ORIGINAL ARTICLE

Assessment of Out-of-Pocket Expenditure of HER2-Positive Breast Cancer Patients in a Tertiary Cancer Center and Private Clinics in the Philippines

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ABSTRACT

Background. The survival advantage of HER2-positive breast cancer from targeted treatment is commonly undermined by catastrophic health expenditure (CHE), particularly in resource-limited areas. Recognizing that financial catastrophe leads to non-adherence to treatment and dissaving practices, we examined the out-of-pocket (OOP) expenses of patients with HER2-positive breast cancer.

Objective. The study aimed to estimate the median total per-cycle out-of-pocket expenditure of HER2-positive breast cancer treatment from the patient perspective, in public and private clinics, evaluate the association of catastrophic health expenditure with non-adherence to treatment, and describe dissaving practices.

Methods. This was a cross-sectional micro-costing analysis of the treatment of HER2-positive breast cancer from the patient perspective from a tertiary cancer center and select private clinics in the Philippines. Random sampling of patients with HER2-positive breast cancer was done. Using a validated questionnaire, a guided interview was administered. Catastrophic health expenditure was estimated as having OOP of >20% of the household income. OOP costs were assessed retrospectively from the time of confirmed HER2 diagnosis up to the date of survey, while household income referred to the corresponding period. The proportion of patients experiencing catastrophic health expenditure was computed. Fisher's exact was used to assess for any association between CHE and non-adherence to treatment. Descriptive statistics were used to report dissaving practices. All statistical analyses were performed using Stata analytical software version 12.

Results. A total of 101 patients participated in the study. The mean age of participants from the tertiary cancer center and private clinics were 52 and 58 years old respectively. Patients from the private clinics had a median total OOP expenditure of PhP 54,737.06 (IQR = PhP 102,670.00), compared with patients from tertiary cancer center who had a median total OOP expenditure of PhP 13,920.66 (IQR = PhP 20,830.00). The overall prevalence of CHE (90.9%, 95% CI 0.81, 0.95) and non-adherence to treatment with trastuzumab (79%, 95% CI 0.70, 0.87) were high, and similar in both groups. A number of dissaving practices such as resignation from work, borrowing money from friends, selling assets were observed.

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Conclusion. The high rate of CHE and treatment delay among patients with HER2-positive breast cancer were not addressed by the existing cancer programs. Most OOP expenditure was for trastuzumab. Current cancer support programs have potential to address the financial impact of their treatment.

Keywords: micro-costing analysis, catastrophic health expenditure, breast cancer

INTRODUCTION

Breast cancer remains to be the most common cancer and the leading cause of mortality among women worldwide.[1] It has a high potential for cure if diagnosed and treated at an early stage.[2,3] A subtype of breast cancer, when HER2 gene is overexpressed was shown to be more aggressive compared to those without this overexpression.[4] The discovery of HER2 gene in breast cancer led to having treatment that targets the overexpression of this gene. Trastuzumab, a monoclonal antibody that blocks HER2, has been proven to cause significant progression free survival (PFS) and overall survival benefit not only for early stage, but also for advanced breast cancer.[5-7] However, financial barriers, particularly the high cost of treatment, can prevent patients from fully benefiting from this survival advantage.[8]

In the Philippines, breast cancer has the highest incidence of cancer among women.[9] It is also one of the top three leading causes of cancer death among Filipinos.[9] According to the data of the Department of Health (DOH) in 2013, 23.17% of breast cancer in the Philippines are HER2-positive.[10] In the year 2019, the cost of trastuzumab in the Philippines is around PhP 84,000 for two vials equivalent to one cycle for most, which is around PhP 1,512,000 for a duration of 1 year or 18 cycles.[11] The upfront cost of this treatment is huge compared with the average annual income of PhP 312,999 of Filipino families in 2018.[12] According to the cost-utility study of Genuino et al., the incremental cost-effectiveness ratio (ICER) of trastuzumab at that time was PhP 435,505 per QALY gained from a healthcare system perspective. It had 10% cost-effectiveness probability at a threshold of PhP 120,000 per QALY gained in the Philippines.[10]

The Philippine healthcare system is a dual health system comprised of the public and private sectors. Health financing is largely reliant on out-of-pocket (OOP) expenditures; the proportion of which, exceeds any health financing provided by the national health insurance and government subsidies. According to the National Objectives for Health Philippines 2017-2022, OOP expenditure accounts for 52.2% of the total health expenditure in 2016. Whereas the national insurance, PhilHealth accounts for 16.7%, and government subsidies account for 18.9% of the total health expenditures only. From 2018 to 2021, OOP health expenditures of Filipinos accounted for almost half of the total household income.[13] Although PhilHealth introduced the Z Benefit Package for breast cancer in 2012 to reduce financial catastrophe, coverage remains limited and OOP spending continues to be substantial.[14]

In the prospective cohort study of Ngelangel et al., mean monthly OOP expenditure of patients with cancer in the Philippines was USD 3,511.68. In this 12-month follow-up study, 40.6% of the cohort (n=909) experienced catastrophic health expenditure. This occurred the most among patients with breast cancer, where 70.41% experienced financial catastrophe.[15]

Catastrophic health expenditure is the out-of-pocket (OOP) expenditure that exceed the identified threshold of a household's capacity to pay for their health.[16] In the systematic review of Iragorri et al on OOP expenditures of cancer patients worldwide, for patients from high-income countries (HIC), 16% of their annual income goes to out-of-pocket expenses related to cancer care, compared with 42% among low- to middle-income countries (LMIC).[17] Patients from LMICs remain to be the most vulnerable to this financial burden, resulting in wider health inequities.

In the systematic review by Yabroff et al., 20.4% of cancer patients experienced any form of financial catastrophe across all ages.[18] This review highlighted one particular study which identified 37% of patients were found to discontinue treatment due to the financial burden. The primary consequence identified was inadequate delivery of cancer treatment.[19,20] Financial catastrophe was not only associated with worse quality of life, but also with different coping strategies that entailed non-adherence to treatment—and in some contexts, even higher mortality.[21,22] Missed schedules or refusal of recommended treatment were observed most among those with low annual income, with work disability, unemployed, or often had leave of absence.[22] In the ACTION (Asean CosTs ONcology) study, cancer patients in the lowest income category across Southeast Asia were markedly more vulnerable: they were nearly six times more likely to experience catastrophic health expenditure (OR 5.86; 95% CI: 4.76–7.23) and nearly six times more likely to die within one year of diagnosis (OR 5.52; 95% CI: 4.34–7.02), compared to their high-income counterparts.[23]

OBJECTIVE

Recognizing the financial impact of cancer treatment, we did a micro-costing analysis of HER2-positive breast cancer treatment from the patient perspective. The primary objective was to estimate the median total per-cycle out-of-pocket expenditure of HER2-positive breast cancer treatment from the patient perspective, in public and private clinics. The secondary objectives were 1) to evaluate the association of catastrophic health expenditure with non-adherence to treatment and 2) to describe the dissaving practices (e.g., borrowing of money) of patients with HER2-positive breast cancer.

METHODS

Study Design

This was a cross-sectional micro-costing analysis of the treatment of patients with HER2-positive breast cancer of all stages. The study was conducted from the patient perspective through a validated survey to estimate their OOP expenses during treatment. Chart review was performed to confirm disease- and treatment-specific details (i.e., stage, chemotherapy regimen). The study protocol was reviewed and approved by the University of the Philippines Manila Research Ethics Board, and all participants provided written informed consent prior to enrolment.

Population

A daily list of HER2-positive patients presenting at the clinic (excluding weekends) was generated; patients arrived individually on their scheduled days. From this list, random sampling was done, independent of who their attending physicians were. Up to ten eligible patients were sampled per day. Patients who returned for repeat clinic visits during the study period were only considered once; if a patient was not selected on a prior visit, she could still be included on a subsequent visit, but once interviewed, she was no longer eligible for re-sampling.

