

CANCER CARE AND ACCESS TO CANCER DRUGS IN ASIA-PACIFIC

Health spending on cancer in Asia-Pacific



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HEALTH SPENDING ON CANCER IN ASIA-PACIFIC

Sub-report 2 of the main report “Cancer care and access to cancer drugs in Asia-Pacific”

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Report summary

Adequate and effective health care investment is critical in cancer control. Today, access to cancer treatment is limited in many markets in Asia-Pacific – in terms of population covered, services covered, and/or costs of services covered. This affects patient outcomes negatively, and the lack of access conflicts with an individual's right to health. Cancer has also seen much advancement in medical treatment that brings substantial clinical benefit to cancer patients in recent years. This necessitates governments to reconsider the allocation of health care resources to achieve the highest benefits to patients. Being able to link health investment to patient outcomes is pivotal to inform decision-making in this regard.

Total health expenditure (financed via public and private sources) as a share of GDP in middle-income markets (4% on average) were approximately half of that in high-income markets (8%) in Asia-Pacific in 2018. Very large differences in per capita health spending can be observed with spending levels in high-income markets ranging from \$1,600 in Taiwan to \$5,400 in Australia and in middle-income markets from \$70 in India to \$500 in China.

The proportion of public health spending tends to be higher in high-income markets than in middle-income markets. Notable exceptions are Hong Kong and Singapore with a comparatively low proportion of public health spending due to different health care organizations, and Thailand with a comparatively high proportion with progress towards universal health coverage. In India and the Philippines, out-of-pocket expenditures dominate total health spending.

The question of what defines an adequate level of public health spending is debatable, with targets of public health expenditure relative to GDP often used in tracking progress towards universal health coverage. On average, public health expenditure as share of GDP in middle-income markets (2%) are less than half of that in high-income markets (5%) in 2018. Only Australia, Japan, and New Zealand met the informal WHO target of public health spending of 5% of GDP, despite relative increases in public health spending in all markets since 2000. Australia, Japan, and New Zealand were also the top-spending high-income markets with public health spending exceeding \$3,000 per capita. Public health spending was less than \$300 per capita in all middle-income markets, ranging from \$289 in China down to \$20 in India.

Limited evidence suggests that health spending on cancer care accounts for around 5-9% of total health spending in high-income markets in Asia-Pacific, which is of a similar magnitude as in Europe and the US. Similar proportions of spending on cancer care have been reported for China. In Indonesia and Thailand, cancer care spending levels are as low as 1-2% of total health spending, excluding out-of-pocket payments for cancer treatment.

The consequences of inadequate health coverage can be dire for cancer patients and their families. High out-of-pocket payments for medical services and non-medical services as well as income loss due to reduced or discontinued employment constitute a toxic mix. Indeed, around 50% of all cancer patients and their families face financial catastrophe in middle-income markets. An exception is Thailand where “only” a quarter of patients face financial catastrophe, which might be related to well-established universal health coverage granting access to cancer care services at both public and private health care facilities. Even in high-income markets cancer patients may face financial difficulties in conjunction with their diagnosis and care process.

Health coverage and overall spending on health care are vital for patient outcomes. Health care expenditure per capita correlate strongly with cancer patient outcomes. In Asia-Pacific, just as in Europe, markets with higher health expenditure per capita achieve higher survival rates. This signals a clear need, in particular in middle-income markets, to secure additional health funding to improve patient outcomes. Effective allocation of additional resources across the health system through evidence-based decision-making is pivotal to achieve the highest benefits to patients.

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1. Health spending and health coverage

Adequate and effective health care investment is critical in cancer control. Ensuring equal access for a rising number of cancer patients (see sub-report 1), represents a major challenge for many markets in Asia-Pacific. Today, access to modern cancer treatment is limited in many markets in Asia-Pacific (1-3). This affects patient outcomes negatively, and lack of access conflicts with an individual's right to health. This right was enshrined in the Constitution of the World Health Organization (WHO) in 1946 and in the Universal Declaration of Human Rights of the United Nations (UN) in 1948 (4, 5). The 2030 Agenda for Sustainable Development, adopted by all UN member states in 2015, also calls for action to get closer to achieving the right to health. The Sustainable Development Goals 3.8 states: “Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines¹ and vaccines for all [until 2030].” (7).

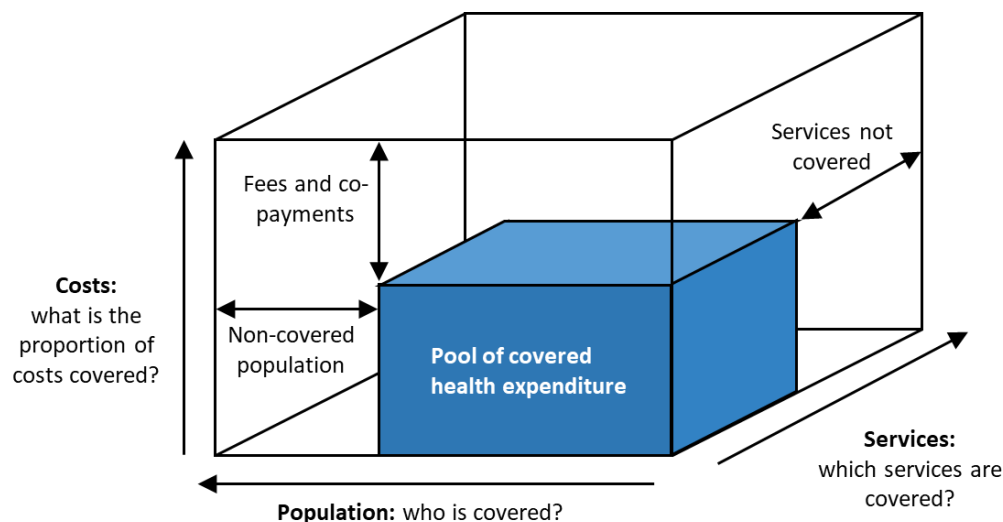


Figure 1: Dimensions of universal health coverage

Source: Adapted from WHO (8).

