



# Marginal Health Care Expenditures Burden for Breast Cancer Patients: A Medical Expenditure Panel Survey Study

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## BACKGROUND

- Breast cancer (BC) is ranked as the second most common malignancy among females in the United States.
- Approximately 12.9% of women have been diagnosed with BC at some point throughout their lifetime.
- With advanced treatment options and rising treatment costs, healthcare expenditures for BC have increased significantly. However, there is limited national-level data on the healthcare burden for BC patients.

## OBJECTIVE

The objective of this study is to examine healthcare expenditures for adults with BC using a nationally representative sample.

## METHODS

**Study Design:** A retrospective cross-sectional study used the Medical Expenditure Panel Survey (MEPS) from 2011-15

### Sample Identification

- Adults aged 18 and older diagnosed with BC based on the ICD-9 code '174' or clinical classification code (CCC) '024'
- All-other cancer patients were identified using clinical classification coding systems 11 to 45.

Outcome measurement

- Health Care expenditure for BC and all other Cancer groups

Statistical analysis

- Weighted analysis was used to examine the healthcare expenditures (2022 inflation-adjusted dollars) of patients with BC and other cancers
- Two-part model (TPM) was used to examine marginal total healthcare expenditure for BC.

- SAS version 9.4 (SAS Institute, Cary, NC)