Inclusion Criteria

1. At least 18 years old up to 69 years old at the time of visit
2. HER2-positive based on laboratory
3. At any phase of medical treatment (i.e., ongoing chemotherapy, trastuzumab, or surveillance)

The two testing sites were tertiary cancer center and private clinics of oncologists. The tertiary cancer center manages approximately 200 cancer patients per day, while each private clinic sees fewer than 100 patients daily. The private clinics of oncologists are situated in the designated area for internists in a multispecialty complex. The two testing sites are within the same complex in Manila, National Capital Region (NCR).

Pre-testing Costing Tool

The validated costing tool on Out-of-Pocket (OOP) Expenses by Palileo-Villanueva et al., originally piloted in Filipino, that had six domains (a. sociodemographic data, b. health-related information, c. healthcare pathways, d. economic profile, e. health financing, f. direct medical costs and non-medical costs) For this study, the tool was adapted to include sources of cancer treatment, dissaving practices (e.g., borrowing money, selling assets), and questions assessing adherence to breast cancer treatment (Appendix A).[24]

A pilot test on ten patients with HER2-positive breast cancer using the adapted tool was done to include variables/components of costs that were not previously included in the tool. Questions, clarifications and instructions were added and revised in the process of pilot testing. The revised questionnaire included sources of financial assistance (e.g., government offices).

Data Collection

Each patient was surveyed once at the time of first sampling (December 2019 to May 2020), and costing was measured retrospectively. Patients were either in their 1) chemotherapy phase of treatment, 2) completed chemotherapy but ongoing trastuzumab, 3) completed chemotherapy and/or trastuzumab, or 4) surveillance after an incomplete or completed treatment. Baseline demographics (e.g., age, place of residence, and monthly household income) were collected. Direct medical costs were estimated under the following cost areas: chemotherapy, trastuzumab, ancillary materials (e.g., intravenous fluid, macroset, and needles). Direct non-medical costs were estimated with the following cost areas: transportation, food, caregiver costs, paper/pen, communication, and others. Their adherence to treatment, defined as completion of intended number of cycles and timing of administration (i.e., adherence to 3-week interval of trastuzumab), were also noted. Non-adherence may either be:

- unable to complete the prescribed number of cycles
- delay of administration of treatment_(>1 week of delay for the next chemo)
- delay of initiation of treatment (>12 weeks from surgery for adjuvant; >8 weeks from diagnosis for neoadjuvant chemo)[25,26]
- unable to adhere to correct dosing.

This was applied to both chemotherapy and trastuzumab. Dissaving practices were surveyed as to whether they had to 1) stop working or schooling, 2) borrow money, or 3) sell assets.

As the timeframe of costing was limited to medical expenses incurred after the establishment of diagnosis based on HER2 laboratory testing, this study did not include cost of diagnostic tests for work-up prior to diagnosis (e.g., biopsy, immunohistochemical staining, and diagnostic imaging). Cost of surgery, biopsy, or radiation treatment, if applicable, were also not included in the estimation of costs. All costs included were cost areas within the medical treatment phase after the diagnosis has been established.

Statistical Analysis

The sample size of 100 was computed using margin of error (E) derived as 5% of the total estimated per-cycle cost of breast cancer HER2 treatment, and with 95% confidence intervals. The standard deviation (SD) of PhP 9,407.44 was computed from the pilot study.

Sociodemographic and clinical variables (stage of breast cancer, etc.) were assessed using descriptive statistics (frequency %, mean (sd), median range). Mean total per-cycle costs of HER2-positive treatment (SD) were estimated. This included both direct medical and non-medical costs. Mean

direct medical costs of treatment (SD) were computed, and this included the following: chemotherapy, biologic agents and pre-medications. Mean direct nonmedical costs of treatment (SD) were also computed. Accounting for the possibility of skewed data, median with minimum to maximum data and interquartile range was computed for total per-cycle cost of HER2-positive breast cancer treatment, direct medical cost, and direct non-medical costs as appropriate.

In this study, CHE was measured using the budget share approach, defined as out-of-pocket (OOP) health expenditures exceeding >20% the household income. OOP costs were assessed retrospectively from the time of confirmed HER2 diagnosis up to the date of survey, while household income referred to the corresponding period. This was estimated using the total per-cycle OOP expenditure as the numerator, and the self-reported household income as the denominator. The proportion with 95% CI of patients with HER2-positive breast cancer who experience catastrophic health expenditure was computed.

Fischer's exact test was computed to assess for the relationship between catastrophic health expenditure and non-adherence to treatment. We recognize that this approach does not adjust for potential confounders, including stage of disease and timing of treatment, which may influence both financial burden and adherence. This represents a limitation of our analysis. Descriptive statistics was used to assess the proportion of patients who had dissaving practices during treatment. All statistical analyses were performed using Stata analytical software version 12.

RESULTS

Baseline Demographics

A total of 101 patients with HER2-positive breast cancer participated in this study. Eighty-eight (88) of the participants were from the tertiary cancer center, and 13 were from the private clinics. The mean age of the participants was 53 years old. Across both settings, 93 patients had a specified chemotherapy regimen. Doxorubicin, cyclophosphamide, and paclitaxel (ACT) was most common overall (60/93, 64.5%). In PGH, ACT accounted for two-thirds of regimens (56/83, 67.5%), followed by docetaxel plus cyclophosphamide (12/83, 14.5%). In private clinics, ACT and docetaxel plus carboplatin were each used in 4 of 10 patients (40%); other regimens were uncommon. Most chemotherapy was given with adjuvant intent (87% at PGH and 83% in private clinics; 87% overall). Palliative treatment accounted for about 9% at PGH and 17% in private clinics (10% overall). Neoadjuvant therapy was uncommon, recorded in 3 patients at PGH and none in private.

More than half (55%) of the patients interviewed were from outside of NCR. Majority of the patients were unemployed (75% from the tertiary cancer center and 61.5% from private clinics). The median monthly household income was PhP 15,739.06 for patients from the tertiary cancer center, and PhP 57,283.71 for those from the private clinics, both belonging to the low- to lower middle-income bracket (Table 1).[27]

Table 1. Baseline Characteristics

	Tertiary Cancer Center, n=88 (%)	Private Clinics, n=13 (%)
Mean Age (SD, Range)	52.2 (9.18) 35 – 72	58.6 (11.05) 37 – 81
Place of Residence (%)		
NCR	38 (43.2)	7 (53.8)
Non-NCR	50 (56.8)	6 (46.2)
Marital Status (%)		
Single	13 (14.8)	2 (15.4)
Married	61 (69.3)	9 (69.2)
Live-in	1 (1.1)	0
Separated	7 (8.0)	0
Widow	6 (6.8)	2 (15.4)
Educational Attainment (%)		
College	31 (35.2)	10 (76.9)
High School	33 (37.5)	2 (15.4)
Elementary	9 (10.2)	1 (7.7)
Technical/ Vocational	14 (15.9)	0
Others	1 (1.1)	0
Employment Status (%)		
Employed	22 (25.0)	5 (38.5)
Unemployed	66 (75.0)	8 (61.5)
Informal sources of income	33 (37.5)	0
Retired	7 (8.0)	0
Monthly Household Income in PhP (Mean, Median, SD, Range)	16,842.1 15,739.06 12,000 0 – 90,000	52,615.4 57,283.71 20,000 3,000 – 170,000
Number of Household Members (Mean, Median, SD, Range)	4.8 (2.0) 1 – 15	5.2 (1.72) 3 – 9
PhilHealth Member (%)	62 (70.4)	3 (23.1)
White Card Holder (%)	83 (94.3)	2 (15.4)
Senior Citizen (%)	20 (22.7)	6 (46.2)
PWD Card Holder (%)	68 (77.2)	7 (53.8)
Breast Cancer Staging (%)		
Stage I	7 (8.0)	2 (15.4)
Stage II	36 (40.9)	4 (30.8)
Stage III	35 (39.8)	5 (38.5)
Stage IV	10 (11.4)	2 (15.4)
Ongoing Cancer Treatment (%)	67 (76.1)	8 (61.5)
Surveillance for Cancer (%)	21 (23.9)	4 (30.8)
Adjuvant*	74 (87.1)	10 (83.3)
Palliative*	8 (9.4)	2 (16.7)
Neoadjuvant*	3 (3.5)	0