Figure 1 shows the dimensions of universal health coverage (UHC) as described by the WHO (8). There are three dimensions: the population covered, the services covered, and the proportion of costs of services covered. These dimensions apply to health care in general but also to cancer care. The implementation of UHC is still in the making in some middle-income markets in Asia-Pacific (9). The achievement of UHC is often only measured in terms of the population covered, thus neglecting the importance of the other two dimensions for patient outcomes. While access to cancer care might

¹ The WHO defines essential medicines as “a subset of the total range of pharmaceuticals that satisfy the priority health care needs of the population. They are selected with due regard to public health relevance, evidence on efficacy and safety, and cost-effectiveness.” (6).

be free for the whole population, many modern services along the patient pathway (e.g., MRI examination, radiotherapy through linear accelerators, tumor genotyping, immunotherapy drugs) might not be offered at all or only in a restricted manner (e.g., only a limited number of drug treatment cycles are for free). For those services that are offered, high out-of-pocket payments might arise (e.g., co-payments for every radiotherapy session and every prescribed drug), which can lead to unaffordability in the absence of annual caps on co-payments or other types of financial safety nets.

The amount of health spending by governments determines the size of the “pool of covered health expenditure” in Figure 1. Governments may prioritize certain dimensions over others, but in order to mitigate socio-economic differences in both access to care and patient outcomes, coverage in all dimensions is necessary. Suboptimal coverage may deprive patients not only of achieving good health outcomes but also put them and their families in a situation of financial distress. This is especially the case for diseases such as cancer, which require the consumption of many different health services within a relatively short period of time.

Cancer has also seen much advancement in medical treatment that brings substantial clinical benefit to cancer patients in recent years (see sub-report 3 and sub-report 4). The “services” dimension in Figure 1 is thus continuously expanding, necessitating governments to reconsider the allocation of resources to achieve the highest benefits to patients. Being able to link health investment to patient outcomes is pivotal to inform decision-making in this regard.

1.1 Aim of the sub-report

The aim of this sub-report is to describe health spending on cancer in Asia-Pacific.²

- Section 2 describes health spending in general and spending on cancer care.
- Section 3 showcases the consequences for cancer patients and their families of inadequate health coverage.
- Section 4 explores how the level of health spending relates to cancer patient outcomes.

² Asia-Pacific consists in this report of 7 high-income markets – Australia, Hong Kong, Japan, New Zealand, Singapore, South Korea, Taiwan – and 7 middle-income markets – China, India, Indonesia, Malaysia, the Philippines, Thailand, Vietnam.

2. Health spending

This section describes the level of health spending across all markets in Asia-Pacific. It aims to answer the following questions: What is the level and proportion of health spending funded by public and private sources? What is known about the level of health spending on cancer care?

2.1 Method and data

Comparable data on health expenditure were retrieved from the Global Health Expenditure Database by the WHO (10). For Hong Kong and Taiwan, this information was obtained directly from local authorities (11, 12). The latest available data for all markets is for the year 2018.

The WHO relies on the System of Health Accounts 2011 (SHA 2011) reporting standard to ensure a common definition of health expenditure. In this analysis, “current health expenditure” was used. It measures the final consumption of health care goods and services, including personal health care (curative care, rehabilitative care, long-term care, ancillary services, and medical goods) and collective services (prevention and public health services as well as health administration).

Health expenditure are financed by a mix of sources. This includes government spending and compulsory health insurance, voluntary private health insurance, out-of-pocket payments by individuals, and funds by foreign donors (i.e., development aid).

A shortcoming of the WHO SHA 2011 framework is the lack of reporting of health expenditure by disease area. This makes it difficult to answer the question: What is the level of health spending on cancer? The OECD has promoted the idea of disease-specific health accounts, but few countries provide such data within the SHA 2011 framework (13). In the absence of such data, cost-of-illness studies, that quantify all costs of a particular disease, are an alternative source of information (14).

2.2 Results

To compare statistics on health spending across markets, results are presented in two fashions. The first approach presents health spending relative to gross domestic product (GDP). The second approach presents health spending levels in US dollars per capita in current prices.

Total health spending

Figure 2 shows total health expenditure (financed via public and private sources) across the 14 markets in Asia-Pacific in 2018. On average, health expenditure as share of GDP in middle-income

markets (4%) were approximately half of that in high-income markets (8%). There are considerable variations across middle-income markets, ranging from 3% in Indonesia to 6% in Vietnam, and also across high-income markets, ranging from 4% in Singapore to 11% in Japan. In comparison, total health expenditure as a share of GDP was 10% in Europe in 2018, ranging from 5% in Romania to 12% in Switzerland (15). In general, total health expenditure as a share of GDP reflect policy choices made by governments in the organization of their overall health financing system, as well as differences in epidemiological patterns, as noted by the WHO (16). The latter point alludes to the fact that populations with a larger proportion of elderly people might face a greater need for health care. As shown in sub-report 1, high-income markets have an older population than middle-income markets in Asia-Pacific, which thus might explain some of the variation observed here.

