

ORIGINAL ARTICLE

Healthcare Utilisation Inequality and the Hidden Burden of Out-of-Pocket Expenditures in Sabah

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ABSTRACT

Malaysia has made significant progress in reducing financial hardship from out-of-pocket (OOP) health expenditures, aligning with Sustainable Development Goal 3.8.2 on universal health coverage. However, persistent income inequality, particularly in Sabah, where nearly one in five families live below the poverty line, continues to hinder equitable access to healthcare. The objectives of this study are to describe the patterns of healthcare utilisation and associated inequalities in Sabah, and the patterns of catastrophic and impoverishing health expenditures using the capacity-to-pay approach. This study utilises data from the National Health and Morbidity Surveys (NHMS, 1996 - 2023) and the Household Income and Expenditure Surveys (HIES, 2014 - 2022). Analyses were conducted using STATA v18. NHMS data were used to evaluate disparities in service use, while HIES data captured catastrophic and impoverishing health expenditures. Catastrophic expenditure was defined as health spending exceeding 40% of household capacity-to-pay, and impoverishment as OOP payments that pushed households below the basic needs threshold. Inequality was assessed using the concentration index (CI), where negative values indicate a pro-poor and positive values indicate a pro-rich distribution. In 2023, inpatient care remained concentrated in the public sector, while outpatient services were more evenly utilised across industries. CIs indicated rising pro-rich inequalities. Between



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2.41% and 3.10% of households experienced catastrophic payments. Households impoverished by healthcare costs increased (from 0.1% in 2014 to 0.3% in 2022), whereas those further impoverished declined (from 2.4% to 1.7%). Targeted and inclusive financial protection strategies are crucial for closing these gaps and achieving equitable health coverage.

INTRODUCTION

Globally, socioeconomic status is a key determinant of health, influencing both disease burden and access to healthcare services (Nasirin & Lionardo, 2021; National Association of Chronic Disease Directors & Centres for Disease Control and Prevention, 2024). In many low- and middle-income countries, out-of-pocket (OOP) expenditures often constitute a significant share of healthcare financing, exposing households to financial hardship (World Health Organisation & World Bank, 2023). These expenditures can lead to catastrophic health expenditure (CHE), where a substantial portion of household income is spent on healthcare, or impoverishing health expenditure (IHE), which pushes households below the poverty line.

In Malaysia, these global patterns are reflected, particularly in the socioeconomically disadvantaged state of Sabah. Despite nationwide improvements in health outcomes and a well-established public healthcare system, Sabah consistently lags, with persistent poverty and stark health inequities. In 2019, Sabah's poverty rate stood at 19.7%, the highest in the country (Department of Statistics Malaysia, 2022). These economic challenges intersect with health disparities, where poorer households face disproportionate barriers to accessing healthcare and a greater likelihood of forgoing necessary care (National Association of Chronic Disease Directors & Centres for Disease Control and Prevention, 2024).

The health outcomes in Sabah further highlight these disparities. The state continues to report some of the nation's highest rates

of infant, toddler, and maternal mortality (Khazanah Research Institute, 2020; Ministry of Health Malaysia, 2021). Communicable diseases, such as tuberculosis and malaria, remain significant public health challenges. Meanwhile, the prevalence of chronic non-communicable diseases (NCDs) has shown modest changes over time. Between 2011 and 2023, the prevalence of diabetes decreased slightly from 9.0% to 8.8%, while hypercholesterolemia increased from 31.1% to 32.1%, and hypertension dropped from 29.1% to 25.5% (Ministry of Health Malaysia, 2011, 2024).

Behavioural risk factors further influence socioeconomic and health inequities in Sabah (Hamsah et al., 2025). The state exhibits one of the highest smoking rates in Malaysia, with 24.9% of individuals aged 15 years and older smoking (Ministry of Health Malaysia, 2024). Additionally, 74.8% of adults aged 18 and above engage in binge drinking, the highest prevalence in the country (Ministry of Health Malaysia, 2019). These risky behaviours add to the effects of poverty and social problems, making health issues harder to manage.