NCR – National Capital Region, PhP – Philippine Peso, PWD – Persons with Disabilities

**total varies from the rest of the table due to missing data for some participants (n=85 for tertiary cancer center and n=12 for private clinic)*

Financing of Chemotherapy

A third (36.6%) of the participants used their Non-Z benefit PhilHealth to procure their chemotherapy. The median cost of coverage of Non-Z benefit PhilHealth was PhP 5,100. Sixteen percent (6 out of 37) of those who used their PhilHealth reported co-payment of the amount exceeding the coverage of PhilHealth. This is followed in equal distribution by Philhealth Z-package and BCMAP at 19.8%; programs that provide full coverage for their chemotherapy. OOP expense was the fourth most common source of chemotherapy at 15.8%. (Figure 1) Out-of-pocket (OOP) payments, including borrowing or selling assets, accounted for a substantial share of chemotherapy financing. For reporting clarity, we separated direct OOP payments from borrowed funds in Figure 1; however, these categories are technically both OOP expenditures. These financing sources were not mutually exclusive; although only 12% of patients across both sites reported relying on multiple sources to cover their chemotherapy costs.

Financing of Trastuzumab

The financing source that had the highest frequency was PCSO (67%). Eighty percent (80%) of those benefitting from PCSO reported to have co-payment with an average co-payment of PhP 10,444.79 per cycle. Medical Social Service (MSS) of the public cancer center was the second most common source of trastuzumab reaching up to 51.5% of the participants. Around a third (34%) of the participants reported full OOP expenditure of trastuzumab for at least one cycle. 20% of the participants go to specific government officials for financial assistance. BCMAP was also a source of trastuzumab, but only 6.9% of the participants. (Figure 2) Majority (72%) of the patients from both sites had multiple sources of financing for trastuzumab.

Cost of Treatment

The median total OOP expenditure per cycle was higher among patients in private clinics (PhP 54,738; IQR = 102,670) compared to those treated at the tertiary cancer center (PhP 13,920; IQR = 20,830). Median direct medical costs per cycle were comparable between the two settings—PhP 97,551 (IQR = 120,246) in the tertiary cancer center and PhP 102,001 (IQR = 200,699) in private clinics. The difference in overall OOP burden is largely explained by professional fees, which were negligible at the tertiary cancer center (median PhP 0; range 0–8,000) but substantial in private clinics (median PhP 6,000; IQR = 1,000; range 0–85,000). This reflects the fact that oncologists in training at the tertiary center did not charge professional fees.

At the tertiary cancer center, the median proportion of OOP direct medical costs relative to total direct medical costs was 17.3% (IQR = 39.9%), reflecting subsidies and financial assistance for chemotherapy and trastuzumab. In contrast, in private clinics, the median OOP direct medical cost per cycle was PhP 49,401 (IQR = 92,500), accounting for 48% of the total direct medical costs (median PhP 102,001; IQR = 200,699).

Median direct non-medical costs (e.g., transportation, food, caregiver expenses) were also higher in private clinics (PhP 7,430; IQR = 3,144) than in the tertiary cancer center (PhP 1,975; IQR = 2,887). Within this category, costs under "others" were notably higher in the tertiary cancer center, largely attributable to temporary housing during treatment (Table 2).

Treatment Adherence and Catastrophic Health Expenditure

The prevalence of catastrophic health expenditure of patients from the tertiary cancer center (90.9%, 95% CI 0.81, 0.95) and private clinics (92.3%, 95% CI 0.64, 1.00)

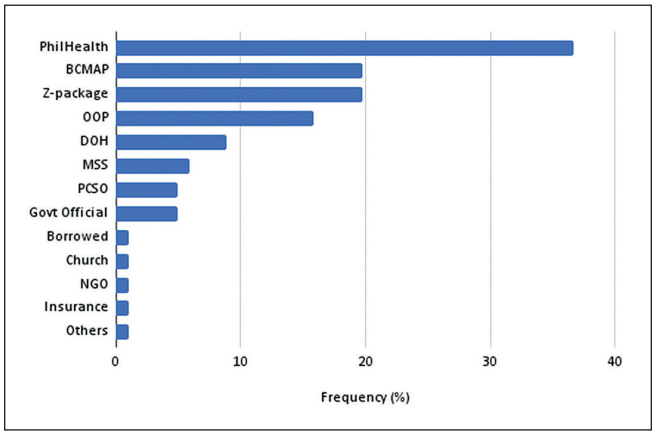

Figure 1. Financing of chemotherapy.

BCMAP – Breast Cancer Medicine Access Program, OOP – Out-of-Pocket, DOH – Department of Health, MSS – Medical Social Service, PCSO – Philippine Charity Sweepstakes Office, NGO – Non-Governmental Organization

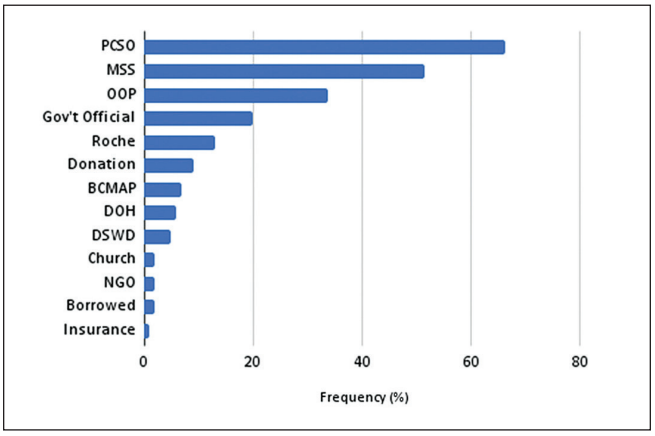

Figure 2. Financing of trastuzumab.

PCSO – Philippine Charity Sweepstakes Office, MSS – Medical Social Service, OOP – Out-of-Pocket, BCMAP – Breast Cancer Medicine Access Program, DOH – Department of Health, DSWD – Department of Social Welfare and Development, NGO – Non-Governmental Organization

Table 2. Cost Summary in Philippine Peso [Mean (SD), Median (IQR), Range and (95% CI of Median)]