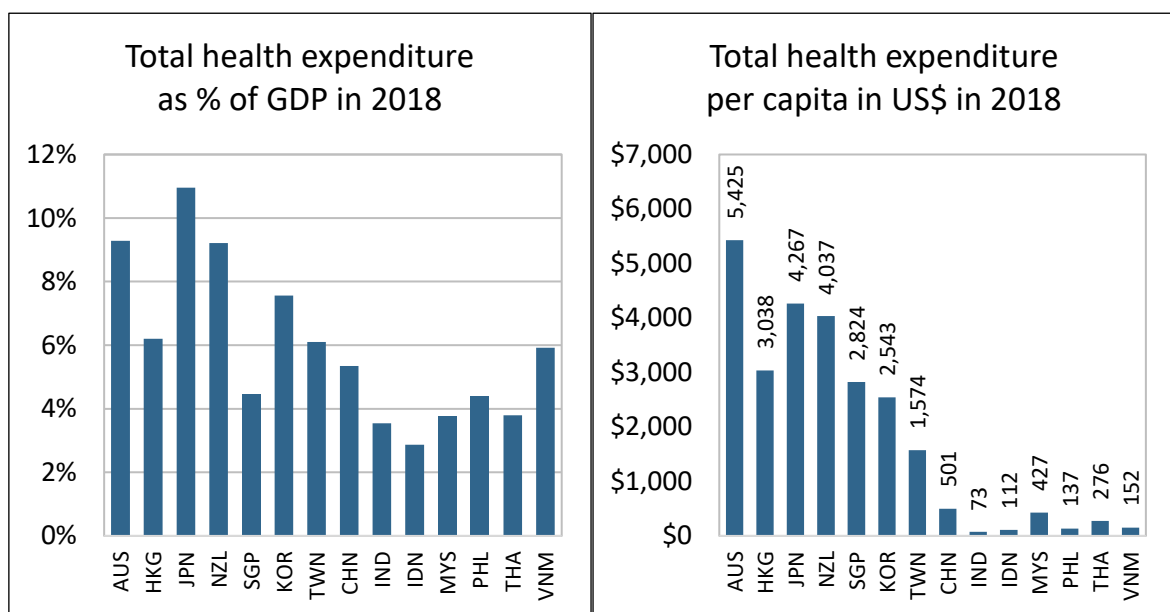


Figure 2: Total health expenditure as % of GDP and per capita in US\$, 2018

Notes: Total health expenditure includes financing from public and private sources. Expenditure are in current prices not adjusted for differences in purchasing power parity. GDP = gross domestic product.

Source: WHO (10), Department of Health for HKG (11), Ministry of Health and Welfare for TWN (12).

Very large differences in per capita health spending can be observed across Asia-Pacific in Figure 2. This is mainly a reflection of differences in levels of economic wealth (GDP), but the differences in health spending as % of GDP also add to it. Spending levels among high-income markets ranged from around \$1,600 in Taiwan to \$5,400 in Australia and among middle-income markets from \$70 in India to \$500 in China. In comparison, total health expenditure per capita was around \$3,700 in Europe in 2018, ranging from \$690 in Romania to \$9,900 in Switzerland (15).

Composition of total health spending

Total health expenditure is financed through a mix of sources, with public spending typically accounting for the greatest contribution. Analysis of health spending data across the globe in 2018 illustrated that the sources of health spending could vary notably across country income groups. High-income member states had larger share of public financing (government transfers and social health insurance contributions) at 70% and lower out-of-pocket spending (OOPs) at 21% in total health spending. In comparison, lower middle-income and upper middle-income member states had a lower share of public financing at 41-55% and a higher share of OOPs at 35-42% (16).

In Asia-Pacific, most of the high-income markets tended to have relatively high proportions of public health spending aligned with the findings by the WHO; see Figure 3. Japan had the highest proportion with 84% in 2018. Hong Kong and Singapore had both comparatively low proportions of around 50%. In Hong Kong this has been attributed to the large role of the private sector in outpatient medical services (around 70% of all services), while in Singapore this has been attributed to the government's longstanding principle of fiscal prudence and common use of co-payments (17-20).

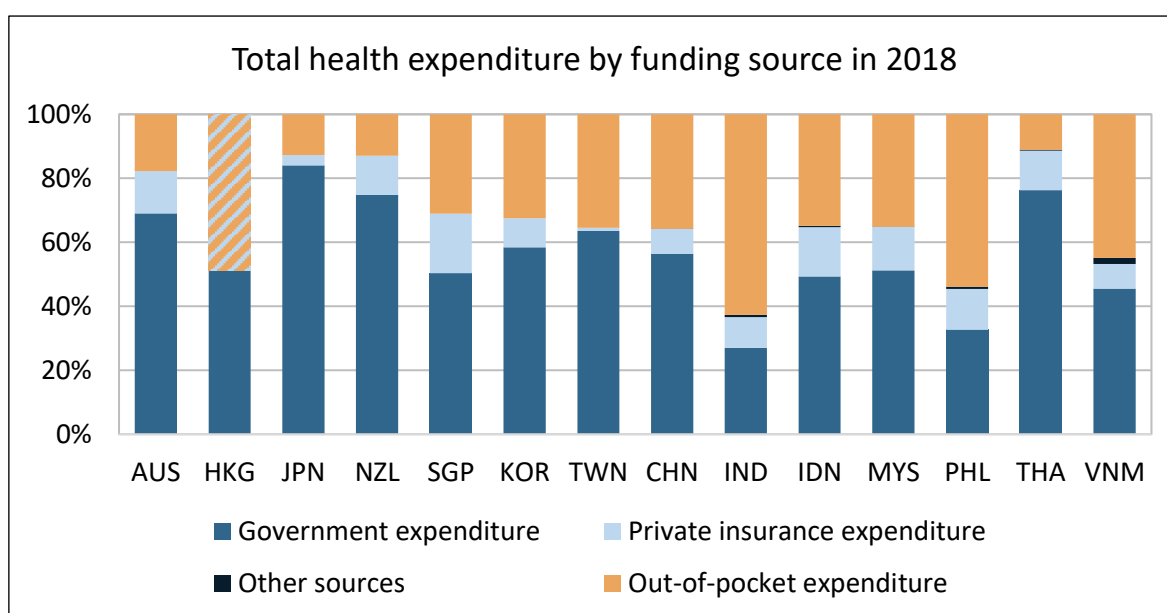


Figure 3: Total health expenditure by funding source, 2018

Notes: "Other sources" encompass non-domestic funding, such as development aid. No distinction between out-of-pocket expenditure and private insurance expenditure possible for HKG.

