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REVIEW

Quality-of-care indicators for oncology management: an analysis of Asia-Pacific healthcare and oncology indicators

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Cancer is a major cause of morbidity and mortality, with variable outcomes seen in the Asia-Pacific region due to substantial differences in cancer care and management. Quality indicators are evidence-based, standardized measures of healthcare quality that help measure or quantify healthcare processes, outcomes, and organizational systems to help promote and provide equitable high-quality healthcare. A detailed list of quality indicators in medical, surgical, and palliative oncology was identified from literature reviews. This study, which was commissioned by the ESMO Asia Pacific Public Policy Committee, aims to report on the performance of healthcare and oncology quality indicators across 47 countries in the Asia-Pacific region.

Key words: quality index, oncology care, health equity

INTRODUCTION

Cancer is a major global health problem, and the situation is escalating rapidly. According to Global Cancer Statistics (GLOBOCAN) by the International Agency for Research on Cancer (IARC), there were 19.2 million new cancer cases (all cancers excluding non-melanoma skin cancers) and a total of 9.9 million cancer deaths globally in the year 2020.[1] Cancer outcomes vary widely across different countries due to multiple factors including variation in cancer patterns, national cancer screening policies, access to good quality treatment, and cultural barriers.[2] Assessment of outcome data is important to understand the results achieved by individual countries and for setting achievable goals for different regions.

Previous studies in the Asia-Pacific (APAC) region have explored aspects of healthcare performance and oncology indicators, but they have often been limited in scope. For example, Bray et al.[3] focused on cancer incidence and mortality trends across various APAC countries, providing essential epidemiological insights but lacking a comprehensive analysis of healthcare infrastructure, policy variations, or the broader range of cancer care indicators. Other research efforts have examined specific aspects, such as healthcare financing models or access to cancer treatments, without integrating these components into a holistic understanding of cancer care quality.[4,5]

Healthcare performance measurement is key to evaluating and improving healthcare systems, and informing policy decisions and initiatives aimed at improving quality of care. Healthcare quality indicators are ‘quantitative measures that provide information about the effectiveness, safety and/or people-centeredness of care’. A recent study gathered opinions from cancer care experts across low- and middle-income countries and reached a consensus on 34 cancer quality indicators—selected from 216 identified through a literature review—that were both feasible to collect and of high priority for cancer care in low- and middle-income countries.[6]

In this study, we focus on 57 healthcare and oncology indicators and their performance across 47 countries in APAC. The APAC region comprises countries with vastly different economic statuses, from high-income countries such as Japan and Australia to low-income countries such as Cambodia and Papua New Guinea. This disparity creates a unique landscape for cancer care, where healthcare systems vary in maturity, cancer care infrastructure, access to cancer medicines, and government funding for cancer treatment. The APAC region also faces unique geographical challenges that impact cancer care delivery, particularly in countries with remote or rural populations. These factors contribute to disparities in access to healthcare, especially in the

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availability of screening, early diagnosis, and treatment. Such geographic and demographic considerations are critical for contextualizing the study's findings, which show discrepancies in cancer care outcomes between urban and rural populations.[7]

This study aims to (i) provide a structured summary of cancer care performance indicators used across the care pathway and (ii) assess the performance within countries in APAC. The data gathered on healthcare and cancer care indicators across 47 countries will be crucial for policymakers, healthcare administrators, and international agencies in identifying key areas for improvement. By benchmarking performance against other countries, governments can allocate resources more effectively, prioritize cancer prevention strategies, and strengthen cancer treatment infrastructure.[8] Ultimately, the findings will serve as a road map for regional efforts toward reducing disparities in cancer care and achieving universal health coverage.

MATERIALS AND METHODS

Methodology

The study adopted a comprehensive approach to identifying and evaluating healthcare and oncology indicators across the APAC region. To ensure replicability and consistency, we established clear inclusion and exclusion criteria for the selection of quality indicators, guided by frameworks for healthcare quality assessment from the literature.[6,9]

To ensure comprehensive data collection, we used a systematic search strategy that combined database queries and hand-searching methods. We searched major academic databases, including PubMed, Web of Science, and Scopus, using a set of predefined keywords such as 'cancer care indicators', 'healthcare performance', 'Asia-Pacific', and 'healthcare expenditure'. In addition, we reviewed reference lists from key articles and included gray literature from credible sources such as the World Health Organization (WHO) and the World Bank. Our approach aimed to minimize bias and ensure the inclusivity of relevant studies and data sources across the APAC region.

In this study, we chose indicators that were valid and demonstrate a direct or indirect relationship with cancer care outcomes or healthcare quality. They also needed to be measurable, with data consistently available across multiple APAC countries through credible sources and peer-reviewed scientific literature. Lastly, indicators were required to have the potential to exhibit variation over time, enabling the assessment of trends and the impact of healthcare intervention.[10] We excluded indicators that lacked sufficient data reliability or were based on estimates without robust empirical support as well as indicators that were highly context specific and thus not applicable across diverse healthcare settings in APAC.

