



The paper:

Out-of-pocket payments for complementary medicine following cancer and the effect on financial outcomes in middle-income countries in southeast Asia: a prospective cohort study
Doi: [https://doi.org/10.1016/S2214-109X\(21\)00595-7](https://doi.org/10.1016/S2214-109X(21)00595-7)

Why was this study conducted?

- Complementary medicine is increasingly being used following cancer diagnosis for many reasons, including amelioration of cancer-therapy-induced side-effects, improvement of general wellbeing, and as the next step after unsuccessful treatment with conventional therapies.
- Complementary medicine might also be an expensive alternative to conventional cancer therapies, leading to serious economic hardship, particularly in resource-limited settings where the practice of using complementary medicine is deeply embedded in some local cultures.
- This study aimed to investigate out-of-pocket spending patterns on complementary medicine and its association with adverse financial outcomes following cancer in middle-income countries in southeast Asia.

How was it done?

Study design and participants

Data were derived from the ASEAN Costs in Oncology (ACTION) study[1], a prospective longitudinal study that enrolled patients who were newly diagnosed with cancer in 47 centres located in eight countries in southeast Asia:

Six lower-middle-income countries (LMIC)



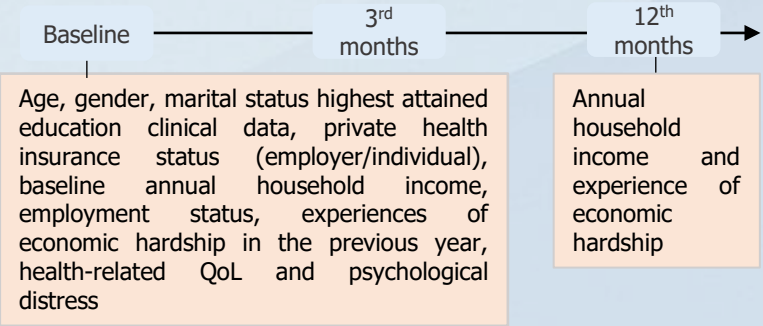
Two upper-middle-income countries (UMIC)



Eligibility criteria:

- first time cancer
- aged 18 years and older
- aware of their cancer diagnosis
- willing to participate in follow-up interviews
- not currently participate in any clinical trials

Study procedures

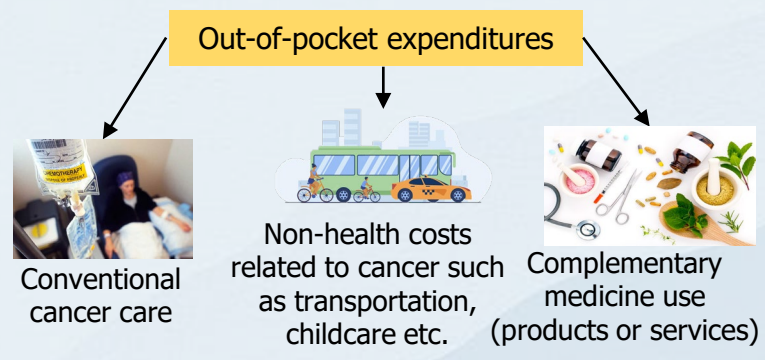


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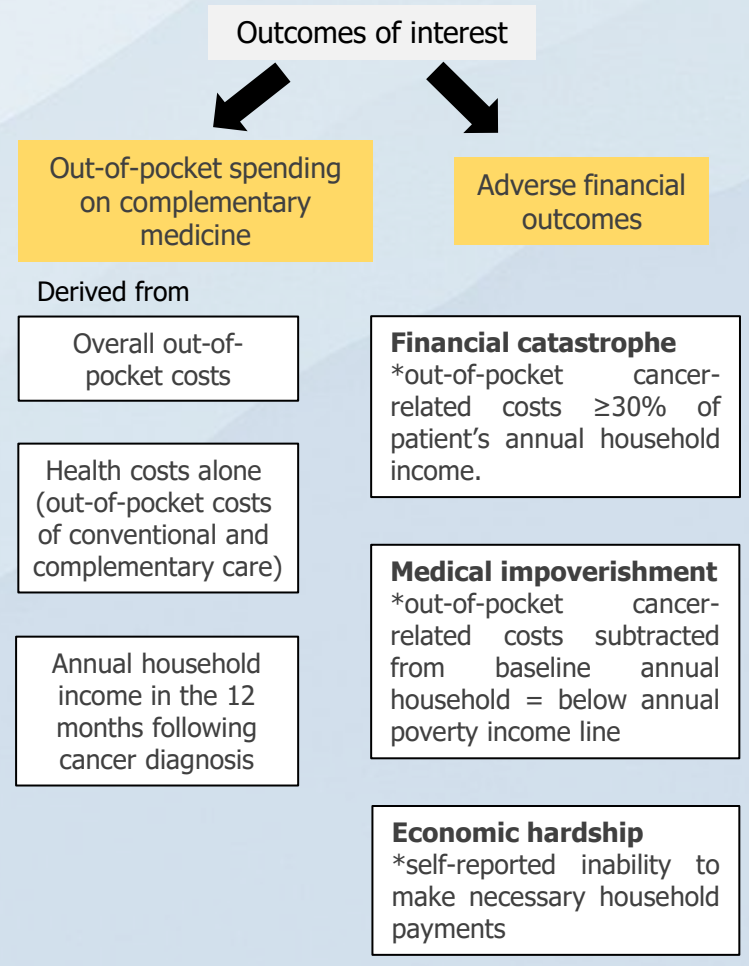