In Sabah, the rising cost of healthcare has raised concerns, yet data on catastrophic and impoverishing health spending remain limited. This study addresses that gap by using data from two national surveys to examine both inequalities in healthcare use and the financial impact of OOP spending. The capacity-to-pay (CTP) method estimates the financial burden based on a household's resources after meeting its basic needs. This provides a more accurate picture of economic hardship, particularly among low-income groups in Sabah (Cylus et al., 2018). The objectives of this study are to describe the patterns of healthcare utilisation and associated inequalities in Sabah, as well as the patterns of catastrophic and impoverishing health expenditures using the capacity-to-pay approach. These objectives focus on identifying gaps in healthcare access and financial protection challenges in Sabah.

MATERIALS AND METHODS

A Study design and study location

This was a cross-sectional study, which utilised data from the National Health and Morbidity Surveys (NHMS, 1996-2023) and the Household Income and Expenditure Surveys (HIES, 2014-2022). Data were extracted between January and April 2024. Subsequent data analysis and interpretation were performed from May to July 2024.

Sabah is the country's second-largest state, with a population of almost 3.8 million, located on the northern part of the island of Borneo (Department of Statistics Malaysia, 2025; Kerajaan Negeri Sabah, 2025). Sabah's population is ethnically and culturally diverse, consisting of more than 30 ethnic groups (Kerajaan Negeri Sabah, 2025). Healthcare in Sabah is part of Malaysia's dual system, comprising a heavily subsidised public sector and a growing private sector. The Ministry of Health Malaysia (MOH) oversees the provision of public healthcare, which serves as the leading provider across the state.

Data source

National Health & Morbidity Survey (NHMS)

Healthcare utilisation data for Sabah were taken from the NHMS, a nationwide household survey that has been running since 1986. It plays a central role in monitoring population health in Malaysia. While some changes to the questionnaire over the years may affect comparisons across rounds, consistent state-level data for Sabah have been available since 1996. Most rounds used face-to-face interviews, except in 2023, when computer-assisted telephone interviews (CATI) were introduced. The MOH publishes more details on the survey design (Ministry of Health Malaysia, 2024)

Household Income and Expenditure Survey (HIES)

HIES data were used to assess patterns in catastrophic (CHE) and impoverishing health expenditure (IHE). HIES is conducted

nationwide twice every 5 years by Malaysia's Department of Statistics (DOSM). It provides detailed household spending information, including health expenses. More information about how the survey can be found in DOSM's official reports (Department of Statistics Malaysia, 2023).

Measurement of living standards

Depending on the available data, socioeconomic status (SES) is typically measured using household income, expenditure, or consumption standards (C Anuranga et al., 2013). Among these, expenditure and consumption data are often preferred because they better reflect living standards and are more stable.

In the NHMS, income data were collected in the 1996, 2006, and 2023 rounds, whereas expenditure or consumption data were used in 2011, 2015, and 2019. The choice between income and expenditure data depended on the survey's design and data collection method. For example, the 2023 NHMS utilised CATI, which limited the collection of detailed expenditure data.

Adjustments were made to allow fairer comparisons between different household types by accounting for differences in household size and composition. When making comparisons, a single household with an income of MYR 40,000 annually can be compared to the same income for a household with two adults and two children by adjusting for their differing needs. This approach, known as the adult equivalent (AE) method, is widely used by the Organisation for Economic Co-operation and Development (OECD) (Organisation for Economic Co-operation and Development, 2008). The formula is as follows:

$$AE_h = (A_h + \alpha K_h)^\theta$$

where,

AE_h is the adult equivalent of the household h
 A_h is the number of adults in the household h
 K_h is the number of children 0-14 years old
 α (value is 0.5) is the "cost of children" and
 θ (value is 0.75) reflects the degree of economies of scale

After adjustment, households are ranked and grouped into quintiles. The lowest quintile represents the bottom 20% of households, while the highest quintile represents the top 20%.

Healthcare utilisation

Healthcare utilisation was assessed based on self-reported data. Outpatient care was measured by the number of visits to any healthcare facility, while inpatient care was measured by the number of admissions. The recall periods were two weeks for outpatient visits and one year for inpatient care. The data were further divided by type of provider, distinguishing between public and private services.