	Tertiary Cancer Center, n=88	Private Clinics, n=13
Total OOP per cycle	22,295.8 (26,246.50) 13,920.5 (20,830.00) 993 – 179,501 (12,313.34, 15,691.03)	82,241.0 (84,259.76) 54,738.0 (102,670.00) 3,306 – 259,420 (14,563.13, 130,195.90)
OOP Direct Medical Costs per cycle	31,940.1 (33,506.91) 15,503.5 (42,435.00) 1 – 175,001 (12,510.94, 29,505.09)	67,543.69 (69,924.42) 49,401.0 (92,500.00) 1,500 – 214,200 (5,867.43, 119,320.40)
OOP Direct Non-Medical Costs per cycle	2,798.9 (2,835.51) 1,694.5 (1,866.50) 185 – 12,630 (1,441.17, 2,159.96)	14,697.31 (24,260.79) 7,430 (3,144.00) 1006 – 94,420 (5,965.50, 10,909.33)
Direct Medical Costs per cycle	211,352.7 (298,187.70) 97,551.0 (120,245.50) 501 – 1,548,544 (71,614.1, 119781.5)	275,936.00 (387,433.50) 102,001.0 (200,699.00) 1,500 – 981,821 (18,111.21, 640,440.80)
Professional Fees	172.7 (1,126.56) 0.0 (0.00) 0 – 8,000 (0.0, 0.0)	11,115.40 (22,282.42) 6,000.0 (1,000.0) 0 – 85,000 (5,000, 6,302.80)
Chemotherapy	38,965.9 (21,898.02) 40,800.0 (33,450.00) 0 – 96,800 (34,459.29, 45,000)	38,992.30 (31,772.69) 40,000.0 (55,000.00) 0 – 85,000 (1,972.03, 66,540.42)
Trastuzumab	388,484.7 (455,824.50) 180,000.0 (447,996.50) 0 – 1,750,000 (129,148.2, 28,4257.5)	463,701.9 (564,774.5) 75,000.0 (924,525.00) 0 – 1,531,800 (0, 1,012,503)
Diagnostics	902.6 (1,112.99) 675.0 (665.00) 0 – 8,200 (500, 800)	6,347.4 (17,011.94) 1,000.0 (2,300.00) 0 – 62,700 (578.88, 4211.19)
Materials for chemotherapy (e.g., syringes, macroset, diluent, etc.)	3,850.1 (6,554.45) 1,808.0 (4,900.00) 0 – 50,000 (1,200, 3,142.59)	1,238.5 (2,471.01) 0 (500) 0 – 8,000 (0.0, 2,377.34)
Herbal Medication (median, 95% CI) (min – max)	226.1 (1,464.56) 0.0 (0.00) 0.0 (0.00) 0 – 13,200 (0.0, 0.0)	330.8 (772.86) 0.0 (0.0) 0.0 (0.00) 0 – 2,500 (0.0, 181.68)
Hormonal Therapy	711.8 (1,213.94) 0.0 (925.00) 0 – 5,000 (0.0, 0.0)	1,207.7 (2,794.18) (800.00) 0 – 10,000 (0.0, 1,768.95)
Pain medicine	43.8 (145.83) 0.0 (0.00) 0 – 1,000 (0.0, 0.0)	284.6 (690.22) 0.0 (100.00) 0 – 2,500 (0.0, 342.24)
Food supplement	92.6 (275.98) 0.0 (0.00) 0 – 1,750 (0.0, 0.0)	938.5 (2,229.55) 0.0 (900.00) 0 – 8,000 (0.0, 960.56)
Vitamins	288.8 (388.27) 183.5 (440.00) 0 – 2,100 (0.0, 300)	893.8 (834.96) 500.0 (1,180.00) 0 – 2,500 (247.33, 1,802.80)
DM/HPN Medication	335.7 (684.80) 0.0 (375.00) 0 – 3,000 (0.0, 0.0)	592.3 (1,492.46) 0.0 (0.00) 0 – 5,000 (0.0, 121.12)
Anti-vomiting	126.6 (201.16) 0.0 (300.00) 0 – 1,000 (0, 300)	230.8 (483.71) 0.0 (0.00) 0 – 1,500 (0.0, 302.80)
Oral pre-medication	204.5 (814.65) 0 (250.00) 0 – 7,500 (0.0, 0.0)	296.2 (720.67) 0.0 (0.00) 0 – 2,500 (0.0, 211.96)

Table 2. Cost Summary in Philippine Peso [Mean (SD), Median (IQR), Range and (95% CI of Median)] *(continued)*

	Tertiary Cancer Center, n=88	Private Clinics, n=13
Direct Non-Medical Costs per cycle	3,470.4 (3,516.24) 1,975.0 (2,887.00) 188 – 15348 (1,532.95, 2,559.09)	14,774.2 (24,240.59) 7,430.0 (3,144.00) 1,006 – 94,420 (5,965.50, 10,909.33)
Transportation	439.9 (747.55) 158.0 (387.50) 0 – 5,500 (124.57,198.85)	772.3 (1,120.58) 400.0 (894.00) 0 – 4,000 (103.58, 1,000)
Food	203.5 (264.41) 150.0 (100.00) 0 – 2,000 (105.74, 200)	403.8 (456.65) 200.0 (400.00) 0 – 1,400 (39.44, 802.80)
Communication	40.6 (84.29) 0.0 (30.00) 0 – 500 (0, 20)	405.4 (859.32) 50.0 (190.00) 0 – 3,000 (3.94, 381.68)
Paper, etc	39.1 (65.62) 20.0 (20.00) 0 – 500 (20, 30)	41.2 (61.65) 20.0 (5.00) 0 – 200 (5.92, 38.17)
Companion	472.8 (564.70) 300.0 (378.00) 0 – 3,000 (252.87, 388.52)	936.2 (1,384.66) 240.0 (1,230.00) 0 – 4.200 (0, 1,999.11)
Others	1,110.8 (1,811.23) 500.0 (700.00) 0 – 10,500 (500, 637.08)	900.0 (1357.08) 400.0 (800.00) 0 – 5,000 (78.88, 1,000)

Medians are reported with IQR and 95% CI to account for skewed distributions and to indicate the precision of the estimates.

were similar. In total, 90% (95% CI 0.83, 0.95) of the participants experienced catastrophic health expenditure. The rate of non-adherence to treatment, defined as missed, delayed, or incomplete treatment, was very high at 79% (95% CI: 0.70–0.87) across both sites, and showed no significant association with CHE. Forty-four percent (44%, 95% CI 0.34, 0.44) experienced delay specifically in their treatment with trastuzumab. The participants' reason for the delay in their trastuzumab treatment ranged from no available stock from BCMAP, to no available funds for the co-payment of their treatment with PCSO. In a post-hoc analysis, delay in trastuzumab was associated with a specific period where PCSO has decreased markedly the financial support provided to the patients.[28] (Appendix B Tables 1 and 2).

Dissaving

A number of dissaving practices were reported by the participants. Majority of the patients (97%, 95% CI 0.92, 0.99) reported at least one dissaving practice listed below. Although majority of the patients were unemployed, 11.9% had to permanently leave from work. One third (32.7%) of the participants had their caregivers file for leave during days of treatment. Other dissaving practices such as borrowing money, and selling her house for one of the participants, were also noted in the study (Table 3).

DISCUSSION

Our study examined the OOP expenditure per treatment cycle of patients with HER2-positive breast cancer in the Philippines. Patients from private clinics had a median total OOP expenditure four times higher (PhP 54,738.00, IQR = PhP 102,670.00) than those from the tertiary cancer center (PhP 13,920.50, IQR = PhP 20,830.00). The difference was largely explained by professional fees in private settings and the greater availability of subsidies in tertiary cancer center. Synthesizing across cost categories, medicines (particularly trastuzumab) were the dominant driver of OOP expenditure, followed by professional fees in private settings, and non-medical costs such as transportation and temporary housing for patients outside NCR.

Table 3. Dissaving Practices

	Frequency (%), n = 101
Patient	
Temporary leave from work	7.9
Leave during days of treatment	17.8
Permanent leave from work	11.9
Stopped school	0.0
Caregiver / Family member	
Temporary leave from work	3.0
Leave during days of treatment	32.7
Permanent leave from work	6.9
Stopped School	3.0
Any household member	
Sold household items	4.0
Sold their house	2.0
Loan from bank	6.9
Loan from friend/s	23.8
Loan from lender	6.9

Our estimated OOP expenditures per cycle were lower than the estimated mean monthly OOP expenditure by Ngelangel et al. (2018) (PhP 181,789.00; n = 458; SD = 348,717.47), but direct comparison must be cautious, as their study included hospitalization costs and multiple cancer types, whereas our analysis focused on per-cycle outpatient expenditures for breast cancer.[15] Importantly, Ngelangel and colleagues showed that Filipinos with an annual household income below were at higher risk of financial catastrophe from cancer treatment.[15] In contrast, our cohort highlights a different pattern: despite income differences between settings, catastrophic health expenditure was uniformly high (92.3% in private clinics and 90.9% in the tertiary cancer center). Even higher-income patients, particularly in private clinics, experienced financial catastrophe, reflecting the disproportionate burden of trastuzumab, whose cost alone can exceed average household income.