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All participants were given cost diaries at baseline to record illness-related payments that were directly incurred and not reimbursed by insurance over the 12-month period after study recruitment.

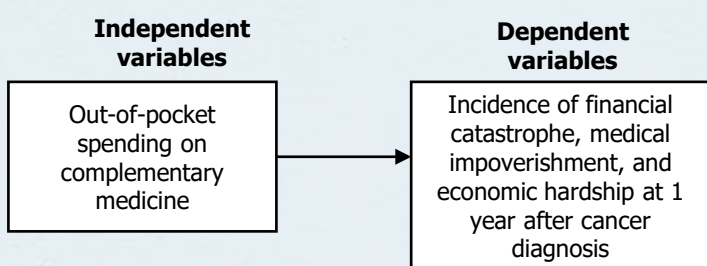


Complementary medicine: A group of diverse medical and health-care systems, practices, and products that were not considered to be part of conventional medicine.



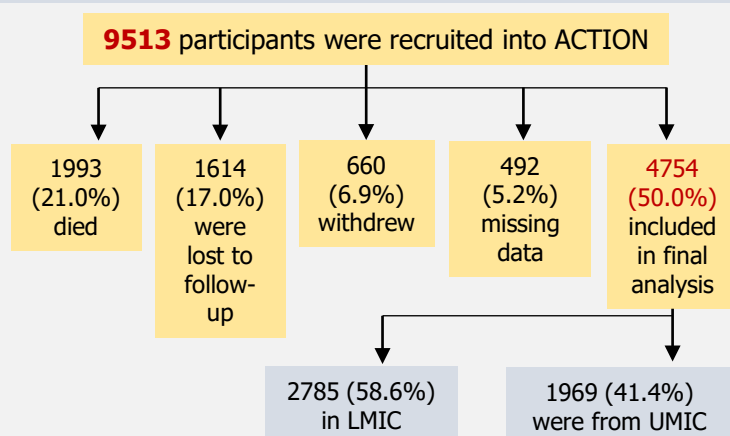
Statistical analysis

- Categorical variables were presented as percentages and compared using chi-square test.
- Continuous variables were described as median (IQR) and compared using non-parametric tests because most variables were not normally distributed; Mann-Whitney U test was used for two subgroups, and Kruskal-Wallis for more than two subgroups
- Baseline characteristics of households who reported making out-of-pocket payments for complementary expenditures were compared with those who did not via chi-square tests.
- Variables with a p value of less than 0.25 in the univariable analyses were included in the multivariable logistic regression analysis to assess the association between patient characteristics and spending on complementary medicine.



- Multivariable logistic regression analyses were adjusted for variables that were associated with both spending on complementary medicine and the adverse financial outcomes.
- Subgroup analyses:
 - ✓ Economically disadvantaged households (low-income status, previous economic hardship, unemployed, or no private health insurance)
 - ✓ Country income group
 - ✓ Country
 - ✓ Cancer site
- ORs were considered statistically significant when the 95% CIs did not include 1, and $p < 0.05$ were considered statistically significant.

What was the results?



- The most common cancers were breast cancer (31.4%), aged 40–60 years at time of cancer diagnoses.
- Approximately 40% of the study participants had private health insurance.
- Other baseline characteristics of study participants is shown in [Supplemental Table 3](#).