Catastrophic Health Expenditure (CHE)

CHE happens when a household spends more than 40% of its CTP on healthcare (Cylus et al., 2018). CTP is the amount a household has left after paying essentials like food, housing, and utilities. It's calculated using the Normative Spending on Food, Housing, and Utilities method (Cylus et al., 2018). This method takes the average spending from households in the 25th to 35th percentile range of their total expenses. According to Cylus et al. (2018), this group represents typical basic spending patterns without extremes, making it a practical benchmark. The formula to calculate CTP for each household is as follows:

$$CTP_i = EXP_i - SE_{25-35^i}$$

where,

CTP_i is the capacity to pay in the household i
 EXP_i is the total expenditure in the household i
 SE_{25-35^i} is the average subsistence expenditure in the 25th to 35th percentile of the i^{th} household

Impoverishing Health Expenditure (IHE)

A household is considered impoverished if healthcare payments force its spending below the poverty line. Here, the poverty line is measured by a household's CTP. IHE shows how medical expenses reduce what families have left to spend on basic needs. Households already below the poverty line before paying

medical costs are categorised as "further impoverished," reflecting the added hardship these families experience. These households are already struggling financially, and health expenses push them even deeper into poverty. Some families might not yet be poor, but their remaining resources after healthcare expenses put them dangerously close to 120% of the poverty line. They are at risk of falling into poverty because of these expenses (World Health Organisation & World Bank, 2023).

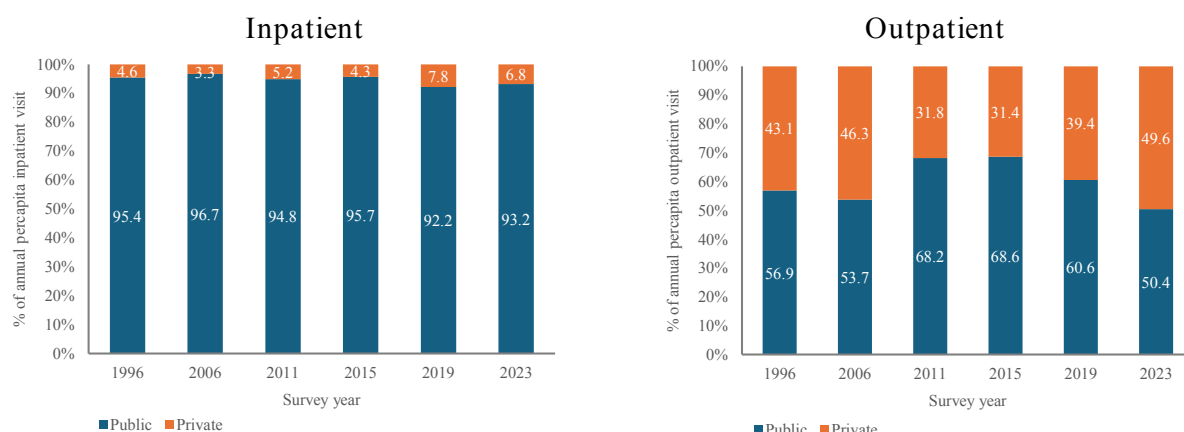
Data Analysis

Descriptive statistics were used to examine overall healthcare utilisation across different SES groups. The distribution of healthcare utilisation across SES segments was assessed for relative inequalities using the Concentration Index (CI). Ranging from -1 to $+1$, the CI indicated both the direction and magnitude of concentration. Negative values suggested that healthcare utilisation was more concentrated among the poor (pro-poor), while positive values indicated that it was more concentrated among the wealthy (pro-rich). A CI value of 0 represented an equal distribution of utilisation across all SES groups. Descriptive statistics were also applied to analyse the incidence of CHE and IHE across the survey year. The analysis measured the proportion of households that experienced CHE or IHE. Data analysis was conducted using STATA v18.0.