Given the heterogeneous methods across countries for data collection on healthcare system performance and their translation to indicators,[11] we included studies from various publication platforms, including the WHO, World Bank, International Monetary Fund (IMF), governmental websites, scientific papers, and gray literature, including published articles, published reports, and various other literature sources. The complete list of references can be found in Supplementary Table S1, available at https://doi.org/10.1016/j.esmoop.2025.104293.

Cancer care indicators

A total of 57 quality indicators were selected and organized into specific categories, including healthcare spending, cancer care policies, infrastructure, and access to medicine. The selection process emphasized indicators that could yield actionable insights for policymakers and healthcare administrators (Table 1). To evaluate similarities and differences in healthcare and cancer care spending, cancer care policies, cancer infrastructure and resource strengths, and availability of supporting cancer ecosystems, several regional groupings were considered for analysis including income-level grouping (according to the World Bank country income-level definition), geographic grouping (United Nations and WHO regions), and population data, to highlight the demographics' impact on healthcare needs and planning. In this study, we decided to structure our regional analysis based on the World Bank's country income-level definition (Figure 1).

RESULTS

The analysis of cancer care performance in APAC countries is structured ∼57 quality indicators, categorized under key subheadings: cancer care spending, medicine and cancer drug expenditure, cancer care infrastructure, and supporting cancer ecosystems.

Healthcare and cancer care spending across the Asia Pacific

Our analysis revealed significant variability in cancer care spending across income levels in APAC countries. Healthcare and cancer care spending correlate strongly with country income levels. Countries with higher income levels, determined by gross domestic product (GDP) per capita, are able to support public healthcare and cancer care delivery with more funding and resources. However, it is critical to consider that higher healthcare spending does not necessarily equate to improved patient outcomes. Studies have shown that factors such as the efficiency of healthcare systems, equitable resource distribution, and integration of care pathways play a crucial role in determining patient outcomes.[4,5]

High-income countries have healthcare spending per capita that ranges from USD 2189 to USD 4880 (except Brunei which has a per capita healthcare spending of USD 633) which is more than double that in countries with lower income levels (Figure 2). This is likely due to the comprehensive universal healthcare models adopted by most of the high-income countries. For example, Japan, South Korea, and Australia offer mandatory national health insurance schemes financed primarily by premiums or taxes, as well as government subsidies.[12,13]

Table 1. Number of quantitative indicators retrieved, grouped into categories according to the cancer care pathway ($n = 57$)

Category	Indicators
Population	1. Total population 2. Population ages $\leq$19 and below 3. Population ages 20-34 4. Population ages 35-49 5. Population ages 50-64 6. Population ages $\geq$65
Healthcare expenditure	7. Total healthcare expenditure 8. Healthcare expenditure as % of GDP 9. Healthcare expenditure per capita
GDP	10. Gross domestic product, current prices 11. Gross domestic product per capita, current prices 12. Gross domestic product, constant prices 13. Gross domestic product per capita, constant prices
Medicine and cancer drug expenditure	14. Prescription drug spending 15. Prescription drug spending as % of health expenditure 16. Prescription drug spending as % of GDP 17. Cancer drug expenditure 18. Cancer drug expenditure as % of health expenditure 19. Cancer drug expenditure as % of prescription drug spending
Healthcare financing model	20. Different financing schemes a. Government schemes and compulsory contributory healthcare financing schemes b. Voluntary healthcare payment schemes c. Household out-of-pocket payment d. Rest of the world financing schemes (nonresident) e. Unspecified financing schemes (n.e.c.) 21. Healthcare financing model
Medicine and health technology assessment regulatory systems	22. The existence of a medicine regulatory agency 23. Name of the medicine regulatory agency 24. The existence of a health technology assessment agency 25. Name of the health technology assessment agency
Data protection rules	26. The existence of a data protection law/act/bill/policy 27. Name of the data protection law/act/bill/policy
National cancer plan and cancer prevention program	28. The existence of an operational policy/strategy/action plan for cancer 29. The existence of a national screening program for cervical cancer 30. Cervical cancer screening program type 31. Primary screening method used in the national cervical cancer screening program 32. The existence of a national HPV vaccination program 33. The existence of a national screening program for breast cancer 34. Hepatitis B (HepB3) immunization coverage among 1-year-olds 35. Availability of health warnings on cigarette packaging and labeling
Rare disease approach	36. The existence of rare disease policy or plan 37. The existence of special funding for patients with rare disease 38. Availability of funding for rare cancers 39. National body in charge of rare disease management
Cancer care workforce and infrastructure	40. Cancer treating specialist recognition—medical oncologist 41. Cancer treating specialist recognition—radiation oncologist 42. Cancer treating specialist recognition—surgical oncologist 43. Organization recognizing cancer specialist status—medical oncologist 44. Organization recognizing cancer specialist status—radiation oncologist 45. Organization recognizing cancer specialist status—surgical oncologist 46. Availability of in-country cancer training program—medical oncologist 47. Availability of in-country cancer training program—radiation oncologist 48. Availability of in-country cancer training program—surgical oncologist 49. Medical oncologist per 100 000 population 50. Radiation oncologist per 100 000 population 51. The existence of specialized cancer centers
Cancer care supportive ecosystem	52. The existence of population-based cancer registry data 53. Availability of palliative care services in primary healthcare 54. Availability of palliative care services in community or home-based care 55. Cancer patient advocacy organizations 56. Number of cancer clinical trials by phase a. Number of in-country early phase I trials and nondrug trials b. Number of in-country phase I trials c. Number of in-country phase II trials d. Number of in-country phase III trials e. Number of in-country phase IV trials 57. Share of in-country trials that are part of international clinical trials

