
OOPs on medications throughout the year 2020	2,315.64	17,069.77	373.00	828.00	924,468.00	1.00	52,653,086.00	22,738

Note: SD = Standard deviation, IQR = Interquartile range, Max = Maximum, Min = Minimum.

CSMBS users incurred an average out-of-pocket payment (OOP) of 6,437.09 THB per person per year (median: 1,000.00 THB), with the highest OOP reaching 951,286.00 THB for a patient treated for mitral valve insufficiency using both OPD and IPD services. The lowest OOP recorded was 2.00 THB (Table 6).

The diseases that resulted in significant OOPs for beneficiaries were hypertension (10.32%) and cataracts in the elderly (5.77%) for OPD and IPD services, respectively (Table 5). Hypertension contributed to total OOPs of 4,945,498 THB per year, while cataracts in the elderly contributed to 20,315,216.00 THB per year. However, these two diseases did not result in the highest average OOPs per beneficiary.

When analyzed by age group, beneficiaries aged 61 and above had the highest average OOPs for OPD services (2,006.94 THB per person per year). For IPD services, beneficiaries aged 41 – 60 years had the highest average OOPs (22,440.56 THB per person per year), followed by those aged 61 and above (20,180.59 THB per person per year) (Table 8). In 2020, all CSMBS beneficiaries accumulated 333,283,802.00 THB in unreimbursed direct medical costs (Table 7), accounting for 21.57% of their total annual healthcare expenditure of 1,545,009,105 THB.

OOPs arising from medication expenses

In 2020, 22,738 CSMBS beneficiaries (43.92% of all CSMBS) faced non-reimbursable medication costs: 17,614 OPD, 6,010 IPD services, and 886 both OPD and IPD services. For OPD, 54.14% of costs were due to non-NLEM

drugs or brand-name drugs with generic alternatives, making up 32.22% of total OPD drug expenses. For IPD, 22.16% of costs stemmed from non-NLEM drugs or off-label use.

Out-of-pocket medication expenses for outpatient services

In 2020, outpatient (OPD) users in Thailand had average out-of-pocket (OOP) medication expenses of 2,247.67 baht per person annually. The most commonly paid medication was Vaxigrip Tetra (quadrivalent influenza vaccine), with 1,052 users paying an average of 308.04 baht each. The highest OOP expense was for Tagrisso 80 mg (Osimertinib), averaging 229,950 baht per person yearly, used by only 2 patients, twice per year. The second one was Xalkori 250 mg (Crizotinib) at 186,120 baht per person yearly. Both are non-NLEM drugs for malignant neoplasms of overlapping bronchus and lung sites. The third one was Afinitor 10 mg (Everolimus), costing 111,390 baht per person yearly. It is a non-NLEM chemotherapy drug used off-label for stage 4 chronic kidney disease. The highest individual OOP expense was 821,940 baht for Adcetris 50mg Injection (brentuximab vedotin), a non-NLEM chemotherapy for Hodgkin lymphoma, with one generic alternative available in the hospital formulary (Table 9).

Out-of-pocket medication expenses for inpatient services

The drug with the most IPD users (8,609 cases) requiring non-reimbursable payments was Nimbox 2 mg/ml (5 ml) Inj, averaging 242.22 THB OOP per case. The drug with the

highest average OOP cost per IPD beneficiary was Tagrisso 80 mg, at 471,397.50 baht per case annually. The second drug was Factor VIIIa (1 mg/ml), used for neoplasms of uncertain behavior of the brain and central nervous system (Brain supratentorial), averaging 154,320.00 baht OOP per case annually. The third one was Tafinlar 75 mg Capsule, averaging 133,952.00 THB OOP per case annually. All three are non-listed drugs in the NLEM.

In 2020, IPD beneficiaries faced average non-reimbursable drug costs of 2,173.50 baht per case annually. The highest OOP cost was 924,468.00 baht annually for a patient with malignant neoplasm of bronchus or lung, primarily due to off-label use of Tagrisso 80 mg, accounting for 99.50% of drug expenses. This patient had one 4-month stay in the Medical Respiratory Care Unit (MRCU) ward (Table 9).