RESULT

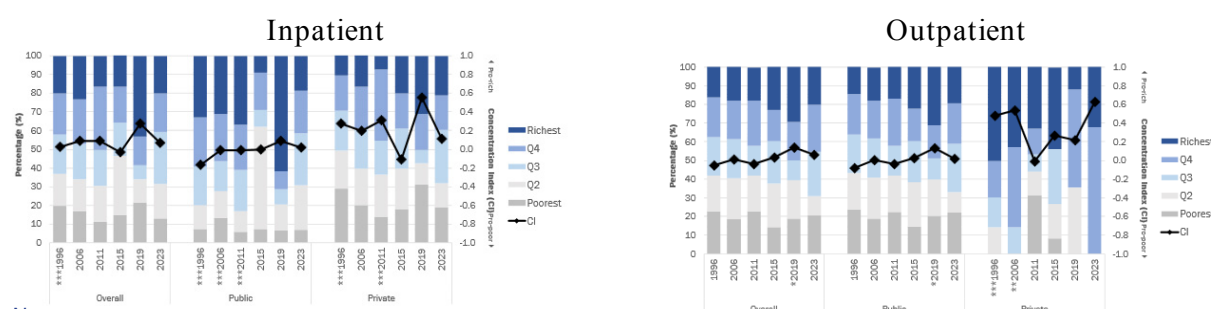
Trends of Healthcare Utilisation

The public sector consistently provided the majority of inpatient visits, though its share declined slightly, ranging from 95.4% in 1996 to 93.2% in 2023, as the private sector's share increased slightly from 4.6% to 6.8% (Figure 1). In contrast, the distribution of outpatient visits between public and private sectors showed greater variation. The public sector's share declined from 56.9% in 1996 to 50.4% in 2023, reflecting a gradual shift toward private outpatient care, whose share increased from 43.1% to 49.6% during the same period.



Note: Inpatient estimates are based on the distribution of inpatient admissions.

Figure 1: Composition of healthcare utilisation by public and private sectors, NHMS 1996-2023



Notes:

1. Significance of difference of the Concentration Index (CI) indicated by * $0.05 \leq p < 0.1$, ** $0.01 \leq p < 0.05$, *** $p < 0.01$
2. Survey design can differ across surveys, so comparisons are not strictly comparable.

Figure 2: Distribution of inpatient and outpatient (visits) by socioeconomic quintiles, NHMS 1996-2023

Inpatient visits by socioeconomic quintiles

Figure 2 shows the distribution of inpatient visits by socioeconomic quintiles, overall and by sectors, across all survey years. In 2019, the distribution of overall inpatient visits was pro-rich (CI = 0.142). Public inpatient visits, initially pro-poor in 1996 (CI = -0.079), shifted towards pro-rich in 2019 (CI = 0.135). In contrast, private inpatient visits were consistently pro-rich in earlier years, with CI values increasing from 0.478 in 1996 to 0.538 in 2006, indicating a widening gap during that period, with poorer groups increasingly underserved.

In public facilities, the poorest quintile's share fell slightly, and the richest quintile's share increased. For private facilities, the richest quintile consistently accounted for most visits. The overall distribution of inpatient visits by socioeconomic quintiles is presented in Table 1.

Outpatient visits by socioeconomic quintiles

The distribution of outpatient visits also evolved (Figure 2). Outpatient visits showed a pro-rich distribution in 1996 (CI = 0.025). Public outpatient visits consistently demonstrated a pro-poor distribution in earlier years, with the CI shifting from -0.164 in 1996 to -0.009 in 2011. In contrast, private outpatient visits remained pro-rich, with CI values ranging from 0.274 to 0.308 throughout the same period.

Over time, the poorest quintile's share of overall outpatient visits decreased, while the richest quintile's share remained relatively stable. In public facilities, the shares of both the poorest and wealthiest quintiles declined. Conversely, in private facilities, the share of the poorest quintile dropped slightly; however, the share of the wealthiest quintile nearly doubled, indicating a pro-rich pattern. This highlights the importance of public services in providing access for poorer households, as private care remains largely inaccessible to

Table 1: Distribution of inpatient visits by socioeconomic quintiles, NHMS 1996-2023