## METHODS

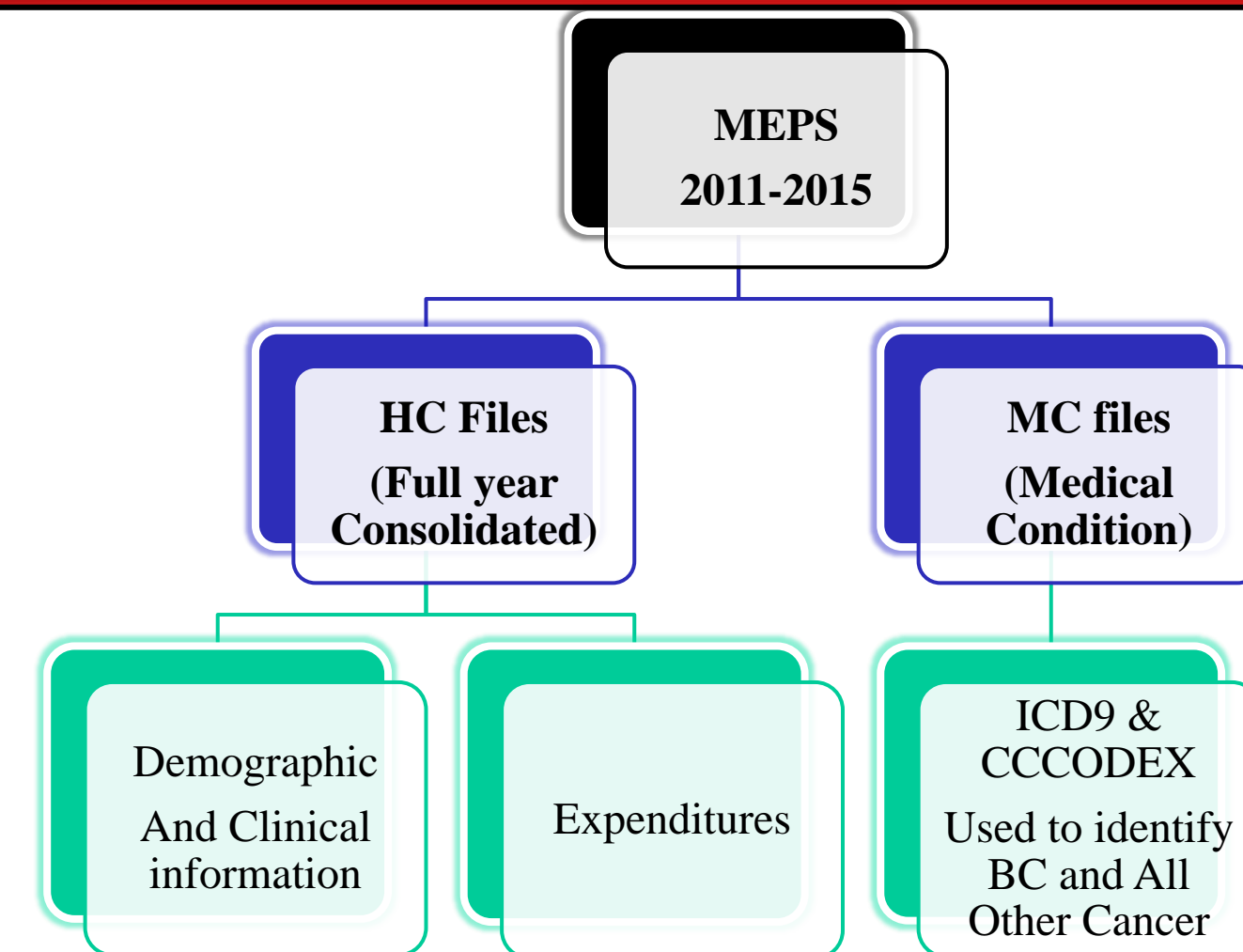


Figure 1. Conceptual Framework based on the Andersen Behavior Model

Predisposing Factors

- Age, Sex, Race/Ethnicity, Marital status, and Education

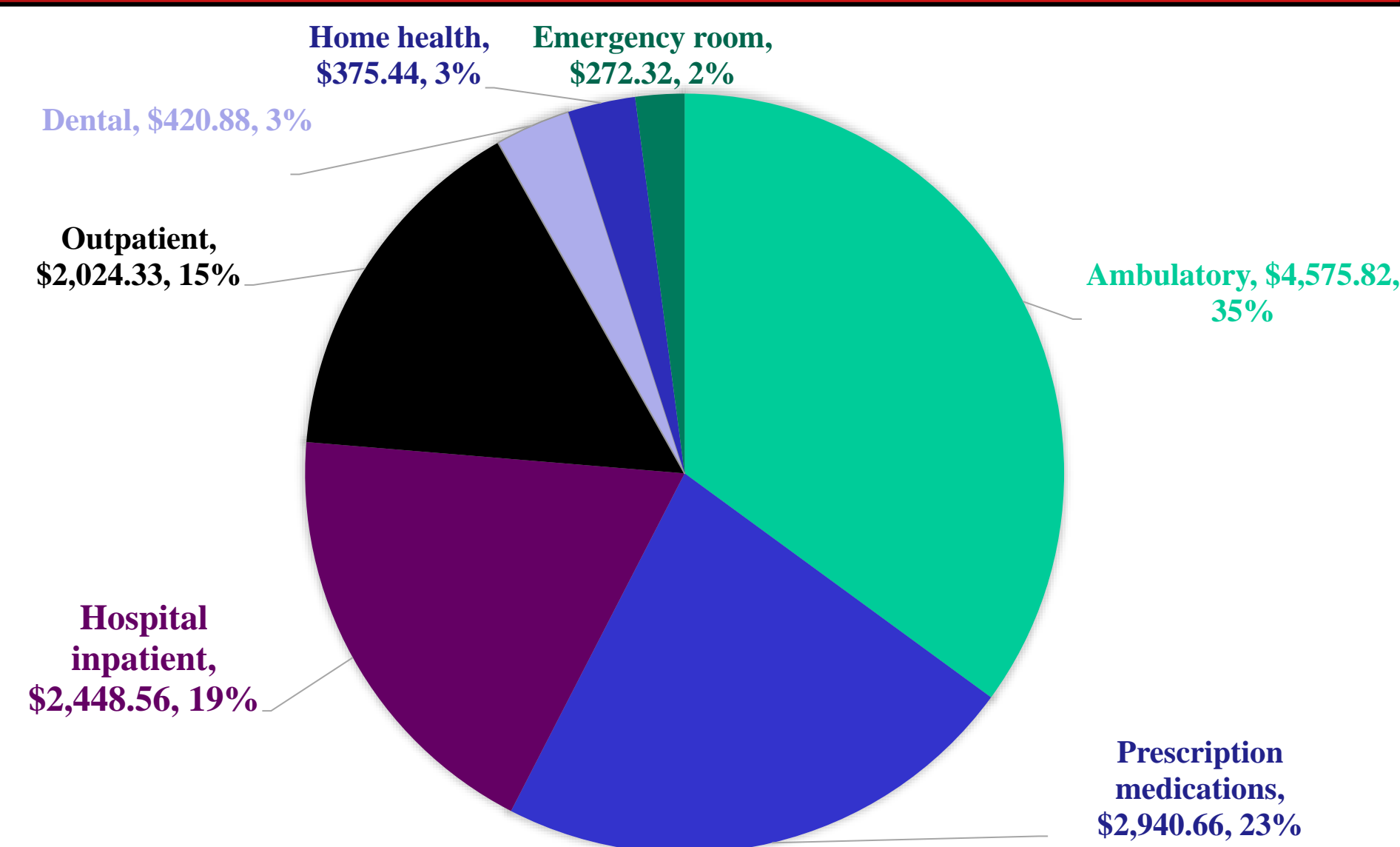
Enabling Factors

- Region, Poverty Status, and Health Insurance Status

Need Factors

- Elixhauser Comorbidity Index Score

Figure 2. Components of Health Care Expenditures for BC



## RESULTS

Table 1. Baseline Characteristics of Study Participants

| Variables                                     | Breast Cancer Group |             | All Other Cancer Group |             | P-value |
|---|---------------------|-------------|------------------------|-------------|---------|
|   | N=2,599,529         | 9.16%       | N=25,759,281           | 90.83%      |         |
| Age, Mean (SD)                                | 63.71(0.38)         | 62.96-64.47 | 60.91(0.17)            | 60.57-61.25 | 0.0001* |
| Age   |                     |             |                        |             |         |
| 18-44   | 180,341             | 8.26        | 3,291,911              | 15.54       | 0.0001* |
| 45-64   | 960,338             | 41.03       | 8,310,403              | 34.56       |         |
| ≥65   | 1,388,837           | 50.69       | 12,978,820             | 49.89       |         |
| Sex   |                     |             |                        |             |         |
| Female  | 2,527,510           | 99.91       | 13,113,744             | 54.32       | 0.0078* |
| Male  | 2,006               | 0.089       | 11,805,883             | 45.67       |         |
| Race/ethnicity                                |                     |             |                        |             |         |
| White   | 1,793,509           | 53.01       | 19,223,499             | 63.03       | 0.0001* |
| Black/African American                        | 230,973             | 19.14       | 1,337,310              | 11.72       |         |
| Hispanic                                      | 167,239             | 13.94       | 1,264,108              | 12.66       |         |
| Others  | 337,795             | 13.92       | 3,094,711              | 12.56       |         |
| Family income                                 |                     |             |                        |             |         |
| Poor/Near poor                                | 347,858             | 19.88       | 3,221,481              | 19.97       | 0.0001* |
| Low income                                    | 329,565             | 15.42       | 2,981,073              | 13.42       |         |