GDP, gross domestic product; HPV, human papillomavirus; n.e.c., not elsewhere classified.

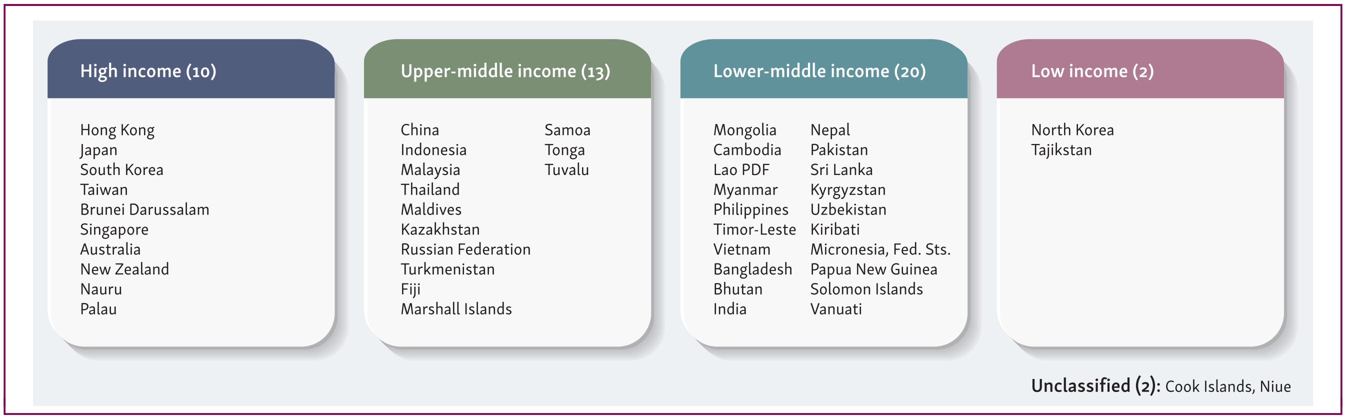

Figure 1. **World Bank's country income-level distribution for the 47 Asia-Pacific countries.**

Healthcare spending per capita for the upper-middle-income countries ranges from USD 228 to USD 628, except for Fiji and Indonesia where healthcare spending per capita falls below USD 200 (Figure 2). Most upper-middle-income countries strive for universal health coverage by offering national health insurance schemes or adopting a universal healthcare system where public healthcare is free or at a very low cost for residents. However, the extent of coverage varies across these countries. Countries such as Fiji, Indonesia, and Malaysia also provide health insurance or assistance to people with low income to ensure that groups in vulnerable situations have access to basic medical care. Thailand's healthcare system includes three reimbursement schemes: the Universal Coverage (UC) Scheme, the Social Security Scheme (SSS), and the Civil Servant Medical Benefit Scheme (CSMBS).[14] The Universal Coverage scheme, launched in 2002, is the largest of the three schemes. It is funded by the national budget and allocated on a mixed per-capita basis by the National Health Security Office (NHSO). At least 250 000 patients who were diagnosed with cancer benefited from the NHSO universal healthcare scheme in 2022, an increase from an annual average of 100 000 beneficiaries in the 5 years prior.

Healthcare spending per capita for low- and lower-middle-income countries is under USD 200, except for Micronesia. Although many of these countries have introduced national health insurance schemes or universal healthcare, the implementation is hindered by multiple challenges.[15,16] These include low government funding, limited coverage, unclear policies, and low adoption rates that have resulted in high out-of-pocket (OOP) spending on healthcare (Figure 2).