Survey Year	Overall						Public						Private					
	Quintile					CI	Quintile					CI	Quintile					CI
	Poorest	Q2	Q3	Q4	Richest		Poorest	Q2	Q3	Q4	Richest		Poorest	Q2	Q3	Q4	Richest	
1996	22.7	19.3	20.6	21.3	16.1	-0.054	23.8	19.4	20.8	21.4	14.6	-0.079**	0.0	14.2	16.0	19.5	50.3	0.478***
2006	18.4	21.9	21.0	20.6	18.1	0.014	19.0	21.7	21.1	20.3	17.7	0.005	0.0	0.0	14.3	42.9	42.9	0.538**
2011	22.8	19.2	15.7	24.3	17.9	-0.035	22.4	19.5	16.1	24.9	17.1	-0.037	31.2	12.8	9.3	13.7	33.1	-0.008
2015	14.2	23.6	22.5	16.6	23.2	0.036	14.4	23.9	22.1	17.4	22.2	0.026	8.3	18.4	29.3	0.0	43.9	0.265
2019	18.7	20.6	10.7	20.5	29.6	0.142*	20.3	19.4	11.6	17.7	31.1	0.135*	0.0	35.4	0.0	52.5	12.1	0.219
2023	20.5	10.3	23.9	25.0	20.3	0.063	22.0	11.1	25.7	21.8	19.4	0.022	0.0	0.0	0.0	67.8	32.2	0.631

Notes:

1. Significance of difference indicated by * $0.05 \leq p < 0.1$, ** $0.01 \leq p < 0.05$, *** $p < 0.01$
2. Survey design can differ across surveys, so comparisons are not strictly comparable.
3. CI: Concentration Index

Table 2: Distribution of outpatient visits by socioeconomic quintiles, NHMS 1996-2023

Survey Year	Overall						Public						Private					
	Quintile					CI	Quintile					CI	Quintile					CI
	Poorest	Q2	Q3	Q4	Richest		Poorest	Q2	Q3	Q4	Richest		Poorest	Q2	Q3	Q4	Richest	
1996	19.6	17.1	21.2	21.9	20.2	0.025***	7.3	12.7	20.9	26.1	33.0	-0.164***	28.9	20.5	21.4	18.8	10.5	0.274***
2006	17.0	17.1	18.8	23.7	23.4	0.086	13.3	14.4	16.0	25.1	31.2	-0.010***	20.2	19.4	21.3	22.5	16.7	0.199
2011	11.3	19.0	19.5	33.6	16.6	0.092	5.9	10.9	22.3	24.1	36.8	-0.009***	13.8	22.8	18.2	38.0	7.2	0.308***
2015	14.7	31.9	17.6	19.4	16.5	-0.035	7.3	54.9	9.0	19.8	9.0	-0.001	18.1	21.4	21.5	19.1	19.9	-0.109
2019	21.5	12.3	7.6	15.5	43.1	0.272	6.7	13.7	8.2	9.7	61.7	0.088	31.1	11.4	7.2	19.3	31.0	0.555
2023	13.0	18.3	28.1	20.7	19.9	0.065	6.8	23.8	27.9	23.0	18.5	0.017	19.1	12.9	28.4	18.3	21.3	0.114

Notes:

1. Significance of difference indicated by * $0.05 \leq p < 0.1$, ** $0.01 \leq p < 0.05$, *** $p < 0.01$
2. Survey design can differ across surveys, so comparisons are not strictly comparable.
3. CI: Concentration Index

them. The overall distribution of outpatient visits by socioeconomic quintiles is presented in Table 2.

Capacity-to-pay (CTP)

Table 3 shows the trends in household expenditure, subsistence costs, and CTP from 2014 to 2023. Overall household expenditure rose steadily from MYR 1934.82 in 2014 to MYR 2778.32 in 2023. Similarly, subsistence expenditure increased from MYR 647.14 to MYR 844.12 over the same period. The CTP, representing available income after basic needs, grew from MYR 1287.68 to MYR 1934.19. OOP health expenditure also saw a significant rise, from MYR 23.29 in 2014 to MYR 71.65 in 2023.

Trend of Catastrophic Health Expenditure

Figure 3 shows the proportion of households whose OOP health spending exceeded 40% of their CTP from 2014 to 2022. The share rose from about 3% in 2014 to just over 4% in 2016, before falling to around 2% by 2022.