It should be emphasized that our costing reflects the policy environment prior to 2021, before PhilHealth expanded its coverage and before the Cancer Assistance Fund (CAF) was operationalized.[13,29] Current benefit packages have since been adjusted to better align with Universal Health Care (UHC) reforms, but our findings remain instructive as they capture the baseline financial burden and illustrate the gaps that national health financing reforms seek to address.

Evidence from neighboring countries underscores the vulnerability of households to cancer costs. In Malaysia, Liew et al. reported a median annual OOP expenditure of USD 1,396 (IQR = USD 3,013) for gynecologic cancers. Although cancer type and health system context differ, the study highlights the vulnerability of low- and middle-income households.[30] Similarly, our findings show that chemotherapy and trastuzumab costs place Filipino households, including those in higher income brackets, at substantial risk of financial catastrophe.

For early-stage breast cancer (i.e., St. I-IIIA), the Breast Cancer Medicine Access Program (BCMAP) and the PhilHealth z-package offered partial financial support.[31-33] However, PhilHealth was only the fourth most common financing source for chemotherapy in our cohort, reflecting both underutilization and limited benefit adequacy. While 19.8% of the patients reported receiving chemotherapy from BCMAP for free, only 6.9% received free trastuzumab from the same program. The limited reach of this subsidy mirrors experiences in Malaysia, where trastuzumab is covered under national programs but constrained by budget ceilings, leaving many eligible patients without access.[34] In our study, the most common source of trastuzumab assistance was the Philippine Charity Sweepstakes Office (PCSO), often requiring co-payments. More than half of patients in private clinics (54%) and 70% in the tertiary cancer center received PCSO support. This reliance on multiple fragmented sources, including PCSO, BCMAP, Medical Social Service within the tertiary cancer center, and NGOs, illustrate inefficiencies in the financing pathway. Strengthening the role of a central coordinated mechanism, such as the Cancer Assistance Fund, could streamline access, reduce redundancy, and improve the patient experience.

The financial strain was further evident in widespread dissaving practices, including resignation from work (11.9%), borrowing money (23.8%), and asset sales, with one patient selling her home. As breast cancer disproportionately affects women during their most productive years, such practices undermine women's economic empowerment and household stability. In Bangladesh, Sarker et al. similarly reported 89% of cancer patients experiencing financial distress, while Mohanty et al. found dissaving more common among those with catastrophic health expenditure. These findings underscore the gendered and long-term economic dimensions of financial toxicity.[35,36]

Adherence was also poor, with frequent delays in trastuzumab linked to reduced PCSO assistance from PhP 50,000 to PhP 10,000 per cycle beginning in 2018.[37] This aligns with Velasco et al., who documented delays in multiple treatment timepoints among BCMAP patients, and with Talao et al., who reported similar delays in another government hospital.[38,39] Such evidence illustrates how fluctuations in subsidy levels directly translate to treatment interruptions with potential survival consequences.

Geographic inequities compounded the burden: more than half of patients came from outside NCR, incurring additional costs for transportation and temporary housing. This highlights the urgency of investing in regional cancer centers and considering travel or accommodation support to reduce non-medical costs for provincial families.

Taken together, our findings reveal how decentralized, overlapping, and unevenly distributed cancer financing perpetuates inequities. Policy implications extend in two directions: first, expanding public-sector capacity and benefit coverage to absorb more patients under subsidized care; and second, considering regulatory and subsidy mechanisms in the private sector to mitigate excessive OOP burdens. Beyond health financing, the near-universal reliance on dissaving practices highlights cancer as a socio-economic development challenge requiring cross-sectoral responses, including poverty alleviation and social protection programs.

Slowly transitioning the cancer programs to a wider coverage under the national health insurance can address a number of concerns on CHE and adherence to treatment. In West China, patients with HER2-positive breast cancer who are able to get financial support from their Breast Cancer Access Program (BCAP) from 2011-2017, had 37% lower risk of overall mortality compared with those who did not receive any support. When the program was transitioned to wider coverage through national health insurance, they observed lower risk of overall mortality by 64% compared with those that did not receive any financial support. This exemplifies the vital role of financial support in improving survival outcomes.[40] Taking on the success of other countries' cancer support programs, the current cancer programs in

the Philippines have potential in serving more with better accessibility.

This micro-costing analysis from the patient perspective would have implications on the implementation of the National Integrated Cancer Control Act. Access to health services can then be improved with the development of several regional cancer centers nationwide.[41] Unifying allocation of resources for cancer treatment can minimize the burden of solicitation through several agencies, thus potentially decreasing the direct non-medical costs.

Scope and Limitations of the Study

The computed OOP may still be an underestimate to the overall treatment of breast cancer because the following were not included 1) cost of surgery and radiotherapy treatment, and 2) cost of diagnostic tests for the diagnosis and staging. Indirect costs such as wage loss of the patients and caregivers were also not included in this study. The retrospective data collection of the study may have been subject to recall bias.

CONCLUSION

There is a high rate of catastrophic health expenditure among patients with HER2-positive breast cancer in the Philippines. Despite the multiple medicine access programs for the treatment of breast cancer, and several sources of financial assistance, there was still significant catastrophic health expenditure and delay in trastuzumab treatment. Transportation costs and temporary housing during treatment as non-medical costs can be minimized with better access to healthcare.

This study reflects how fragmented health financing resulted in 1) several sources of financial assistance, 2) unequal access to the cancer programs, and 3) lack of adequate financial risk protection, all leading to catastrophic health expenditure and dissaving practices. Framed within the implementation of the National Integrated Cancer Control Act and UHC reforms, our findings provide baseline metrics and policy directions to reduce financial toxicity for Filipino cancer patients.

Recommendations

To provide actionable insights for policymakers, we outline the following priority recommendations:

- Expand PhilHealth cancer benefit packages to align more closely with the actual costs of chemotherapy, biologics, and supportive care.
- Strengthen and unify fragmented financing streams (e.g., PCSO, BCMAP, CAF) under a central coordinating mechanism to streamline patient access.
- Invest in regional cancer centers and travel/accommodation support to address geographic inequities.
- Address the gendered impact of financial toxicity by linking cancer care financing with social protection measures for women and caregivers.
- Explore regulatory and subsidy mechanisms in private clinics to reduce professional fees and standardize costs.

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Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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REFERENCES

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015 Mar;136(5):E359–86. doi:10.1002/ijc.29210. PMID: 25220842.
2. Sun L, Legood R, dos-Santos-Silva I, Gaiha SM, Sadique Z. Global treatment costs of breast cancer by stage: A systematic review. PLoS One. 2018 Nov 26;13(11):e0207993. doi: 10.1371/journal.pone.0207993. PMID: 30475890; PMCID: PMC6258130.
3. Institute of Medicine (US) Council on Health Care Technology; Goodman C, editor. SEER (Surveillance, Epidemiology, and End Results Program) [Internet]. National Academies Press (US); 1988 [cited 2019 Jul 8]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK218348/.
4. Ramaswamy G, Morgensztern D, editors. DeVita, Hellman, and Rosenberg's Cancer, Principles and Practice of Oncology Review. 4th ed. Philadelphia: Wolters Kluwer; 2016.
5. Perez EA, Romond EH, Suman VJ, Jeong JH, Davidson NE, Geyer CE, et al. Four-year follow-up of trastuzumab plus adjuvant chemotherapy for operable human epidermal growth factor receptor 2–positive breast cancer: Joint analysis of data from NCCTG N9831 and NSABP B-31. J Clin Oncol. 2011 Sep 1;29(25):3366–73. doi: 10.1200/JCO.2011.35.0868. PMID: 21768458; PMCID: PMC3164242.
6. Smith I, Procter M, Gelber RD, Guillaume S, Feyereislova A, Dowsett M, et al. 2-year follow-up of trastuzumab after adjuvant chemotherapy in HER2-positive breast cancer: a randomised controlled trial. Lancet Lond Engl. 2007 Jan 6;369(9555):29–36. doi: 10.1016/S0140-6736(07)60028-2. PMID: 17208639.
7. Slamon DJ, Leyland-Jones B, Shak S, Fuchs H, Paton V, Bajamonde A, et al. Use of chemotherapy plus a monoclonal antibody against HER2 for metastatic breast cancer that overexpresses HER2. N Engl J Med. 2001 Mar 15;344(11):783-92. doi: 10.1056/NEJM200103153441101. PMID: 11248153.
8. Rosenzweig M, West M, Matthews J, Stokan M, Yoojin Kook YK, Gallups S, et al. Financial toxicity among women with metastatic breast cancer. Oncol Nurs Forum. 2019 13;46(1):83–91. doi: 10.1188/19.ONF.83-91. PMID: 30547962.
9. Ferlay J, Ervik M, Lam F, Laversanne M, Colombet M, Mery L, et al. Global Cancer Observatory: Cancer Today. [Internet]. Lyon, France: International Agency for Research on Cancer; 2024 [cited 2024 Aug 30]. Available from: https://gco.iarc.who.int/today.