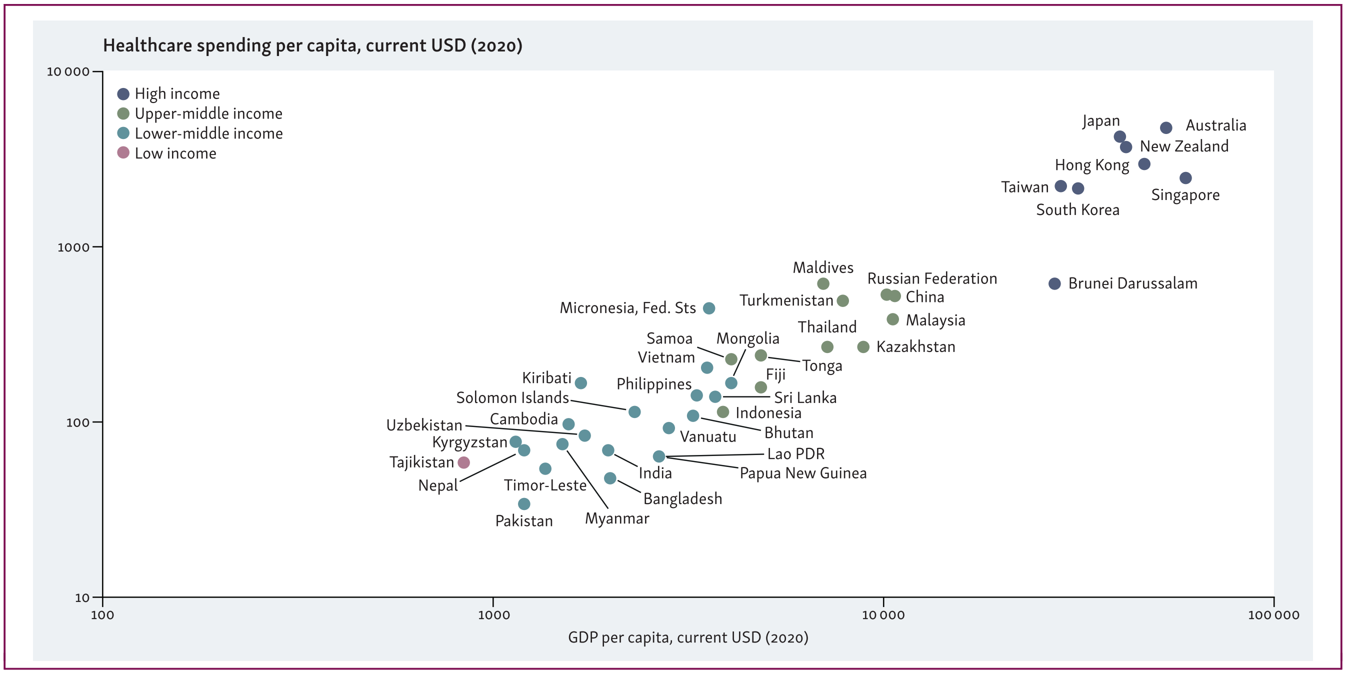

Figure 2. **Healthcare spending per capita correlation with gross domestic product (GDP) per capita (log scale).**
Source: IMF and The World Bank Data.

Healthcare financing model

All high-income countries have government and compulsory healthcare schemes as the predominant healthcare financing means, ranging from 50% in Hong Kong to 84% in Japan. The mature healthcare systems in high-income countries tend to have more advanced universal healthcare schemes that cover the majority, if not all the population. Nonetheless, significant OOP spending of >30% of total healthcare financing exists in some high-income countries, such as Hong Kong, Singapore, South Korea, and Taiwan, due to a preference for private healthcare as well as high co-payment rates.

Upper-middle-income countries share a similar healthcare financing mix as the high-income countries, with government and compulsory healthcare schemes taking up a high proportion of total healthcare financing, ranging from 49% in Indonesia to 78% in Thailand. This is followed by household OOP payments that range from <1% to 39%. However, an exception is Turkmenistan which has a very high proportion of OOP payments at 75%, while government and compulsory schemes stand at only 20% (Figure 3).

Among the low-income and lower-middle-income countries, most have high OOP payments in their healthcare financing mix, ranging from 44% to 76%. The healthcare systems in these countries are in the nascent stages and tend to lack universal healthcare coverage, resulting in high OOP payments (Figure 3).

Access to medicines

Most APAC countries have a medicine regulatory agency. The only countries without a medicine regulatory agency are North Korea and small countries in the Western Pacific, such as Nauru and the Marshall Islands.

Higher-income countries tend to have higher prescription drug spending per capita (Supplementary Figure S1, available at https://doi.org/10.1016/j.esmoop.2025.104293). High-income countries have a prescription drug spending per capita that ranges from USD 144 (Singapore) to USD 1051 (Japan). The range for upper-middle-income countries is from USD 44 to USD 197, and the range for lower-middle-income countries is from USD 16 to USD 91. High-income countries tend to have well-established health technology assessment bodies, such as the Pharmaceutical Benefits Advisory Committee in Australia and the Central Social Insurance Medical Council in Japan, that allow for faster