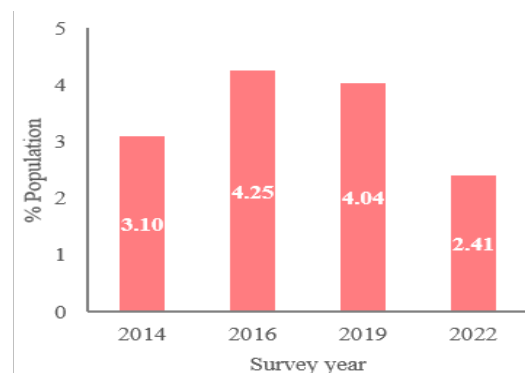


Figure 3: Population with OOP Exceeding 40% of CTP, HIES 2014-2022

Figure 4 shows the proportion of households experiencing OOP health expenditures exceeding 40% of their CTP, by income quintile, for 2014, 2016, 2019, and 2022. From 2014 to 2022, catastrophic OOP expenditure was consistently concentrated among the poorest households (Q1), where it was 5–7 times more likely. While the overall prevalence fluctuated between 3–4% in 2014–2019, before dropping to about 2% in 2022, Q1 households showed much higher percentages, remaining around

one in five in 2016 and 2019 before reducing to 11.8% in 2022. In contrast, the higher-income quintiles (Q2–Q5) recorded negligible proportions and very minimal changes across all years. This shows that, despite some improvements, the poorest remain disproportionately burdened compared to other groups.

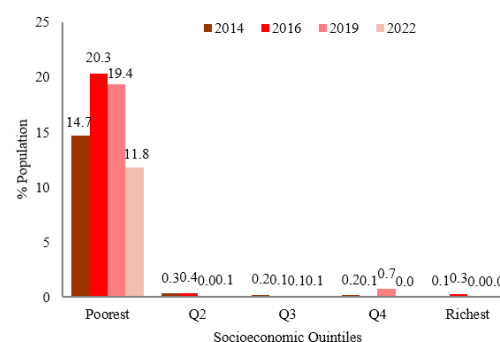


Figure 3: Population with OOP Exceeding 40% of CTP, HIES 2014-2022

Figure 5 illustrates the distribution of households by risk of impoverishment due to OOP health expenditures from 2014 to 2022. The proportion of households that were further impoverished due to healthcare costs decreased, while the percentage of households that were impoverished remained low, ranging from 0.1% to 0.4%. The proportion of households at risk of impoverishment declined substantially from 29.0% in 2014 to 5.1% in 2022. Over the same period, the proportion of households not at risk of impoverishment steadily increased from 65.5% to 90.5%, indicating a marked improvement in financial protection. The percentage of households incurring no OOP payments remained relatively stable, fluctuating between 3.0% and 3.8%, with a slight decrease to 2.4% in 2022.

DISCUSSION

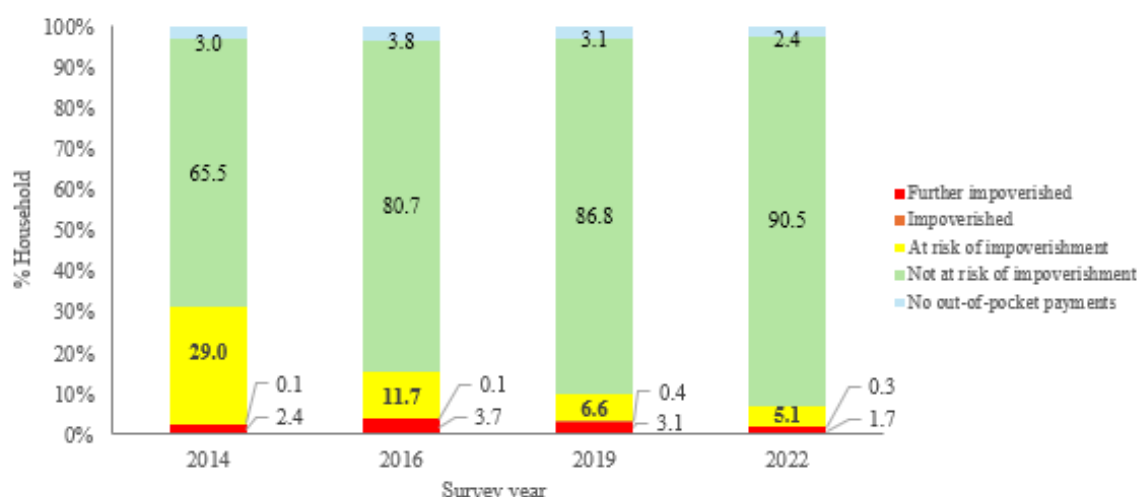
The findings from this study describe the patterns of healthcare utilisation in Sabah shifting over the years towards the private sector for outpatient services (56.9% in 1996 to 50.4% in 2023), whilst inpatient services