| Middle income                                 | 655,339             | 27.60       | 6,376,237              | 26.38       |         |
| High income                                   | 1,194,749           | 37.08       | 12,340,837             | 40.21       |         |
| Education level                               |                     |             |                        |             |         |
| ≥High school                                  | 243,709             | 15.05       | 2,511,886              | 15.24       | 0.0001* |
| High school diploma/GED                       | 818,329             | 13.87       | 6,479,438              | 26.91       |         |
| Associate/bachelor                            | 1,095,882           | 41.82       | 11,629,235             | 44.12       |         |
| Masters or higher                             | 371,596             | 11.24       | 4,299,068              | 13.71       |         |
| Insurance coverage                            |                     |             |                        |             |         |
| Any private                                   | 161,170,798         | 61.98       | 167,435,261            | 65.10       | 0.0001* |
| Non-private                                   | 70,187,283          | 27.01       | 92,475,818             | 35.90       |         |
| Public  | 28,594,819          | 11.01       | 23,209,112             | 9.01        |         |
| Marital status                                |                     |             |                        |             |         |
| Married                                       | 1,452,827           | 50.32       | 15,659,692             | 57.96       | 0.0001* |
| Separated/divorced /widowed                   | 926,577             | 41.24       | 6,362,874              | 29.23       |         |
| Single/never married                          | 150,112             | 8.43        | 2,671,816              | 12.79       |         |
| Region  |                     |             |                        |             |         |
| Northwest                                     | 517,294             | 18.90       | 4,753,399              | 17.53       | 0.0001* |
| Midwest                                       | 624,580             | 21.31       | 5,778,803              | 22.38       |         |
| South   | 918,580             | 38.36       | 9,012,671              | 36.12       |         |
| West  | 469,454             | 21.40       | 5,374,755              | 23.94       |         |
| Elixhauser Comorbidity Index score, Mean (SD) | 0.38(0.91)          | 0.27-0.56   | 0.41(0.81)             | 0.39-0.44   | 0.005*  |