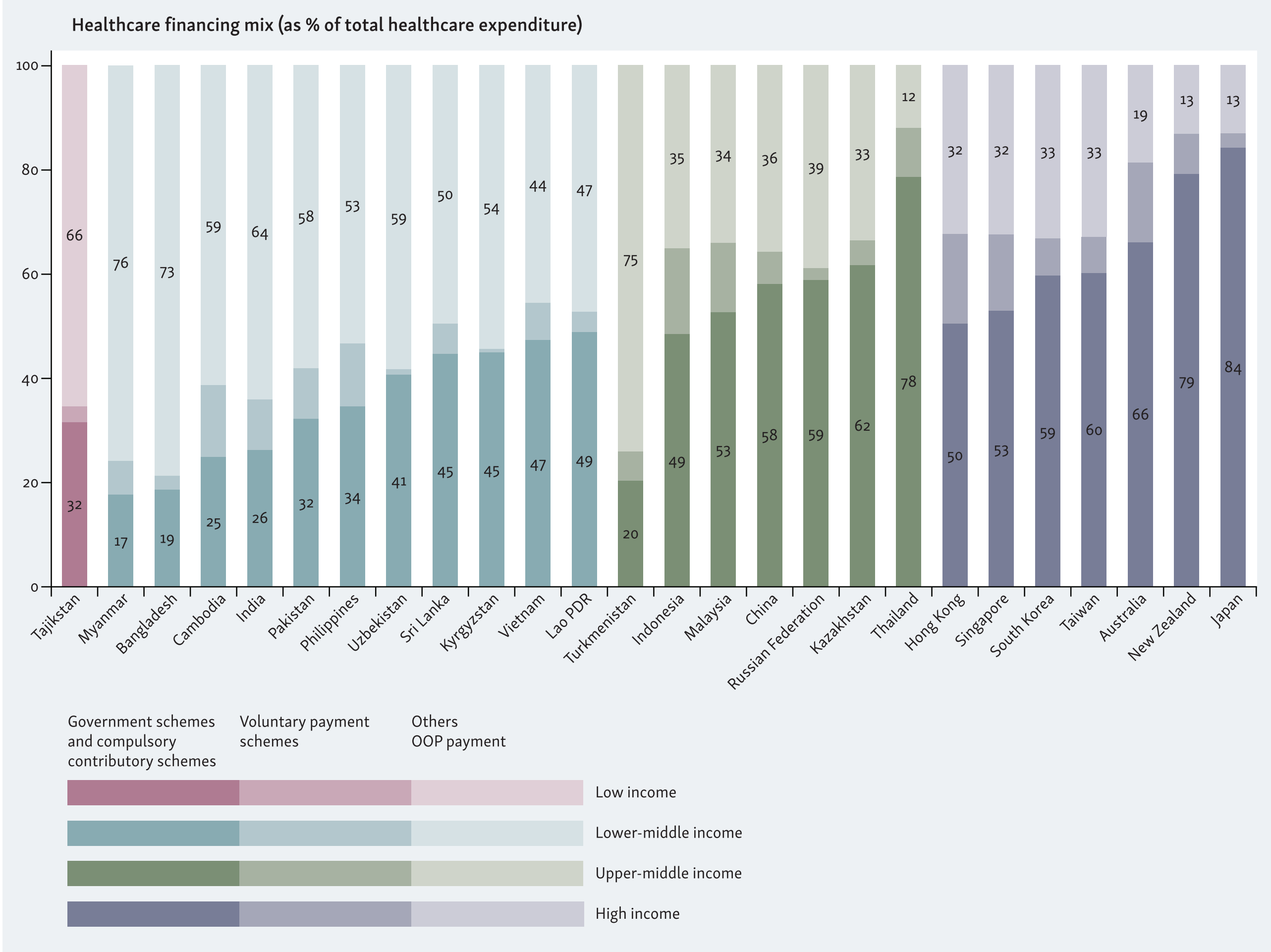

Figure 3. Healthcare financing mix (as a percentage of total healthcare expenditure). Source: WHO Global Health Expenditure Database.[4] OOP, out of pocket.

access to innovative medicines in comparison to upper- and lower-middle-income countries.

An example of access to cancer medicines in an upper-middle-income country is Thailand which provides access to the National List of Essential Medicines (NLEM) among the three public (reimbursement) schemes. However, the UC Scheme and the SSS have access limitations to non-NLEM anticancer drugs by reimbursement caps. The CSMBS provides better access to systemic anticancer drugs through the Oncology Prior Authorization program. Additionally, Patient Access Programs are offered by pharmaceutical companies to assist access to nonreimbursable drugs for self-paying patients; 89.7% and 100% of anticancer drugs in the WHO-Model List of Essential Medicines (WHO-EML) are accessible in the UC—SSS and CSMBS, respectively. However, 19.2%-100% of anticancer drug regimens contained in the National Comprehensive Cancer Network (NCCN) guideline for treatment in early-stage are reimbursable in the UC—SSS, and only 5.9%-52.6% for treatment in the advanced stage. Meanwhile, 57.7%-100% of anticancer drug regimens contained in the NCCN guideline for treatment in the early stage are reimbursable in the CSMBS, and 41.2%-84.2% for treatment in the advanced stage.