Table 3: Monthly Household Expenditure, Subsistence Costs, and Capacity-to-Pay, HIES 2014-2022

Expenditure Type	HIES 2014 (MYR)		HIES 2016 (MYR)		HIES 2019 (MYR)		HIES 2022 (MYR)	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Overall expenditure	1934.82	1891.53 - 1978.11	2123.62	2053.84 - 2193.39	2275.66	2228.72 - 2322.60	2778.32	2715.57 - 2841.06
Subsistence expenditure	647.14	636.69 - 657.58	704.44	692.07 - 716.80	720.77	708.63 - 732.91	844.12	831.73 - 856.51
Capacity-to-pay	1287.68	1245.08 - 1330.29	1419.18	1351.92 - 1486.44	1554.89	1509.96 - 1599.82	1934.19	1873.10 - 1995.28
Out-of-pocket health expenditure	23.29	21.42 - 25.16	29.58	22.08 - 37.07	39.37	37.19 - 41.55	71.65	68.47 - 74.82

Notes:

1. Overall expenditure, subsistence expenditure, and capacity-to-pay are adjusted for household size and composition.
2. Overall expenditure figures are adjusted for imputed rent, which represents the economic value of the housing services homeowners use, equivalent to the rent they would pay if they rented their home. This adjustment provides a more accurate measure of the household's proper economic resources (Cylus et al., 2018)
3. MYR: Malaysian Ringgit; CI: Confidence Intervals



Note: The risk of impoverishment occurs when total spending, after out-of-pocket payments, exceeds 120% of the poverty line. The poverty line is a relative measure that reflects basic needs for food, housing, and utilities.

Figure 5: Breakdown of population by the risk of impoverishing health expenditure, HIES 2014-2022.

are predominantly still public-centric. This is consistent with the recent NHMS 2023 finding that showed 51.1% of outpatient visits were now in private facilities, whereas 74.7% of inpatient admissions were in public hospitals (Ministry of Health Malaysia, 2024). This shift in outpatient visits is potentially driven by perceptions of better service quality and shorter waiting times in the private sector (Kamarohim et al., 2013; Rasiah et al., 2009). This apparent shift presents an opportunity to leverage public-private partnerships by curating well-structured partnerships that optimise the efficiency and perceived quality the private sector provides while maintaining affordability.

In Sabah, partly due to the state's unique geography, healthcare delivery can be especially challenging, as many rural and remote communities are spread across mountains, islands, and forested regions. Urban centres like Kota Kinabalu benefit from a more developed health infrastructure, which includes a robust range of private facilities. For rural populations, the public sector is often the only feasible option in hard-to-reach areas (Abd Samad et al., 2024; Naing et al., 2020). While outpatient care is shifting

nationally toward private providers, Sabah's rural population remains reliant on the public sector. The financial dimension adds another layer of complexity to healthcare access, as the burden of OOP payments, though declining over time, remains particularly concerning for low-income households. Sabah's rural poverty rate stands at 19.5%, starkly higher than the 5.5% in urban areas (Department of Statistics Malaysia, 2022). High poverty rates among these households may drive them to rely on public services, as they often prioritise basic needs over healthcare costs (Department of Statistics Malaysia, 2022; Goroh et al., 2020; UN Human Rights, 2019).