Source: WHO (10), Department of Health for HKG (11), Ministry of Health and Welfare for TWN (12).

There was great variation in the share of public financing in total health spending in middle-income markets; see Figure 3. Thailand had by far the highest proportion with 76%. This is a result of Thailand's early move towards universal health coverage in 2002, backed by general taxation to finance the health care sector without relying on contributions from members (21). Public spending

in China, Indonesia, Malaysia, and Vietnam amounts to around 45-55% of total spending, while OOPs amount to around 35-45% of total spending. While Vietnam is the only lower middle-income markets among those markets as classified by the World Bank, the share of its public spending was in line with the upper middle-income markets and reflects its efforts to achieve UHC with the government setting a national social health insurance coverage target at 95% by 2025 (22).

For India and the Philippines, the situation of these two lower-middle income markets was different even when compared to the average figures reported by the WHO. While OOPs was 42% and public spending at 41% on average in lower middle-income countries worldwide, OOPs dominated in India and the Philippines, accounting for 63% and 54% of total health spending respectively. Public spending contributed to only one third or less of total health expenditure. In India, previous research has attributed this to the small role of the public health care sector due to it being “*perceived as being unreliable, of indifferent quality and generally is not the first choice, unless one cannot afford private care*” (23, 24), and with initial moves towards UHC only having begun since 2017 (25, 26). In the Philippines, explanations are the lack of infrastructure and human resources and inadequate coverage of health services by the social health insurance (PhilHealth) (27, 28).

Public health spending

Public health researchers have proposed that setting explicit targets with public health expenditure relative to GDP is one of the possible measures in tracking progress towards UHC (29). The question of what defines an adequate level of public health spending has engaged scholars and the WHO in recent decades (30). The 2010 World Health Report of the WHO notes in relation to public health spending that it is “*difficult to get close to universal health coverage at less than 4-5% of GDP [p.98]*” (8). This informal target is thus not officially endorsed but the 5%-reference keeps being used as a benchmark by the WHO (31). It is also acknowledged that, for instance, Thailand managed to achieve UHC at a rate of public spending of around 2-3% of GDP (31). Yet UHC in Thailand refers here more the population and costs of services covered, whereas the range of services covered (i.e., the third dimension in Figure 1) in cancer care is comparatively low (see sub-report 3), possibly responsible for poor patient outcomes (see sub-report 1).

On average, public health expenditure as share of GDP in middle-income markets (2%) were less than half of that in high-income markets (5%) in 2018; see Figure 4.³ Variations are substantial within middle-income markets, ranging from 1% in India to 3% in China, Thailand, and Vietnam, and even

³ In some markets, public health spending is also low in comparison to other areas of public spending, such as military spending. In fact, military spending as % of GDP in 2018 was higher than public health spending in India (2.4% of GDP) and Singapore (3.1% of GDP) (32).

greater within high-income markets, ranging from 2% in Singapore to 9% in Japan. Only three markets – Australia, Japan, and New Zealand – managed to meet the 5% of GDP target across Asia-Pacific in 2018 and South Korea and Taiwan would have met a lower target of 4% of GDP.

Figure 4 also shows that the level of public health expenditure differed by more than a factor of 10 between all middle-income markets and the top-spending high-income markets, Australia, Japan, and New Zealand, which spent more than \$3,000 per capita. In fact, all middle-income markets spent less than \$300 per capita, ranging from \$289 in China down to \$20 in India. This is equivalent to spending \$0.8 on health care per inhabitant on a daily basis in China and \$0.05 in India.