Cancer care spending

Cancer medication spending per capita (Figure 4) among high-income countries ranges from USD 30 to USD 138, as most countries provide comprehensive health coverage, including cancer care. An example is Australia's Pharmaceutical Benefits Scheme (PBS) which provides reimbursement for innovative oncology drugs, including chemotherapy, targeted therapy, and immunotherapy drugs. For the upper-middle-income countries, cancer care spending per capita ranges from USD 2 to USD 17. Oncology coverage is expanding in some countries, such as China which has witnessed increasing inclusion of innovative oncology drugs in the National Reimbursement Drug List (NRDL). However, oncology coverage varies, with countries such as Indonesia providing limited coverage for oncology drugs.

Low- and lower-middle-income countries generally spend <USD 2 per capita for cancer care, except for Vietnam, which has a per capita spending of USD 6. With limited resources for healthcare, low and lower-middle-income countries struggle to provide comprehensive cancer treatment, especially for innovative and expensive cancer drugs, which in turn drive high OOP spending.

Cancer care policy

A cancer plan is defined as a national-level document that sets goals for the country and outlines the steps to achieve the goal in cancer care, which covers policies from education, prevention, screening, and treatment. Almost all countries in APAC have an operational cancer plan; however, the comprehensiveness of the national cancer plan varies across countries. For example, mortality reduction is part of the cancer plans of all countries, and one of the strategies to achieve this is increased awareness through education. In addition to education, higher-income countries have other strategies in place such as allocating a budget for purchasing state-of-the-art equipment for cancer care (Hong Kong) and increasing accessibility to cancer care in rural regions (Australia).

High-income countries tend to have comprehensive cancer policies, with well-organized prevention and

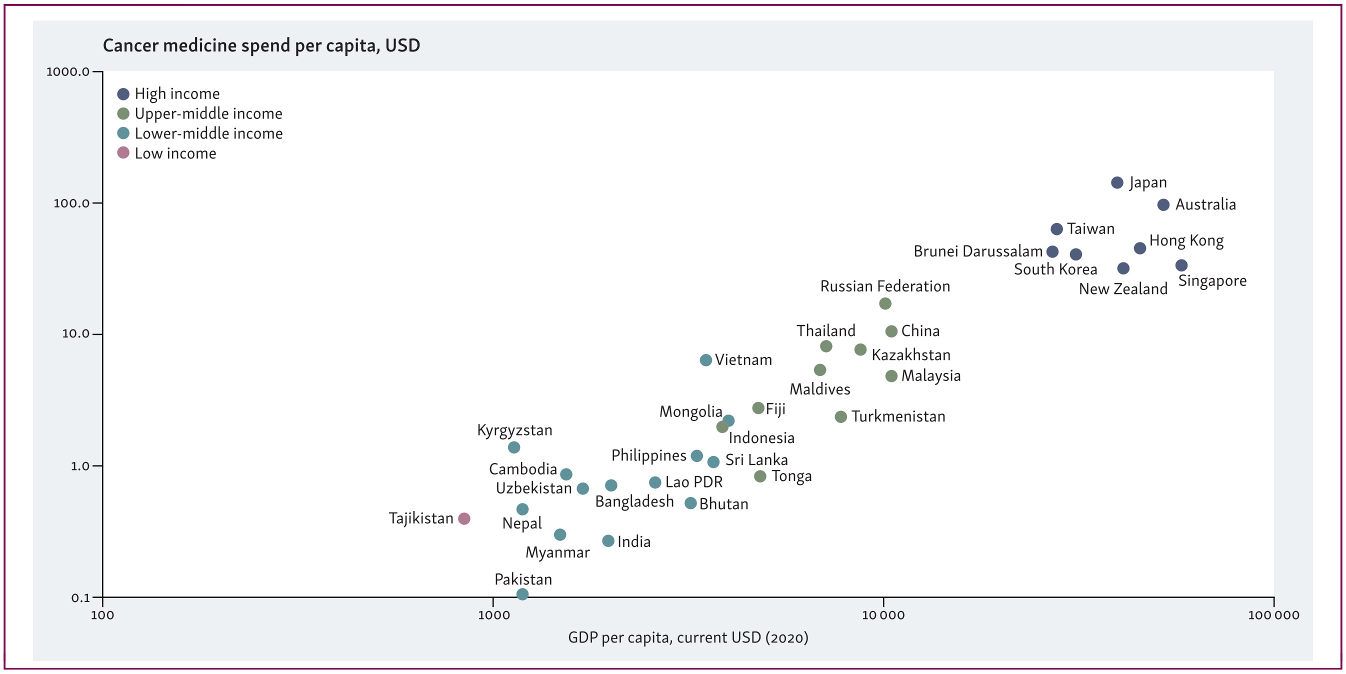

Figure 4. Cancer medicine spending per capita correlation with gross domestic product (GDP) per capita (log scale). Source: Fitch Solutions Industry Statistics Pharmaceuticals and Healthcare 2020 and IMF.

screening programs in place, such as human papillomavirus (HPV) vaccination, and breast cancer and cervical cancer screening programs (Supplementary Table S2, available at https://doi.org/10.1016/j.esmoop.2025.104293). National cervical cancer screening programs in high-income countries are well-structured with a clear definition of the target population eligible for the screening and screening policies. By contrast, lower-middle and low-income countries tend to have opportunistic screening programs where cervical cancer screening is only provided to those who have requested for it or have been recommended by a healthcare professional. Similarly, most high- and upper-middle-income countries in APAC have breast cancer screening programs in place, while approximately half of the lower-middle-income and low-income countries do not.