However, systemic limitations in the public sector, such as understaffing, long waiting times, and limited resources, may push patients to seek private care despite the higher costs. (Abd Samad et al., 2024; Atun et al., 2016). According to NHMS 2019, outpatient OOP spending ranged from MYR 18 to MYR 508 over two weeks, while inpatient care costs ranged from MYR 404 to MYR 1,526 a year (Ministry of Health Malaysia, 2019). These costs increase the risk of CHE and impoverishment, particularly among poorer households. Our findings on healthcare utilisation by

socioeconomic quintiles show that the private sector has consistently been pro-rich across survey years, while public sector use, which was pro-poor in the 1990s, has been shifting dynamically towards a more even distribution across income groups in the recent NHMS 2023 cycle. These patterns demonstrate that the richer population remains the primary driver of private-sector use.

In contrast, the public sector has been moving away from a pro-poor safety net to a more universal provider over the years, consistent with previous analyses of NHMS data (Abu Bakar et al., 2019). In India, a similar shift was observed with the introduction of health policies to benefit people with low incomes, as the public sector became progressively less pro-rich. At the same time, private-sector services remained dominated by the rich (Selvaraj et al., 2021).

Indirect costs, such as transportation costs, are an essential challenge to healthcare access for lower-income households (Syed et al., 2013). This is amplified amongst those requiring regular follow-ups, such as those with dialysis, cancer, or mental health conditions (Lee et al., 2024). These expenses often result in forgone care, perpetuating cycles of poor health and financial strain ('Allocate More Resources for Mental Health Care in Sabah', 2023; Ansiung, 2024; Leong et al., 2007; Shoesmith & Pang, 2016). Additionally, Sabah's large migrant population (around 24%) also faces low financial protection (Department of Statistics Malaysia, 2024). Barriers related to legal status and limited insurance make this group especially vulnerable, highlighting the need for inclusive approaches to basic healthcare (Lasimbang et al., 2016).

Government programmes such as the Bantuan Prihatin Rakyat (BPR) and the Economic Stimulus Package have helped reduce OOP spending for people experiencing poverty (Ministry of Economy, 2023; Ministry of Finance, 2021). However, policies must go beyond temporary financial aid to strengthen long-term financial protection by expanding health coverage and improving insurance

options. This is especially critical in rural areas of Sabah, where the physical and systemic barriers are especially intensified. Focused action, such as expanding healthcare facilities in rural areas, improving access to primary and specialist care, partnering with non-governmental organisations, and retaining trained healthcare workers in underserved areas, is critical and can be implemented. Established services such as the Flying Doctor Service and mobile health teams have addressed some geographic barriers, but newer approaches such as telemedicine and mobile clinics should be considered as a practical way to scale up to reach geographically isolated populations (Falcon, 2019; Manual et al., 2024; Naserrudin et al., 2023; Thangiah et al., 2020). By addressing inequities stemming from poverty, geography, or migrant status, a more inclusive and equitable healthcare system in Sabah can be achieved, ensuring that all experience universal health coverage.

Limitations and future research directions

This study offers valuable insights into healthcare use and financial strain among households in Sabah. However, it has some limitations. Given that the NHMS data were self-reported, they are subject to recall bias. Additionally, using healthcare utilisation as a proxy for access may not accurately reflect actual healthcare needs, as low utilisation among the poorer population could indicate unmet needs rather than improved health status. Future research should explore complementary measures of health demand and unmet healthcare needs to strengthen these findings.

Furthermore, qualitative research would yield insights into patient narratives and lived experiences, particularly among underserved groups such as rural and migrant communities. Research is also needed to assess how current government programmes affect access to care and whether new policies are helping to reduce healthcare gaps. More work is required on forgone care, especially in rural areas where distance and cost limit

access. Understanding why people skip or delay care will help guide better solutions. It is also essential to study how expanded financial protection, including universal health coverage, can lower the risk of catastrophic spending in Sabah. This evidence will be valuable for shaping future policies.

CONCLUSION

Rising gaps in healthcare access and financial hardship in Sabah highlight the need for stronger, targeted policies to support health equity. Government efforts have improved access and reduced poverty for many, but challenges remain. Rural communities, low-income families, and migrants continue to face serious barriers to care. Tangible measures, such as expanding primary care services and leveraging partnerships with the private sector or non-governmental organisations, could help improve healthcare utilisation and reduce financial hardship.

CONFLICT OF INTEREST

The authors declare that this research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest. Most of the authors are affiliated with the Ministry of Health, Malaysia, and the study was conducted in accordance with institutional policies and guidelines.

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