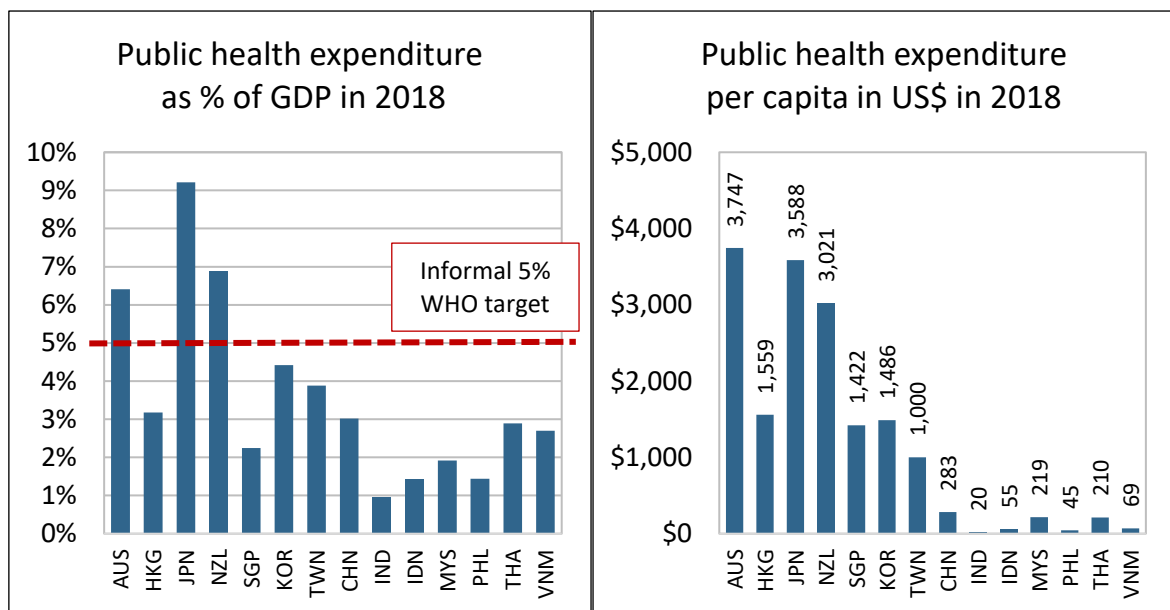


Figure 4: Public health expenditure as % of GDP and per capita in US\$, 2018

Notes: Expenditure are not adjusted for differences in purchasing power parity. GDP = gross domestic product.
Source: WHO (10), Department of Health for HKG (11), Ministry of Health and Welfare for TWN (12).

Figure 5 portrays the development of public health spending since 2000. It shows that in all markets, public health spending as percentage of GDP has increased over time. This has brought all markets closer to the 5%-benchmark. China has tripled its public spending, while Indonesia and South Korea have also more than doubled public spending over 2000-2018. By contrast, the increases in the Philippines and India were minimal.

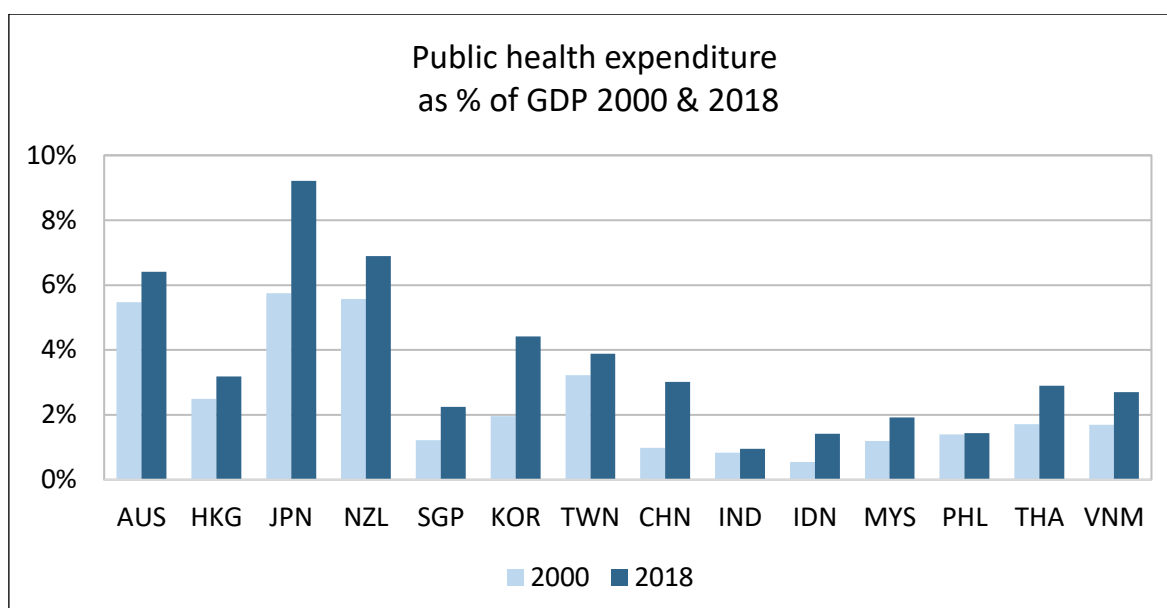


Figure 5: Public health expenditure as % of GDP, 2000 and 2018

Notes: Expenditure are not adjusted for differences in purchasing power parity. GDP = gross domestic product. Proportion in 2000 in HKG refers to earliest available fiscal year of 2006/2007.
Source: WHO (10), Department of Health for HKG (11), Ministry of Health and Welfare for TWN (12).

Health spending on cancer care

In Europe, previous studies show that health spending (from public and private sources) on cancer care accounted for 6% of total health spending in 2018, ranging from 4-7% in most countries (15, 33). Interestingly, there is no correlation between GDP per capita and the percentage of total health spending on cancer care in Europe, with some wealthier countries, such as Germany and the Netherlands, spending around 7% on cancer care and other wealthier countries, such as Norway and Sweden, spending around 4% on cancer care. There is also no correlation between the number of newly diagnosed cancer cases (incidence crude rate) and the percentage of total health spending on cancer care in Europe (15).

In the US, previous studies show that health spending (from public and private sources) on cancer care has been fluctuating around 5% of total health spending between 1963 and 1995 (34). In 2010, the proportion was still around 5% (expenditure on cancer care of \$124.57 billion (35), and total health expenditure of \$2,450.5 billion (10)), but edged up to 6% in 2015 (expenditure on cancer care of \$183 billion (36), and total health expenditure of \$3,045.5 billion (10)). This rather stable pattern of the cancer-specific proportion of total health expenditure has also been observed in Europe, where it was around 6% between 1995 and 2018 (33, 37).

In high-income markets in Asia-Pacific, existing estimates of the size of health spending on cancer care indicate roughly a similar magnitude⁴ as in Europe and the US:

- **Australia:** Health spending on cancer care was estimated to AUD 6.3 billion in 2013 (38), corresponding to around 4.5% of total health spending (AUD 140 billion in 2013, according to the WHO (10)).
- **Japan:** Health spending on cancer care was JPY 4,525.6 billion in the fiscal year 2018 (39), corresponding to around 7.5% of total health spending (JPY 59,929 billion in 2018, according to the WHO (10)).
- **South Korea:** Health spending on cancer care was estimated to be 9.1% of total health spending in 2009 by the OECD (13).