Out-of-pocket medication expenses paid by the beneficiaries in 2020

In 2020, beneficiaries had average out-of-pocket (OOP) medication expenses of 2,315.64 baht per person per year (median: 373.00 baht), ranging from 1.00 baht to 924,468.00 baht for an inpatient (IPD). Total OOP medication expenses for all beneficiaries reached 52,653,086.00 baht. Details are in Table 9.

Discussion and Conclusion

This study examined private health insurance purchasing and usage along with OOPs under the CSMBS among government officials in Songkhla, Thailand. Findings show 31.95% of officials purchased private health insurance, mostly females (69%) aged 31 - 40 (34%), married (38%), earning 20,001 - 30,000 baht monthly (21%). However, 54% did not use their insurance. Despite CSMBS being the best government healthcare, users faced average OOPs of 6,437.96 baht/year (median: 1,000 baht). Additionally, there was a trend of higher OOPs among older beneficiaries. Those aged 61 and above had the highest OOPs for OPD services, with an average of 2,006.94 THB per person per year. For IPD services, this age group had the second-highest OOPs, following the 41-60 years age group, with an average of 22,440.56 THB per person per year. Diseases associated with high OOPs were severe conditions, consistent with cancer, cardiovascular diseases, and neurological disorders.

A 2020 review of hospital data found that CSMBS users utilized OPD services more than IPD, consistent with the 2017 Thailand Health and Welfare Survey.⁴³ The largest portion of OPD out-of-pocket expenses was for medications and intravenous nutritional supplies (44.86%, average of 2,247.67 baht per case annually), with chemical drugs accounting for 32.22%. The highest average OOPs per user across both OPD and IPD services was Tagrisso 80 mg tablet (Osimertinib 80 mg), a chemotherapy drug used for treating malignant neoplasms of overlapping sites of the bronchus and lung, averaging 350,673.75 baht per case (four cases in 2020). The highest OOP case was an 85-year-old patient treated for mitral valve insufficiency, costing 951,286 baht. Such conditions are often covered by private critical illness insurance, which typically includes cancer, cardiovascular, and neurological diseases.⁸⁻¹⁰ This aligns with concerns among civil servants, as 96.00% in Songkhla province prioritized health insurance covering critical illnesses and medical expenses.

Chronic ulcerative inflammation of the rectum and sigmoid colon had the highest average out-of-pocket (OOP) costs per case annually for OPD services (106,046 baht), while neoplasms of uncertain behavior of the brain and central nervous system topped the list for IPD services (194,199 baht). These conditions pose a cancer risk, with most OOP costs stemming from chemotherapy. The top three drugs with the highest average OOP costs both for OPD and IPD are primarily chemotherapy drugs. Although these cases involve few patients (1 - 2 per drug annually), they create a significant financial burden due to non-reimbursable costs. To address this, the Comptroller General's Department has proposed a project to expand benefits for cancer and hematology patients who require high-cost medications (Oncology Prior Authorization: OCPA) to reduce the financial burden on patients. In 2020, 21 drugs were eligible for direct payment⁶, which was an increase from 2018 when only 6 drug items were covered.⁴⁴

The hospital database review found that Tagrisso 80 mg has the highest average OOP costs in both OPD and IPD settings. Despite this drug being included in the OCPA program, its use off of the approved indications meant that patients still had to bear the costs themselves. Furthermore, other drugs with high OOPs in the top five list for both OPD and IPD were primarily oncology and hematology medications also fall outside OCPA criteria. This study's findings could

serve as valuable information for the Comptroller General's Department in making decisions to expand the coverage of Tagrisso 80 mg reimbursement, as well as to consider adding more drugs, particularly cancer medications, to enhance drug accessibility and reduce patient burden. In 2021, the Department of Comptroller General revised the eligibility criteria for Tagrisso 80 mg, making it more accessible to patients.⁴⁵ However, even with these adjustments, there are still patients incurring OOPs for this drug. Additionally, this data could assist private insurance companies targeting government employees in designing cancer coverage policies, particularly for elderly individuals, who face a higher incidence of cancer with age.⁴⁶

The average out-of-pocket payments for IPD services (17,990.21 THB per person per year) were significantly higher than for OPD services (2,006.94 THB per person per year), consistent with research by Sukhawan (2019), which found that OOPs for IPD services were higher than for OPD services across all age groups.⁴⁷ Room and meal charges accounted for the largest share of IPD OOPs (27.61%, 6,095.06 THB/person/year), with premium and special rooms reflecting a demand for comfort. This aligns with the findings of the first part of the study, which showed that comfort was the most influential factor in government employees' decision to purchase private health insurance (with a score of 3.75 out of 5 points).