Cancer care infrastructure and resource development programs

Most countries in APAC have specialized cancer centers; however, the level of cancer care provided in these centers varies. High-income countries have fully equipped specialized cancer centers that provide advanced cancer therapies, whereas centers in lower-middle-income countries have very limited access to advanced medical equipment, and patients with cancer are mostly treated with older-generation chemotherapies, if available. We define ‘advanced medical equipment’ as including technologies such as positron emission tomography—computed tomography scanners, proton therapy units, and in-house genomic sequencing capabilities. Access to these resources is primarily seen in high-income countries, supporting advanced cancer diagnostics and treatment modalities.[3] The lack of such equipment in lower-income countries remains a major barrier to improving cancer outcomes.

Specialized cancer centers in high-income countries such as South Korea, Japan, and Singapore have equipment that can provide advanced treatments such as proton therapy and include in-house genome analysis capabilities. These centers have multiple cancer subspecialty departments as well as supporting services such as palliative care and psychotherapy. Patients treated in specialized centers will also have access to cutting-edge treatment as part of ongoing clinical trial research. In addition to providing patient care, the centers house multiple research departments such as precision medicine and proteomics, to advance knowledge in cancer care.

Countries in lower-middle-income and low-income groups usually have very limited cancer treatment options. For example, Cambodia’s first specialized cancer hospital has 24 beds and is staffed with 14 oncologists. In Papua New Guinea, the only radiotherapy machine broke down in 2019, leaving many of the diagnosed patients who could not afford to travel overseas untreated.

There is significant variation in medical oncologists’ availability across countries with different income levels (Supplementary Figure S2, available at https://doi.org/10.1016/j.esmoop.2025.104293). There are fewer than 1 oncologist per 100 000 population in lower-middle-income countries, whereas this ranges from 0.7 to 3.9 oncologists per 100 000 population in high-income countries.

Most countries in the region have an in-country medical training program to train and develop cancer care specialists. All high-income and upper-middle-income countries have in-country training programs for at least one of the three cancer specialties (medical oncologists, radiation oncologists, or surgical oncologists), apart from Fiji. Around half of lower-middle-income and low-income countries do not have an in-country training program for cancer specialists and doctors looking to specialize in oncology are usually trained overseas.

Medical and radiation oncologist training programs are generally available in most APAC countries. In some countries, such as Tajikistan and the Russian Federation, there is accreditation for radiology but not radiation oncology. The Russian Ministry of Health only provides accreditation for oncology and pediatric oncology. Surgical oncologist is not a recognized specialty in most APAC countries. There are surgeons who specialize in cancer surgeries, such as in Japan, Hong Kong, Thailand, and Singapore, but they are primarily trained as surgeons and subsequently achieve their specialization by working in oncology departments.

Supporting cancer ecosystems

Supporting cancer ecosystems span the entire patient journey from information collection upon diagnosis, treatment, and availability of end-of-life care. The population-based cancer registry (PBCR) serves as the backbone of data collection, providing the foundation for decisions on cancer policies. The quality level of PBCR is determined by how comprehensive and up to date the registry is (Supplementary Figure S3, available at https://doi.org/10.1016/j.esmoop.2025.104293).

High-income countries tend to have high-quality PBCRs due to well-established national protocols for data to be collected from the various centers where patients are diagnosed. The registry is regularly updated and maintained by a dedicated workforce.

Upper-middle-income countries have a mix of high-quality and medium-quality PBCRs. Upper-middle-income countries with more mature healthcare systems such as China, Malaysia, Russia, and Thailand have high-quality PBCRs, and these countries also tend to have higher per capita healthcare spending. Upper-middle-income countries with medium-quality PBCRs are Fiji, Indonesia, Kazakhstan, the Marshall Islands, and Samoa. Tonga and Turkmenistan have registration activity for their PBCRs, although data collected are not at a population level, but usually at a hospital level. PBCRs with registration activity have limited coverage, and therefore incidence rates, mortality, and age-specific incidence rates cannot be determined.

Lower-middle-income countries have an equal mix of medium-quality PBCRs and registration activity. A few countries in this income group that stand out and have high-quality PBCRs are India, the Philippines, and Vietnam.

Cancer clinical trials. In general, the ratio of clinical trials to population is higher in high-income countries and lower in lower-income countries. All high-income countries have a high trial-to-population ratio, with Singapore having the highest ratio in the group and Japan the lowest (Supplementary Figure S4, available at https://doi.org/10.1016/j.esmoop.2025.104293). Upper-middle-income countries have a trial-to-population ratio slightly trailing high-income countries, except Indonesia and Kazakhstan, as the healthcare systems in these two countries are not as mature as the other four countries in the upper-middle-income group.