In middle-income markets in Asia-Pacific, existing estimates of the size of health spending on cancer indicate either a similar or much lower magnitude as in Europe and the US:

- **China:** Health spending on cancer care was estimated to be CNY 221.4 billion in 2015 (40), corresponding to around 6.5% of total health spending (CNY 3,418 billion in 2015, according to the WHO (10)).
- **Indonesia:** Health spending on cancer care (solid types and leukemia) by the Healthcare & Social Security Agency (BPJS) was IDR 3,904 billion in 2019 (41), corresponding to around 0.9% of total health spending (IDR 425,583 billion in 2018, according to the WHO (10)). Out-of-pocket payments are not included in this number and might be considerable as noted above.
- **Thailand:** Health spending on cancer care by the National Health Security Office (NHSO), the payer of the Universal Coverage Scheme (UCS), was USD 297 million in 2018, with the UCS covering 72.2% of the population (42). Total health spending was USD 19,549 million in 2018, according to the WHO (10). This would correspond to a cancer-specific spending proportion of 1.5%, but if the remaining population covered by two other schemes would have a similar consumption of cancer care resources, the proportion would be around 2.1%. Out-of-pocket payments are not included in this number.

It is difficult to infer an optimal proportion of health expenditure to be spent on cancer care, as epidemiological patterns differ greatly across Asia-Pacific (see sub-report 1). However, considering that around 30% of deaths are because of cancer in high-income markets and 9–25% in middle-

⁴ Differences in underlying methodology might complicate a valid comparison across markets.

income markets, the proportions of health spending on cancer care found here appear low. The combination of low overall health spending levels and low percentages of spending going into cancer care in middle-income markets render it difficult to finance a comprehensive set of cancer care services. This comes with negative consequences both for individual coverage against high OOP payments (see section 3) and patient outcomes (see section 4).

3. Financial burden of cancer treatment

This section explores the financial consequences for cancer patients and their families from inadequate health coverage for cancer treatment across all markets in Asia-Pacific. It aims to answer the following question: What is the proportion of households in financial catastrophe because of cancer treatment?

3.1 Method and data

A pragmatic literature review on financial catastrophe because of cancer treatment was performed. The review was conducted in PubMed/MEDLINE based on a pre-defined search strategy for each of the 14 markets in Asia-Pacific as well as for Asia as a whole.⁵ Titles and abstracts were screened for relevancy. Relevant articles were reviewed with respect to the definition of “financial catastrophe” used. The initial search was limited to the articles published between Jan 1, 2018 and Sep 30, 2020, and, due to few relevant search hits, extended to articles published between Jan 1, 2015 and Sep 30, 2020. The limitation to articles published in recent years is motivated by the fact that public health spending has been on an increasing trajectory in most markets in recent decades, as shown in Figure 5 in section 2, which might have improved the financial safety net available to patients.

There is not yet a formal definition of financial catastrophe, also referred to as financial toxicity or economic/financial hardship, and different definitions exist in the literature (43-45). Financial toxicity is largely contributed by high OOP medical payments by patients and reduced income while being treated or recovering from the disease. Despite relatively rich data covered by qualitative studies on the topic, there are limited quantitative studies with a need for standardized tools to advance research in the field.

In general, financial catastrophe is defined at the household level rather than at the individual level. This is based on the idea that a sick household member will receive financial help from other household members. Health-related expenditure include both OOPs for medical services and for non-medical services such as costs for transportation and accommodation in relation to care provision. These OOPs are typically compared to the annual household income. Thresholds for OOPs exceeding annual household income by 10% to 40% have been used in the literature and there is no consensus

⁵ For example, for Australia the search strategy was: ("cancer*" [Title/Abstract] OR "neoplasm*" [MeSH Terms]) AND ("hardship" [Title/Abstract] OR ("catastroph*" [Title/Abstract] OR "financ*" [Title/Abstract] OR ("catastroph*" [Title/Abstract] "econ*" [Title/Abstract]) OR "low econ*" [Title/Abstract] OR "minimal econ*" [Title/Abstract] OR "limited means" [Title/Abstract] OR "circumstances" [Title/Abstract] OR "economic status" [Title/Abstract]) AND "Australia" [Title/Abstract] AND ("2018/01/10" [Date - Publication] : "3000" [Date - Publication]).

on which one is best suited to represent financial catastrophe (43-45). In this report, financial catastrophe is defined as OOPs for medical services and non-medical services exceeding annual household income by 30%. This choice was primarily driven by the definition used in the ACTION study carried out in multiple markets in Asia-Pacific.

3.2 Results

As newly diagnosed cancer patients go through their treatment journey (consisting of diagnostics and treatment, such as surgery, radiotherapy, and/or systemic treatment), costs incur along the way. This includes both OOPs for medical services and for non-medical services such as costs for transportation and accommodation in relation to care provision. At the same time, some patients might face income loss due to reduced or discontinued employment during treatment and when cancer survivors return to work. Adequate health coverage is vital in these circumstances. This is especially true for diseases such as cancer, which come with a high health care need within a relatively short period of time upon diagnosis.⁶ If there is no safety net through social health insurance or (mandatory) private insurance, patients face a double burden of high OOPs and income loss, creating financial difficulties.

Figure 7 summarizes recent estimates of the extent of financial catastrophe due to cancer across middle-income markets in Asia-Pacific. Around half of all cancer patients face financial catastrophe, defined as OOPs for medical services and non-medical services exceeding annual household income by 30%. Vietnam is the market with the highest proportion of cancer patients in financial catastrophe with 68% as reported by the international ACTION study (46). For Malaysia, a recent country-specific study put this proportion to 51% (as shown in Figure 7) (47), similar to the result obtained in the ACTION study at 45% (46).