10. Genuino AJ, Chaikledkaew U, Guerrero AM, Reungwetwattana T, Thakkinstian A. Cost-utility analysis of adjuvant trastuzumab therapy for HER2-positive early-stage breast cancer in the Philippines. BMC Health Serv Res. 2019 Nov 21;19(1):874. doi: 10.1186/s12913-019-4715-8. PMID: 31752849; PMCID: PMC6873585.
11. Agoncillo J. Charity begins here | Inquirer News [Internet]. 2017 [cited 2019 Jul 16]. Available from: https://newsinfo.inquirer.net/891158/charity-begins-here.
12. Mapa C. Annual Family Income is Estimated at PhP 313 Thousand, on Average, In 2018 [Internet]. Philippine Statistics Authority. 2019 [cited 2024 Sep 20]. Available from: https://psa.gov.ph/statistics/income-expenditure/fies/node/144731.
13. Department of Health. National objectives for health Philippines 2017-2022. Manila, Philippines: Department of Health.
14. Ngelangel C, Lam H, Quintos R, Lecciones J, Abola MT, Sarmiento FM, et al. Protection against financial catastrophe: Evaluation of Z benefit packages in providing financial risk protection and improving clinical outcomes. Technical Terminal Report Nov 2016-Oct 2017. Philippine Council for Health Research and Development. 2017 Nov.
15. Ngelangel CA, Lam HY, Rivera AS, Kimman ML, Real IO, Balete SL and Philippines ACTION Study Group. Philippine Costs in Oncology (PESO): Describing the economic impact of cancer on Filipino cancer patients using the ASEAN costs in oncology study dataset. 2018;52(2):125-33. doi: 10.47895/amp.v52i2.418.
16. Tran G, Zafar SY. Financial toxicity and implications for cancer care in the era of molecular and immune therapies. Ann Transl Med. 2018 May;6(9):166. doi: 10.21037/atm.2018.03.28. PMID: 29911114; PMCID: PMC5985271.
17. Iragorri N, de Oliveira C, Fitzgerald N, Essue B. The out-of-pocket cost burden of cancer care—a systematic literature review. Curr Oncol. 2021 Mar 15;28(2):1216–48. doi: 10.3390/curroncol28020117. PMID: 33804288; PMCID: PMC8025828.
18. Yabroff KR, Dowling EC, Guy GP, Banegas MP, Davidoff A, Han X, et al. Financial hardship associated with cancer in the United States: Findings from a population-based sample of adult cancer survivors. J Clin Oncol. 2016 Jan 20;34(3):259–67. doi: 10.1200/JCO.2015.62.0468. PMID: 26644532; PMCID: PMC4872019.
19. Azzani M, Roslani AC, Su TT. The perceived cancer-related financial hardship among patients and their families: a systematic review. Support Care Cancer. 2015 Mar;23(3):889–98. doi: 10.1007/s00520-014-2474-y. PMID: 25337681.
20. Kodama Y, Morozumi R, Matsumura T, Kishi Y, Murashige N, Tanaka Y, et al. Increased financial burden among patients with chronic myelogenous leukaemia receiving imatinib in Japan: a retrospective survey. BMC Cancer. 2012 Apr 24;12(1):152. doi: 10.1186/1471-2407-12-152. PMID: 22530992; PMCID: PMC3502305.
21. Lathan CS, Cronin A, Tucker-Seeley R, Zafar SY, Ayanian JZ, Schrag D. Association of financial strain with symptom burden and quality of life for patients with lung or colorectal cancer. J Clin Oncol. 2016 May 20;34(15):1732–40. doi: 10.1200/JCO.2015.63.2232. PMID: 26926678; PMCID: PMC4966336.
22. Shankaran V, Jolly S, Blough D, Ramsey SD. Risk factors for financial hardship in patients receiving adjuvant chemotherapy for colon cancer: a population-based exploratory analysis. J Clin Oncol. 2012 May 10;30(14):1608–14. doi: 10.1200/JCO.2011.37.9511. PMID: 22412136.
23. ACTION Study Group; Kimman M, Jan S, Yip CH, Thabrany H, Peters SA, Bhoo-Pathy N, et al. Catastrophic health expenditure and 12-month mortality associated with cancer in Southeast Asia: Results from a longitudinal study in eight countries. BMC Med. 2015 Aug 18:13:190. doi: 10.1186/s12916-015-0433-1. PMID: 26282128; PMCID: PMC4539728.
24. Palileo-Villanueva L, Velasquez JRH, Mondragon K, Loyola A. Out-of-pocket expenditures of patients consulting at outpatient clinics in two government hospitals in Manila, Philippines: A pilot study. 2017. Unpublished.
25. Kitano A, Shimizu C, Yamauchi H, Akitani F, Shiota K, Miyoshi Y, et al. Factors associated with treatment delay in women with primary breast cancer who were referred to reproductive specialists. ESMO Open. 2019 Mar 5;4(2):e000459. doi: 10.1136/esmoopen-2018-000459. PMID: 30962960; PMCID: PMC6435250.
26. Chavez-MacGregor M, Clarke CA, Lichtensztajn DY, Giordano SH. Delayed initiation of adjuvant chemotherapy among patients with breast cancer. JAMA Oncol. 2016 Mar;2(3):322–9. doi: 10.1001/jamaoncol.2015.3856. PMID: 26659132; PMCID: PMC5920529.
27. Domingo K. Who are identified rich, poor? Gov't shows income class brackets in PH [Internet]. [cited 2024 Oct 4]. Available from: http://www.pids.gov.ph/details/who-are-identified-rich-poor-gov-t-shows-income-class-brackets-in-ph.
28. Rappler.com. PCSO charity assistance drops to less than half [Internet]. Rappler. [cited 2020 Jun 26]. Available from: http://www.rappler.com/nation/218715-pcso-charity-assistance-october-2018.
29. Republic Act No. 11215 [Internet]. [cited 2024 Sep 27]. Available from: https://lawphil.net/statutes/repacts/ra2019/ra_11215_2019.html.
30. Liew CH, Shabaruddin FH, Dahlui M. The burden of out-of-pocket expenditure related to gynaecological cancer in Malaysia. Healthcare. 2022 Oct;10(10):2099. doi: 10.3390/healthcare10102099.
31. Department of Health. What is Breast Cancer Medicines Access Program (BCMAP)? [Internet]. [cited 2019 Jul 16]. Available from: https://www.doh.gov.ph/node/967.
32. Patdu MPD, Liangco WLL, Ngelangel CA, Guerrero AMS, Ala MVG, Rosario RMB, et al. The effect of DOH-PCSI patient navigation access program for breast cancer on quality of care at the medical oncology clinic at the Philippine General Hospital: the first 6 months. Acta Med Philipp. 2015;49(2):5–12. doi: 10.47895/amp.v49i2.958.
33. Benefits | PhilHealth [Internet]. [cited 2019 Jun 5]. Available from: https://www.philhealth.gov.ph/benefits/.
34. Horton S, Rodriguez RC, Anderson BO, Aung S, Awuah B, Pebé LD, et al. Health system strengthening: Integration of breast cancer care for improved outcomes. Cancer. 2020 May 15;126(Suppl 10):2353–64. doi: 10.1002 /cncr.32871. PMID: 32348567; PMCID: PMC7197416.
35. Sarker AR. Out-of-pocket cost of cancer among Bangladeshi households: A field study. Bangladeshi Institute of Development Study. doi: 10.1371/journal.pone.0262900.
36. Mohanty SK, Wadasadawala T, Sen S, Maiti S, E Jishna. Financial catastrophe of breast cancer treatment: Evidences from a longitudinal cohort study in India. 2023. doi: 10.13140/RG.2.2.36660.22407.
37. Caliwan C. PCSO charity assistance down by 56% [Internet]. 2018 [cited 2024 Sep 24]. Available from: https://www.pna.gov.ph/articles/1056214.
38. Velasco Jr. RN, Ando MM, Javelosa MAU, King REC, Mondragon KAM, Tan HNC, et al. The magnitude of delay in non-metastatic breast cancer treatment in a tertiary hospital: an analysis from 2012 to 2018. Acta Med Philipp. 2025 Jun 30;59(8):45-51. doi: 10.47895/amp.vi0.9028. PMID: 40755562; PMCID: PMC12314435.
39. Talao JK, Juat NS, Luna HGC, Mendoza MJL, Tejada KG, Cardenas LC, Medina SR. Clinical profiles and outcomes of patients enrolled in the department of health: Breast cancer medicines access program in the Philippines— a single center experience. JCO Glob Oncol [Internet]. 2023 Aug [cited 2024 Sep 24]; Available from: https://ascopubs.org/doi/10.1200/GO.2023.9.Supplement_1.6 DOI 10.1200/GO.2023.9.Supplement_1.6
40. Zheng D, Song L, Liu X, Zhong X, Xie Y, Wang C, et al. Impact of financial support on the prognosis of HER2-positive breast cancer from 2002 to 2020: a prospective cohort from western China. Gland Surg. 2022 May;11(5):805–17. doi: 10.21037/gs-22-229.
41. Dayrit M, Lagrada L, Picazo O, Pons M, Villaverde M. The Philippines: Health System Review. New Delhi: World Health Organization, Regional Office for South-East Asia [Internet]. 2018 [cited 2024 Sep 20];8(2). Available from: https://iris.who.int/bitstream/handle/10665/274579/9789290226734-eng.pdf.