\* Statistically significant difference

Table 2. Bivariate Comparison of Health Care Expenditures by Service

| Type of Health Care Service               | Breast Cancer Group |                     | All Other Cancer Group |                     |
|---|---------------------|---------------------|------------------------|---------------------|
| Type of Health care services              | Mean                | 95% CI              | Mean                   | 95% CI              |
| Total*                                    | 13,428              | 11,876.35-14,980.46 | 14,514                 | 13,442.87-15,584.91 |
| Hospital inpatient*                       | 2,448.56            | 1,678.00-3,219.12   | 4,471.64               | 3,772.07-5,171.21   |
| Ambulatory*                               | 4,575.82            | 3,810.11-5,341.52   | 3,874.39               | 3,569.44-4,179.35   |
| Outpatient                                | 2,024.33            | 1,452.47-2,596.20   | 1,598.85               | 1,349.70-1,848      |
| Emergency room                            | 272.32              | 183.17-361.48       | 335.17                 | 284.26-386.09       |
| Prescription medications*                 | 2,940.66            | 2,561.37-3,319.94   | 2,862.95               | 2,635.77-3,090.13   |
| Dental                                    | 420.88              | 303.24-538.52       | 472.92                 | 422.05-523.79       |
| Home health                               | 375.44              | 183.78-567.10       | 645.03                 | 232.61-1,057.46     |
| Total excluding prescription medications* | 10,790              | 9,202.90-13,546     | 11,586                 | 8,435.17-12,763     |

P-value < 0.05

## DISCUSSION

- A major portion of the health expenditures among BC patients was driven by inpatient hospitalization followed by ambulatory care and prescription medications.
- The two-part model revealed no statistically significant difference in annual healthcare expenditures for BC and other cancers [\$-1648 (95% CI=\$-3,954-\$656)].

## CONCLUSION

- This study found that both BC and other cancer patients have similarly high total healthcare expenditures which highlights the need for a comprehensive evaluation of expenditures to minimize the costs of cancer care.

## REFERENCES

- Montero, A.J., et al., The economic burden of metastatic breast cancer: a US managed care perspective. Breast cancer research and treatment, 2012. 134(2): p. 815-822.
- Allaire BT, Ekwueme DU, Guy Jr GP, Li C, Tangka FK, Trivers KF, et al. Medical care costs of breast cancer in privately insured women aged 18–44 years. American journal of preventive medicine. 2016;50:270.