Thailand is the market with the lowest proportion of cancer patients in financial catastrophe with 24% from the same ACTION study (46). While both Malaysia and Thailand have had achieved UHC long time before the study, households in Malaysia appeared to be less shielded from financial toxicity than those in Thailand. The authors of the ACTION study emphasized differences in the structures of their health care systems as a possible explanation. In Thailand, public insurance funds finance a package of cancer care services which citizens can access from both public and private health care facilities. In Malaysia, publicly financed health care is only provided in public health care

⁶ This situation sets cancer apart from other diseases, such as diabetes or multiple sclerosis, which do not stop people from continuing to work upon diagnosis and where annual medical treatment costs are comparatively low but instead occur throughout several years or even decades.

facilities, which are characterized by long waiting times, which in turn might force many patients to pay OOP for health care services in the private health care facilities (46).

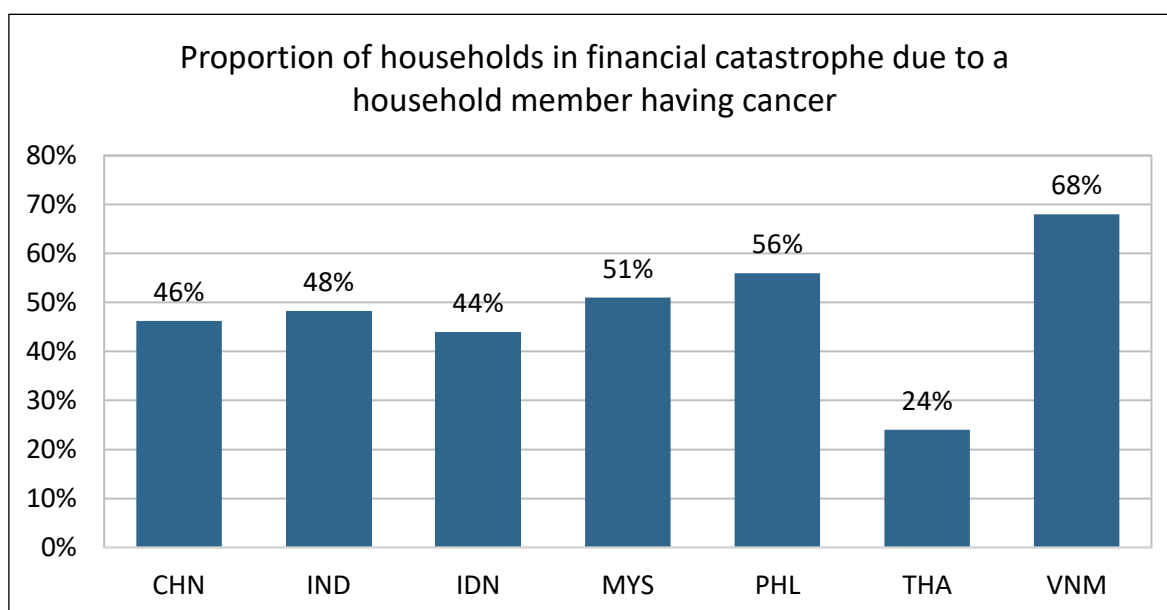


Figure 6: Proportion of households in financial catastrophe due to a household member having cancer

Notes: Financial catastrophe is defined as out-of-pocket medical and non-medical expenditure $\geq 30\%$ annual household income. For China, the numerator of financial catastrophe only comprises medical expenditure and thus leads to an underestimation of the proportion of households in financial catastrophe, whereas the denominator is household non-food expenditure, which is a smaller amount than household income and thus leads to an overestimation of the proportion of households in financial catastrophe. For India, the proportion shown is the average of the proportion of affected households using a 20% and 40% threshold, and with estimates for the public sector and the private sector weighted based on the proportion of patients treated in these sectors. In India, the numerator of financial catastrophe only comprises medical expenditure related to inpatient treatment and thus leads to an underestimation of the proportion of households in financial catastrophe, whereas the denominator is household expenditure, which might be a smaller amount than household income and thus leads to an overestimation of the proportion of households in financial catastrophe. No comparable data were identified for high-income markets.

Source: CHN (48), IND (49), MYS (47), IDN+PHL+THA+VNM (46).

In high-income markets in Asia-Pacific, no comparable studies on financial catastrophe of cancer patients were identified. However, cancer patients in these markets may also face financial difficulties, even though possibly not to the extent in middle-income markets. In Australia, cancer patients in rural areas may face high OOPs due to the cost of travelling far away from their homes for treatment, or from the relatively high co-payments for treatment by working-age patients without concession cards (50, 51). The latter is similar to the situation in Japan, where younger cancer patients face a higher risk of financial problems due to the higher co-payment rates on medical services (30% instead of 10% for people aged 70 or older) (52). In South Korea, 6% of male cancer patients and 19% of female cancer patients reported OOPs for medical expenditure in excess of 10% of annual household income. Patients with private insurance that cover health services and treatment that are not

reimbursed through the national health insurance were less likely to experience financial toxicity. (53).

Further research is warranted on financial catastrophe due to its complexity, lack of a firm definition of the topic, and limited quantitative studies. The subjective perception of financial distress and its effects on patients in general is also an under-researched area (44). There is also limited evidence regarding the effect of OOPs on health seeking behavior and subsequent patient outcomes, as patients might become reluctant to seek care with the prospect of potential high OOPs (54). This burden falls disproportionately on poor patients, making them more likely to subsequently present at late-stage disease with worse prognosis.