APPENDICES

Appendix A. Costing Tool for Assessment of Out-of-Pocket Expenditure of Her2 Positive Breast Cancer Patients (English Version)

I. Personal Information

1. When is your birthday? _____

2. Sex of patient ◻ Male ◻ Female

3. Marital Status:
   ◻ Single
   ◻ Married
   ◻ Live-in partner
   ◻ Separated
   ◻ Widowed

4. What is your educational status?
   ◻ Not applicable
   ◻ Primary school graduate
   ◻ Secondary school graduate
   ◻ College graduate
   ◻ Vocational course
   ◻ Others (pls. identify) _____

5. Where do you live?
   5.1 Where do you stay while with ongoing chemotherapy? _____
   5.2 What is your permanent address (if different from above) _____

II. Breast Cancer Status

6. Breast Cancer Stage. May I check your chart? _____

7. Chemotherapy Regimen. May I check your chart? _____

Chemotherapy	Dose	Number of cycles	Frequency

8. Which part of breast cancer treatment are you in?
   ◻ chemotherapy
      ◻ Ongoing. Which cycle? _____
      ◻ Completed chemotherapy. How many cycles were you able to complete? _____
      ◻ Discontinued chemotherapy. How many cycles were you able to complete? _____
        What is the reason for discontinuation? _____
   ◻ trastuzumab
      ◻ Ongoing. Which cycle? _____
      ◻ Completed trastuzumab. How many cycles were you able to complete? _____
      ◻ Discontinued trastuzumab. How many cycles were you able to complete? _____
        What is the reason for discontinuation? _____
   ◻ surveillance (no longer receiving chemotherapy/trastuzumab)
      ◻ completed both chemotherapy and trastuzumab
      ◻ completed chemotherapy but not trastuzumab
        What is the reason for not completing trastuzumab? _____
      ◻ neither completed chemotherapy nor trastuzumab
        What is the reason for not completing trastuzumab? _____

9. Is your chemotherapy/trastuzumab given on-time? (meaning interval of every 3 weeks is followed? ◻ Yes ◻ No
   9.1 if not, why? _____

10. How many times did you have to go to this clinic to be able to complete one cycle of chemotherapy?
    ◻ once ◻ more than once
    10.1 if more than once, what was the reason for this?
    ◻ to request for treatment protocol/medical abstract/medical certificate
    ◻ to show my laboratory prior to chemotherapy
    ◻ to have my laboratory done
    ◻ Others _____

11. Aside from this clinic, do you consult in another clinic/hospital? ◻ Yes ◻ No
    11.1. If yes, which other clinic/hospital do you go to?
    ◻ Health Center
    ◻ Private Clinic
    ◻ Another government hospital
    ◻ Private Hospital
    ◻ Others _____

III. Socio-economic Status

12. Personal source of income
    12.1 What is your occupation?
    12.2 Do you have any other sources of income aside from your primary occupation? (check all that applies)
    ◻ Income from house rental/ or any other material for rent
    ◻ Bank interest
    ◻ Retired and with pension
    ◻ No other source of income
    ◻ Retired but without pension
    ◻ In the process of looking for job
    ◻ Opted to stay at home and not work
    ◻ Others (pls. identify) _____

13. How much do you earn per month? _____. If on an on-call basis, how much do you earn per day of work? _____. How many times in a month are you called in for work? _____

14. Are you the primary breadwinner of the family? ◻ Yes ◻ No

15. Household income
    15.1 How many are you in your household? _____
    15.2 How many are earning in your household? _____
    15.3 What is your estimate monthly household income? _____

IV. Health Economics

16. How much do you think do you need for the expenses of your treatment, including chemotherapy/trastuzumab/medication/ laboratory? _____ pesos

17. Where do you get your financial support for your treatment? (Check all that applies)
    ◻ Own money/Household income
    ◻ Loan (bank or individual people)
    ◻ Donated by relatives
    ◻ Donated by non-relatives (friends/neighbor)
    ◻ Government
    ◻ MSS
    ◻ PCSO
    ◻ DSWD
    ◻ Others
    ◻ NGO, foundation, private institution, donation
    ◻ Others _____

18. Do you have specific budget for your health/breast cancer treatment? □ Yes □ No □ Others (pls. specify) _____
    18.1 If yes, how much is your allotted budget? _____ pesos

19. Are you a member of *4Ps (Pantawid Pamilyang Pilipino Program)*? □ Yes □ No

20. Were you interviewed by the Medical Social Service (MSS)?
    □ Yes, if yes, what is your classification? _____ (if unsure, may I please check your bluecard?)
    □ Not yet interviewed
    □ Unknown

21. Do you have any private insurance / health maintenance organization (HMO) that you use for treatment? □ Yes □ No
    21. 1 If yes, where do you use this?