Three chemotherapy drugs (Xalkori 250 mg, Fasenra 30 mg/ml, and Entyvio 300 mg) and two targeted therapy drugs (Tafinlar 75 mg, Mekinist 2 mg) were among the top five drugs with the highest OOPs for both OPD and IPD services. These are off-label, originator drugs with generic alternatives, leading to higher OOPs as patients bear the costs. This aligns with Saichon (2019), which found that government employees incur higher OOPs than universal health insurance beneficiaries due to greater healthcare needs and financial capacity.⁵ Government employees may purchase life and health insurance to cover non-reimbursable expenses, such as room upgrades, special physician fees, and death compensation, particularly when seeking additional treatment options or preferring more effective medications not covered by their public insurance.⁴⁸ However, the premiums for such policies may exceed the actual OOPs incurred. This is because private health insurance market strategies typically focus on covering IPD services, which have lower premiums, while offering OPD coverage at higher costs.⁸⁻¹⁰

We found that beneficiaries aged over 60 represented the largest age group using the CSMBS in 2020. This is partly due to Thailand transitioning into an aging society, consistent with data from the National Statistical Office showing an increase in the proportion of the population aged 60 and older, from 12.68% in 2012 to 19.21% in 2023, with a continuing upward trend.⁴⁹ Additionally, this age group incurred the highest average OOP for OPD services (2,267.30 THB per person per year) compared to other age groups and ranks second for IPD services (average OOP of 20,180.59 THB per person per year). Data from the Thailand Development Research Institute in 2017 revealed that homebound elderly individuals have average monthly expenses of 9,667 THB per person, while bedridden patients require long-term care costs averaging 19,129 THB per person per month. Most of these expenses fall under the responsibility of their families, covering equipment, supplies, caregivers, and transportation.⁵⁰ Without long-term health expenditure planning, these costs burden households. Therefore, planning for the healthcare expenses of the elderly is crucial.

Private health insurance is available only to individuals aged 65 or younger, with coverage extending until age 90. A key condition excludes pre-existing medical conditions unless the buyer pays a higher premium. Purchasing insurance at a younger age, before any illness occurs, results in lower premiums.⁸⁻¹⁰ The hospital database review found that beneficiaries under 40 used hospital services less than those aged 41 and above, suggesting fewer health issues in the younger group. Part 1 of the study also showed that civil servants aged 31 - 40 were the most likely to purchase private health insurance. This is consistent with a 2022 study by Munpuk and Chaiyasoonthorn, which found higher insurance uptake among Thais over 30 compared to those aged 20 - 30. Private insurers should target individuals aged 30 and above,³³ particularly those aged 30 - 40, as they are financially stable and have fewer health issues, making them ideal candidates for private health insurance.

The survey revealed that 49% of civil servants prioritize purchasing private health insurance for their children. Premiums for children aged 0 - 5 are the highest, averaging 89,381 baht annually, compared to other age groups.¹⁹⁻²¹ Since 2023, private insurers have introduced stricter conditions, such as co-payments and deductibles, for this age group.^{8-10,51} Additionally, some companies only offer child policies to existing customers or require parents to purchase

additional coverage.^{16-17, 20,51} Data from the hospital database showed that while children aged 0 - 5 have a higher number of beneficiaries compared to other age groups, their average annual out-of-pocket (OOP) costs per case for outpatient (OPD) services (2,192.52 baht) and inpatient (IPD) services (4,529.00 baht) were lower than private insurance premiums. Therefore, purchasing insurance primarily for general medical expenses for their children may not be necessary. Common services for this age group included singleton hospital births (1,006 cases), ankyloglossia (477 cases), and low birthweight deliveries (272 cases). The highest OOP costs were for immunization against diphtheria-tetanus pertussis with poliomyelitis (73,513 baht annually for OPD) and acute lymphoblastic leukemia treatment (287,870 baht annually for IPD). Private insurance may still be worthwhile for civil servants seeking convenience, reduced wait times, or coverage for severe illnesses with potentially high OOP costs.