The provision of a comprehensive safety net to prevent high OOPs is imperative in the quest of governments seeking to guarantee equitable and good-quality care through UHC. For cancer care services offered under UHC, some factors are especially noteworthy, such as:

- Ensuring that the public health system has the capacity to cater to the needs of all patients, thus avoiding patients being forced to seek care in the private sector
- Reviewing the size of co-payments on health services and imposing an annual cap on co-payments
- Seeking ways to cover non-medical costs such as costs of travel in conjunction with care provision

4. Health spending and cancer patient outcomes

This section explores how the level of health spending relates to cancer patient outcomes across all markets in Asia-Pacific. It aims to answer the following question: Is there an association between health spending and cancer patient outcomes?

4.1 Method and data

Two types of input were combined for the analysis. Health spending was defined as total health expenditure per capita; see section 2. This is a measure of the financial value of resources used in health care and demarcates the fundamental boundaries within which health is produced through the public and private health care sector.

Outcomes of cancer patients were defined as the complement of the mortality-to-incidence ratio (1–MIR) as a proxy for survival; see section 2 in sub-report 1. While 1–MIR is a cruder measure than survival, it allows international comparisons due to its simplicity and availability of incidence and mortality data for most markets.

Both data inputs refer to the year 2018 in all markets. Linear regression analysis was used to examine the strength of the correlation between the two measures.

4.2 Results

Linking inputs in the health care process to patient outcomes is fundamental in assessing the efficiency of health care systems. Measuring such inputs and patient outcomes comprehensively is challenging as both consist of several relevant dimensions (e.g., survival and quality of life may both be relevant patient outcomes).

Figure 6 shows how total health expenditure per capita (inputs) correlate with the complement of the mortality-to-incidence ratio (1–MIR) of cancer (patient outcomes). Each dot in Figure 6 represents a market and the drawn (unweighted) line represents the relationship between inputs and outputs inferred based on the 14 markets. The following observation can be made. There is a clear positive correlation between health expenditure and the 1–MIR across Asia-Pacific. This indicates that markets with higher health spending tend to achieve better patient outcomes, while markets with

lower health spending tend to achieve worse patient outcomes. The strength of this association is high⁷, as indicated by a correlation coefficient of 0.75 (0 is no correlation and 1 is perfect correlation).

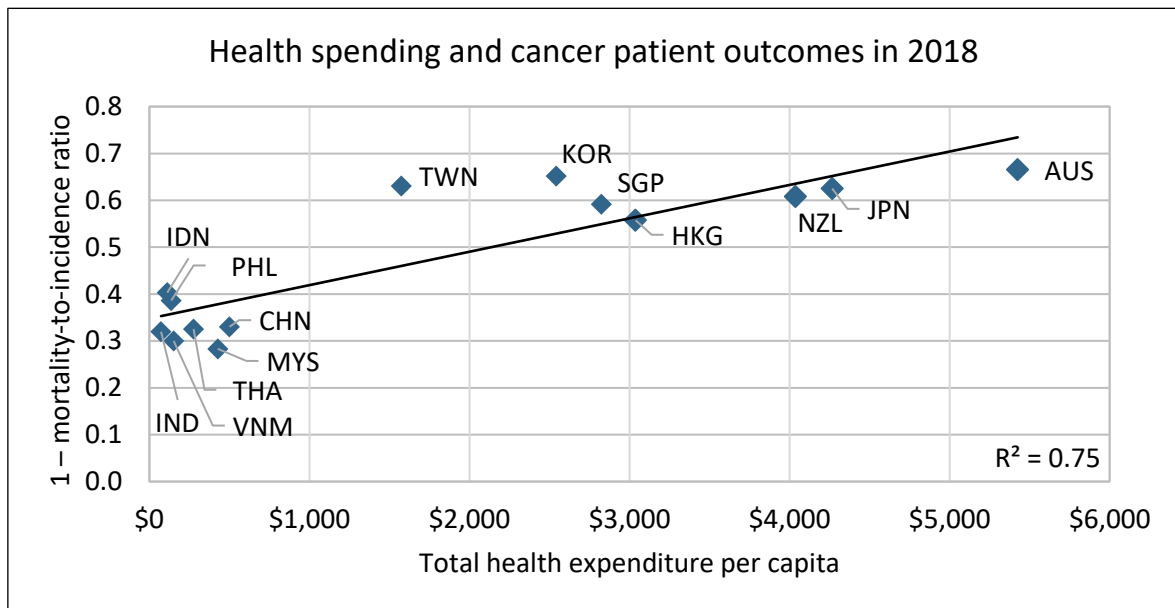


Figure 7: Total health expenditure per capita and complement of the mortality-to-incidence ratio of cancer, 2018

Notes: Total health expenditure includes financing from public and private sources. Expenditure are not adjusted for differences in purchasing power parity.

Source: National cancer registries and GLOBOCAN for the mortality-to-incidence ratio (see Figure 6 in sub-report 1) and WHO, Department of Health for HKG, Ministry of Health and Welfare for TWN for health expenditure (see Figure 1).

A positive relationship between health spending and cancer patient outcomes has been documented previously in other parts of the world. This includes analyses of OECD countries, studying the relationship between total health spending per capita and 5-year cancer survival rate (55), and the relationship between a measure of the quality of health systems and the cancer MIR (56). Analyses of the relationship between cancer-specific health spending per capita and 5-year cancer survival rates in European countries further supported the positive correlation between health investment and outcomes (15, 57).

The positive relationship between health spending and patient outcomes in Figure 6 does not need to be causal, but it suggests that health spending might be a stronger driver of patient outcomes. It signals to health policy makers that sufficient health care investment is vital for patient outcomes. Furthermore, health spending only represents the overall monetary value of all resources used. Effective allocation of such resources across the health system through evidence-based decision-making is pivotal to achieve the greatest benefits to patients (58).

⁷ Note that the associations could potentially also be driven by some third factor (e.g., the level of education in a country) that is related to both the amount of health expenditure and patient outcomes.

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