Findings from multivariable analysis (Table 1)

Factors that were significantly associated with out-of-pocket spending on complementary medicine were:

- being from Indonesia, Laos, Malaysia, Myanmar, or Thailand (reference: Vietnam);
- being managed in public hospitals;
- and having private health insurance

Median out-of-pocket expenditure on complementary medicine (Table 2)

- Lower-middle-income countries has lower amount spent on complementary medicine, but higher out-of-pocket spending compared to upper-middle-income countries.
- There were significant differences in spending patterns by cancer sites and between countries. Participants with haematological malignancies, for instance, reported the highest share of expenditures on complementary medicine compared with those with other cancers.
- Compared with their higher-income counterparts, participants from low-income households (15% vs 29%) and those who reported economic hardship in the year preceding cancer diagnosis (21% vs 25%) were significantly more likely to spend higher shares of their health expenditures on complementary medicine.

Out-of-pocket spending and financial outcomes (Table 3–5)

- In upper-middle-income countries, out-of-pocket spending on complementary medicine were associated with significantly higher risks of financial catastrophe (adjusted OR [aOR] 1.52 [95% CI 1.23–1.88] and medical impoverishment (1.75 [1.36–2.24] but not economic hardship.
- Out-of-pocket spending on complementary medicine was consistently associated with increased risks of financial catastrophe and medical impoverishment among economically vulnerable households—eg: in the low-income groups and those reporting previous economic hardship.

How much can we take out from this research/paper?

This multicentre cohort study in SEA region is applaudable and amicable for showing that research collaboration is possible in this region of different sociocultural background to find answers to important questions. It was not an easy fit to coordinate in this vast area and in almost 50 centres where data collection was conducted. Besides having adequate funding, properly skilled and knowledgeable researchers and research-related professionals were key to the success of such study.

The research question was concern about financial impacts of out-of-pocket spending on non-conventional therapy or complementary medicine, and other cancer-treatment related cost for the person and in the family as a consequence to the cancer diagnosis. Hence, the cost diary and the amount of spending recorded was of utter importance because it was the outcome measure from which categories of financial impact were derived. Unfortunately, this measuring process was not described and verified in detail that could stand to scrutiny. People in this region are commonly believed not keen record keepers or have the habit of writing a diary. Moreover, disclosing the amount of money one has or spent is sensitive to the core of many people, not just to those in SEA. These were challenges and possible threats to the one-year use of the cost diary and data on the amount of money in the study that require greater attention during the study and reporting. This might explain the half exclusion/dropping-out of the study samples. Same goes to description on the multiple imputation and the selection of variables for the multivariable model.

The results showed that about a quarter of the participants reported out-of-pocket spending on complementary medicine, and on average less than 15% of the overall out-of-pocket cost were spent on complementary medicine. As the amount of money was standardised in comparison, the within-country proportions of the study samples' healthcare cost etc and their between-country comparisons were meaningful but not so with the absolute amount of comparison because the market value of respective currency in exchange for goods were different. This means that the different amount of out-of-pocket money spent on complementary medicine in the different participating countries did not necessary mean different volume of complementary medicine consumption, or in other types of expenditures.

The three adverse financial outcomes (1) financial catastrophe, (2) medical impoverishment, and (3) economic hardship does seem to be ordinal in nature taken on them alone. If this was truly so in the participating countries, we would expect more participants who experienced adverse financial impact in financial catastrophe, then medical impoverishment, and least in economic hardship. This logical phenomenon was observed in the both the upper-middle-income countries Malaysia and Thailand, but no in Philippines, Myanmar and Vietnam. Keep guard of prejudice and if the data quality was of no serious concern (none-reporting by those with lower adverse financial impact or selective or over-reporting in the highest category), these results may prompt further exploration of the health spending behaviours in these different countries in the first year after a diagnosis of cancer.

Based on the proportions of adverse financial outcome categories and out-of-pocket money spent on complementary therapies, it appears that people in Vietnam and Indonesian would benefit the most if there were government policy that include insurance coverage or public subsidies on evidence-based complementary medicine for people with cancers. However, this priority of implementations and benefits is arbitrary across the countries as indicated in this study, and similar measures that are efficient and effective in every participating country will benefit their people.

References

[1] Kimman, M., Jan, S., Kingston, D., et al. (2012). Socioeconomic impact of cancer in member countries of the Association of Southeast Asian Nations (ASEAN): the ACTION study protocol. *Asian Pacific journal of cancer prevention : APJCP*, 13(2), 421–425. <https://doi.org/10.7314/apjcp.2012.13.2.421>