22. Do you receive any privilege as a Senior Citizen/Persons with disability? □ Yes □ No
    22. 1 If yes, check which applies □ Senior Citizen □ PWD □ Both

V. Cost of Chemotherapy

23. Where do you get your chemotherapy (not including Trastuzumab)?
    □ Bought from outside pharmacy. How much do you spend for this? _____ pesos
    □ Bought from this clinic pharmacy. How much is this? _____ pesos
    □ Free from NGO, foundation, donor, or church
    □ Free from Breast Cancer Medicine Access Program (BCMAP)
    □ Free from PhilHealth (Z-package)
    □ Free from PhilHealth (regular)
    □ Free from PCSO
    □ Partially subsidized by PCSO, with an additional payment of _____ pesos
    □ Free from MSS
    □ Free from health center
    □ Free from private insurance
    □ Partially subsidized by private insurance, with out-of-pocket expense of _____ pesos
    □ Others _____

24. Where do you get your Trastuzumab?
    □ Bought from outside pharmacy. How much do you spend for this? _____ pesos
    □ Bought from this clinic pharmacy. How much do you spend for this? _____ pesos
    □ Part of patient-access program of a pharma company (eg., Roche)
      □ Partly bought, the rest are free from pharma company. _____ pesos
      □ Partly from PCSO, the rest are free from pharma company. _____ pesos
    □ Free from a foundation, donor, or church
    □ Free from Breast Cancer Medicine Access Program (BCMAP)
    □ Free from PhilHealth
    □ Free from PCSO
    □ Partially subsidized by PCSO, but the rest are paid. _____ pesos
    □ Free from MSS
    □ Free from health center
    □ Free from private insurance
    □ Partially subsidized by a private insurance, but would pay this amount _____ pesos
    □ Others _____

25. Where do you get the supplies needed for the administration of chemotherapy/trastuzumab (IV line, PNSS, etc.)?
    - □ Bought from outside pharmacy. How much do you spend for this? _____ pesos
    - □ Bought from this clinic pharmacy; How much do you spend for this? _____ pesos
    - □ Part of patient-access program of a pharma company (eg., Roche)
      - □ Partly bought, the rest are free from pharma company. _____ pesos
      - □ Partly from PCSO, the rest are free from pharma company. _____ pesos
    - □ Free from a foundation, donor, or church
    - □ Free from Breast Cancer Medicine Access Program (BCMAP)
    - □ Free from PhilHealth
    - □ Free from PCSO
    - □ Partially subsidized by PCSO, but the rest are paid. _____ pesos
    - □ Free from MSS
    - □ Free from health center
    - □ Free from private insurance
    - □ Partially subsidized by a private insurance, but would pay this amount _____ pesos
    - □ Others _____

26. Which of the following did you have to put out cash for?

	How many cycles did you have to pay for this?	How much did you pay for this?
Doxorubicin		
Cyclophosphamide		
Docetaxel		
Carboplatin		
Trastuzumab		
Macroset (linya ng swero)		
IV bottle (bote ng swero)		
Cannula (panturok)		
Pre-medications (e.g., Ondansetron, metoclopramide, dexamethasone)		
Mixing fee of pharmacy		

27. How much do you pay for your laboratory per cycle? _____ pesos
    27.1 Which of the following lab tests is done per cycle of chemotherapy? □ CBC □ Crea AST ALT □ Others _____

28. Where do you have your labs done? □ In this clinic □ Outside this clinic □ Varies, sometimes this clinic, sometimes outside

29. Were you able to comply with all requested labs? □ Yes □ No If not, why? _____

30. What other medications do you buy (whether prescribed or not by the doctor)?

Check if applicable	Other Medications	Cost
	Herbal Medicine (e.g., MX3, serpentina, etc.)	
	Food Supplement (e.g., Nutren, Boost Optimum, etc.)	
	Vitamins (e.g., multivitamins, Calcium with Vitamin D, Vitamin B Complex, Vitamin C)	
	Medications for other comorbidities (e.g., diabetes, hypertension, heart failure, etc.)	
	Pain relievers (e.g., tramadol, mefenamic acid, ibuprofen, morphine)	
	For vomiting/nausea (e.g., ondansetron, metoclopramide, etc.)	
	Pre-medication for chemotherapy (e.g., dexamethasone, loratadine)	

31. What is your mode of transportation going to this clinic and going home? Check all that applies. Compute only for yourself (excluding your caregiver).
    - ◻ Walking
    - ◻ Sidecar/Tricycle Cost going to: ____ going back: ____
    - ◻ Jeep Cost going to: ____ going back: ____
    - ◻ Bus Cost going to: ____ going back: ____
    - ◻ Train Cost going to: ____ going back: ____
    - ◻ Van or FX Cost going to: ____ going back: ____
    - ◻ Taxi Cost going to: ____ going back: ____
    - ◻ Ambulance Cost going to: ____ going back: ____
    - ◻ Ship Cost going to: ____ going back: ____
    - ◻ Airplane Cost going to: ____ going back: ____
    - ◻ Others, pls. specify _____ Cost going to: ____ going back: ____

32. How much do you spend for food during the day of chemotherapy?
    ◻ I spend _____ pesos ◻ I don't spend for food

33. Do you need to allot money for cellphone prepaid or postpaid load?
    ◻ Yes _____ pesos ◻ No

34. Do you spend for ballpen/paper/photocopy of papers?
    ◻ Yes _____ pesos ◻ No

35. Do you pay your doctor/nurse or give gifts?
    ◻ Yes _____ pesos ◻ No

36. Do you have a caregiver who goes with you during chemotherapy? ◻ Yes ◻ No
    - 36.1 If yes, how many? ___
    - 36.2 Do you need to pay for your caregiver? ◻ Yes ◻ No If yes, how much? ____ pesos
    - 36.3 Do you pay for his/her/their transportation? ◻ Yes ◻ No If yes, how much? ____ pesos
    - 36.4 Do you pay for his/her/their food? ◻ Yes ◻ No If yes, how much? ____ pesos

37. Aside from the costs mentioned above, is there anything else that you spend for your treatment? ◻ Yes ◻ No
    - 37.1 If yes, pls. specify _____
    - 37.2 How much is this _____ pesos

38. What is your total estimate of cost for one cycle of chemotherapy/trastuzumab? _____ pesos

39. For overall financial support for your breast cancer treatment, from which of the following did you receive support from? (check all that applies)
    - ◻ Non-governmental organization (NGO) specify: _____
    - ◻ Department of Social Welfare and Development (DSWD)
    - ◻ Social Security System (SSS)
    - ◻ Government Service Insurance System (GSIS)
    - ◻ Philippine Charity Sweepstakes Office (PCSO)
    - ◻ Government official, specify _____
    - ◻ Church / religious congregation
    - ◻ Relatives
    - ◻ Friends
    - ◻ Others _____

If you've received financial support, (include guarantee letters, etc.)
39.1 How much did you get?_____ pesos
39.2 Where did you use this? (check all that applies)
□ Chemotherapy
□ Trastuzumab
□ Needs for administration of chemotherapy
□ Transportation
□ Food
□ Others _____
39.3 How much do you spend for your transportation/food/needs to go to these agencies? _____ pesos

VI. Effect of Health Expenditure to the Family

40. Since you were diagnosed with breast cancer, which of the following did your family experience?
□ The patient stopped working permanently.
□ The patient would leave from work during days of treatment. How many days in total: _____
□ The patient stopped working temporarily.
□ A family member stopped working permanently.
□ A family member stops working during days of treatment. How many days in total: _____
□ A family member stopped working temporarily.
□ The patient stopped studying.
□ A family member stopped studying.
□ Sold assets
□ Lost their home
□ Bank loan
□ Loan from friends/relatives
□ Loan from a lender

Appendix B

Table 1. Treatment Adherence and Catastrophic Health Expenditure

Adherent to Treatment	Catastrophic Health Expenditure		Total
	With	Without	
Yes	19 (20.9)	2 (20.0)	11
No	72 (79.1)	8 (80.0)	90
Total	91	10	101
Fisher's exact test p-value	1.000		
Odds ratio (95% Exact confidence interval)	1.06 (0.19, 11.00)		

Table 2. Trastuzumab Delay and Onset of Trastuzumab

Trastuzumab delay	Onset of Trastuzumab		Total
	Before PCSO budget cutoff	After PCSO budget cutoff	
Yes	29 (29.3)	15 (15.2)	44
No	46 (46.5)	9 (9.1)	55
Total	75	24	99
Pearson chi2(1)	4.1828	***Pr*** = 0.041	
Fisher's exact	0.058		
1-sided Fisher's exact	0.035		

PCSO – Philippine Charity Sweepstakes Office