Many private health insurers target civil servants, offering plans that cover costs beyond CSMBS, focusing on OPD services at private hospitals for convenience and hospitalization compensation.⁴⁸ Our survey found 45% of civil servants bought private health insurance through agents, consistent with research showing agents have the most influence (30.50%) on health insurance decisions in Thailand.³³ Meanwhile, 28.17% did not purchase private insurance, believing CSMBS fully covers their needs. Thus, agents are crucial in informing civil servants about additional benefits.

This study has several limitations. In the first part, the first limitation is that the survey on the utilization of CSMBS, as well as the purchase and use of private health insurance among government employees relied on self-reported data, which may introduce recall bias.⁵² To mitigate this, CSMBS data were limited to the past three months, while private insurance data covered the past year to align with policy durations. Second, since the study was conducted in 2020 during the COVID-19 pandemic, the survey may reflect inflated out-of-pocket payments (OOPs) due to reduced hospital access and increased purchases of medications, sanitizers, masks, and ATKs for self-care. National data show household healthcare spending rose from 45.9% (2021) to 53.2% (2022) during the pandemic.⁵³ Third, although the participant characteristics were proportionally distributed across ministries in Songkhla province, the use of

convenience sampling for agency selection and respondent recruitment may limit the findings' generalizability.

For the second part of this study, several limitations were identified. First, due to COVID-19, hospitals reduced overcrowding by postponing non-urgent appointments, mailing medications to chronic patients, and delaying non-emergency procedures. This likely resulted in lower-than-normal OOPs in the 2020 database, as patient volumes in 2020 were significantly lower than in 2019 and post-pandemic years. Second, discrepancies in recording patient entitlements in the premium ward database led to an overrepresentation of CSMBS beneficiaries. Upon reviewing the data, the patient with the highest OOPs was found in a 24 years old person, unusually young for a CSMBS user. Further review confirmed this patient, and others were incorrectly recorded as civil servant beneficiaries. Initially, the researchers excluded data from patients with such discrepancies. However, with 2,053 beneficiaries in this ward annually, a comprehensive individual review was not feasible, making it difficult to estimate the extent of similar errors. These discrepancies potentially inflated OOP estimates for this ward. Nevertheless, the researchers verified and confirmed that the top 20 patients with the highest OOPs in the premium ward were genuine beneficiaries, and no such discrepancies were found in other wards. Third, the study focused on collecting OOPs related to direct medical costs recorded in the hospital database. Therefore, the OOPs data did not include other expenses, such as travel, accommodation, or caregiver costs.

Additionally, the study has limitations due to differing participants in its two parts, preventing direct comparisons. The first part surveyed Songkhla government employees on healthcare benefit utilization and private health insurance decisions, while the second part analyzed hospital data, including claims by employees and their dependents. The data were limited to a single hospital, which may not represent province-wide trends. As a tertiary referral hospital, Songklanagarind Hospital serves patients from multiple southern provinces, so the findings may not fully reflect healthcare costs specific to Songkhla government employees. Future research should focus on non-pandemic periods, as COVID-19 may have altered OOPs, demand, and healthcare utilization among CSMBS beneficiaries. For example, the pandemic increased health awareness and understanding of private health insurance to manage health risks for individuals and families.

In conclusion, although the CSMBS provides the most comprehensive benefits among Thailand's public healthcare schemes, beneficiaries still face average OOPs of 6,437.09 THB per person annually. For IPD, the largest OOP share (27.61%) came from room and meal charges, reflecting a preference for comfort. For OPD, medications and intravenous nutrients (44.86%), especially chemotherapy drugs, dominated OOPs, indicating gaps in coverage, particularly for cancer treatments. Conditions linked to the highest OOPs both in OPD and IPD were also cancer risk factors, aligning with government employees' focus on critical illness insurance. These findings could inform policy revisions by the Comptroller General's Department to better align benefits with beneficiaries' needs. With Thailand's aging population, older individuals showed higher healthcare utilization and OOPs, offering insights for private insurers to design tailored plans for government employees seeking additional coverage. The findings could also guide employees in purchasing private insurance to mitigate financial risks from serious illnesses or aging, while reducing reliance on overcrowded public hospitals.

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