Cancer clinical trials in most countries are predominantly made up of international trials, with ≥85% being international multisite trials. A few countries, such as Hong Kong, India, and South Korea, have a slightly higher share of local clinical trials (30%-40% share). The lowest international trial composition in the region is for China, with only 13% of the 3220 cancer clinical trials conducted being international trials.

Palliative care. Palliative care availability varies significantly across the APAC region, with notable disparities in service implementation. Our analysis assesses whether palliative care services are available in primary healthcare, community, or home-based care settings. In general, countries that have palliative care services available in the community through specialized centers or in home-based settings will also have it in the primary healthcare setting. Around half of the countries in APAC have palliative care available in a primary healthcare setting in the public health system (Supplementary Figure S5, available at https://doi.org/10.1016/j.esmoop.2025.104293). Less than half have palliative care available in community or home-based care settings.

There is a strong correlation between the availability of palliative care and the country's income level. Most high- and upper-middle-income countries have palliative care available in both primary healthcare and community or home-based care settings. A few of the countries that do not have palliative care are China, the Marshall Islands, and Tuvalu—defined by the absence of structured, government-incentivized palliative care programs that are broadly accessible to the population. In these settings, although there may be isolated efforts or initiatives, the implementation is often uneven and lacks integration into the primary healthcare system. For instance, although China has made strides in expanding palliative care services, these efforts are concentrated in urban areas and major hospitals, leaving rural regions underserved and highlighting a lack of uniform integration into the broader healthcare framework.[17] The discrepancies underscore the need for comprehensive national policies and resource allocation to ensure equitable palliative care access across all regions.

About a quarter of lower-middle-income countries have palliative care, the rest do not—the few countries that have palliative care in the public healthcare system are Bhutan, India, Kyrgyzstan, Mongolia, Timor-Leste, and Uzbekistan. In India, palliative care services have been delivered for >40 years. Policies promoting palliative care have already been made at the national, international, and state levels with Tamil Nadu and Kerala rapidly developing palliative care services, and international organizations such as the International Network for Cancer Treatment and Research being actively engaged in research protocols for local Indian community practices.[18]

STUDY LIMITATIONS

We recognize several limitations in our study. First, the variability in data quality and availability across countries may have influenced our findings. Some indicators were derived from estimates and self-reported data, which are subject to bias and potential inaccuracies. Second, the reliance on published sources and secondary data limited our ability to capture nuances in healthcare systems that may not be documented. Moreover, the differences in healthcare system organization and the contextual factors affecting cancer care outcomes were challenging to account for fully. Future research should incorporate more primary data collection and explore longitudinal studies to better understand the dynamics of cancer care improvements over time. In addition, implementing standardized data reporting and adopting electronic health records across the region could mitigate data inconsistencies and enhance research accuracy.

CONCLUSIONS

The findings of the analysis highlight the need for further support for cancer-care planning and delivery to strengthen the efforts to build universal healthcare in the APAC region countries. This study shows the differences in cancer care across low-, middle-, and high-income countries, and provides more information on the disparities of cancer care among these nations. The most significant discrepancies in cancer care outcomes are observed when comparing low-income countries with high-income countries, reflecting vast differences in healthcare system maturity, resource allocation, and accessibility to advanced cancer treatments.

Our analysis recognizes the importance of understanding the intersecting disparities that influence cancer care access and outcomes across the APAC region. Intersectionality refers to how various social and demographic factors—such as geography, culture, socioeconomic status, and religion—interact to create unique challenges in healthcare access and health-seeking behaviors.[19] While our study focused on country income levels as a primary determinant of cancer care disparities, we acknowledge that other intersecting factors could significantly impact the cancer indicators we examined.

For example, archipelagic and mountainous countries in the region face geographic challenges that hinder healthcare delivery, such as limited transportation infrastructure and difficulties in reaching rural or isolated populations. Moreover, socioreligious and cultural factors can shape health-seeking behaviors, influencing participation in cancer screening and treatment adherence. Countries that share these geographic and cultural characteristics may experience unique challenges in achieving equitable cancer care, distinct from income-based disparities. This perspective aligns with recent research emphasizing the role of intersectionality in health inequities in the APAC context.[20,21]

The significant disparities in cancer care quality and access between low- and high-income countries emphasize the importance of strategic investments in healthcare infrastructure, workforce training, and equitable distribution of medical resources. Our findings provide a roadmap for policymakers and healthcare stakeholders to identify and address gaps in cancer care delivery, paving the way for more comprehensive and effective cancer management across diverse economic settings. Strategic investments to tackle the critical challenges highlighted in this report would help improve the lives of millions and reduce global inequities in cancer care.

To better address these complexities, future research should integrate an intersectional framework to explore how multiple social determinants collectively shape cancer care outcomes. This approach could help identify region-specific strategies that account for the diversity of challenges faced by different populations, ultimately informing more tailored and effective healthcare interventions.

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