BREAST CANCER IN CHINA:
ROOM FOR IMPROVED SCREENING

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Screening for breast cancer can result in earlier diagnosis and better health outcomes.\(^1,2\)

Breast cancer is the most common cancer among women in China and is responsible for over 62,000 breast cancer-related deaths annually.\(^3,4\)

No uniform Chinese guidelines for breast cancer screening exist, and participation in screening varies widely according to age and geography.\(^5\)

Little has been reported comparing the outcomes of BC survivors in China and the US or comparing the state of their disease at diagnosis in a general population survey.
Objective

To assess how outcomes differ among breast cancer survivors according to the presence of symptoms at diagnosis and to compare stage of diagnosis across China and the US.
METHODS
Methods: Data Source

Data came from the National Health and Wellness Survey (NHWS), the combined 2010-2015 China – NHWS and the 2013 US NHWS.

- The NHWS is an mixed method (internet & centralized locations) self-reported survey administered to the adult population of the respective country,
  - Designed to be representative of the adult population in each country (US: Total, China: Urban) based on census built quotas / weighting (age, gender, ethnicity – US and region – China).

- All female respondents in **China** diagnosed with breast cancer rom 2010 through 2015 were included in the analyses (**N=131**).
  - The most recent responses were included in the analysis for those who participated in more than one fielding on the China NHWS.

- **US** data was limited to women with diagnosed breast cancer in the 2013 NHWS (**N=980**).
Methods: Measures

Cancer Details:

- Stage at diagnosis
- How the cancer was discovered
- Presence of symptoms at time of diagnosis

Health-related quality of life – SF-12v2\textsuperscript{6} or SF-36v2\textsuperscript{7} Health Survey:

- Physical (PCS) and Mental (MCS) Component Summary scores were calculated to describe mental and physical health status, respectively.
- Health utilities were derived from the SF scales using the SF-6D algorithm.\textsuperscript{8}
- Higher values on these metrics indicate better health.

Activity impairment was measured with the Work Productivity and Activity Impairment (WPAI) questionnaire.\textsuperscript{9}

- Higher values indicate more impairment.

\textsuperscript{6} Ware JE, et al. How to Score Version 2 of the SF-12v2\textsuperscript{®} Health Survey (With a Supplement Documenting SF-12\textsuperscript{®} Health Survey). Lincoln, RI, Qual Inc. 2002.
\textsuperscript{8} Brazier JE, Roberts J. Med Care. 2004;42(9):851-859.
Methods: Analyses

Differences across countries (categorical variables) were analyzed using chi-square tests.

Differences in outcomes (continuous variables) were analyzed within each country according to the presence of symptoms using t-tests.
Characteristics of the Sample

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Female</td>
<td>100.0%</td>
<td>131</td>
</tr>
<tr>
<td>Age (Mean, SD)</td>
<td>46.5</td>
<td>13.7</td>
</tr>
<tr>
<td>Age at Diagnosis (Mean, SD)</td>
<td>42.7</td>
<td>12.6</td>
</tr>
<tr>
<td>Married/Living with Partner</td>
<td>86.3%</td>
<td>113</td>
</tr>
<tr>
<td>University Degree</td>
<td>51.1%</td>
<td>67</td>
</tr>
<tr>
<td>Employed</td>
<td>67.9%</td>
<td>89</td>
</tr>
</tbody>
</table>

Relative to the US sample, the Chinese respondents with breast cancer were:

- Younger
- More likely to be married
- More educated
- More often employed
The women from China were currently experiencing cancer, as opposed to the US women where most were currently cancer free.

There was an overall difference in current stage \((p<0.001)\) as well as pairwise differences at Stages 0, 1, 2a, 2b, 3a, and cancer free \((p<0.05)\).
Results: Breast Cancer Stage at Diagnosis

**Women in China were diagnosed at later stages than women in the US**

There was an overall difference in stage of diagnosis ($p<0.001$) as well as differences in proportion diagnosed at Stages 1, 2b, and 3a ($p<0.05$).
The majority of women in China discovered their breast cancer from self-exam rather than mammogram in the US.

There was an overall difference method of discovery ($p<0.001$) as well as pairwise differences for each detection method ($p<0.05$).
Results: Income Association with Breast Cancer Discovery

Women in China with higher income were more likely to have cancer detected by mammogram versus lower income women.
Results: Income Association with Breast Cancer Discovery

Women in the US, regardless of income status, are primarily discovering their breast cancer through mammography

![Bar chart showing the incidence of breast cancer discovery methods in the USA by income status.](chart)

- **Self-examination**: Lower income (10%) vs. Higher income (30%)
- **Examination by healthcare provider**: Lower income (5%) vs. Higher income (15%)
- **Mammogram**: Lower income (50%) vs. Higher income (75%)
- **Other**: Lower income (5%) vs. Higher income (10%)

*Significance: *p<0.05
Results: Presence of Symptoms at Diagnosis

Symptoms at diagnosis were much more common among women in China than in the US

Difference is statistically significant (p<0.001).

* *
Results: Symptoms Association with Health & Activity Impairment

Symptoms at time of diagnosis were associated with worse overall health status and higher activity impairment.

*\( p<0.05 \), †\( p<0.10 \), SF-6D = Health Utilities derived from the SF scales using the SF-6D algorithm

\[^*^p<0.05, \ ^{†}p<0.10, \text{SF-6D = Health Utilities derived from the SF scales using the SF-6D algorithm}\]
Results: Symptoms Association with Health Outcomes

Symptoms at diagnosis were associated with decrements in HRQoL, both physical and mental health status.

* \( p < 0.05 \), † \( p < 0.10 \), PCS = Physical Component Score, MCS = Mental Component Score
Discussion

Breast cancer is diagnosed at a later stage in China than in the US and is more likely to be diagnosed through self-exam.

Women with higher income in China were more likely to have their cancer detected by a mammogram.

Consistent with this, more women in China were experiencing symptoms associated with cancer at the time of diagnosis.

Symptoms at the time of diagnosis is associated with worse health outcomes.

Women with symptoms experienced worse quality of life (physical & mental) as well as higher activity impairment.

Women in China may benefit from effective screening for breast cancer.

With the large / widely dispersed population, costs associated and patient profiles a two-step risk assessment screening may be more beneficial.
Limitations

The present study is based on cross-sectional data of breast cancer survivors and cannot reflect the outcomes of those who did not survive the disease or relationships with mortality.

The study was cross-sectional so causality cannot be inferred (cancer symptoms may not have been the cause of the worse outcomes among patients with symptoms at diagnosis).

The NHWS is broadly representative of the Chinese urban and US adult population but may not be representative of the individuals with breast cancer in those countries.

The present analysis does not indicate whether increased screening would be cost-effective.
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Thank You
APPENDIX SLIDES

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Results: Presence of Symptoms at Stage of Diagnosis

Women in China and the US are more likely to have symptoms at later stages of diagnosis, and more so in China.
Results: Income Association with Stage of Diagnosis

Women in China with higher income appear to be more likely to be diagnosed in early stages of cancer vs. lower income women.

*Results: Income Association with Stage of Diagnosis*

Breast Cancer Stage at Diagnosis

- Low income
- High income

*p<0.05, †p<0.10

*p<0.05, †p<0.10"
Results: Income Association with Stage of Diagnosis

Women in the US with higher income were more likely to be diagnosed at stage 0, and lower income women were not sure.

*\textit{p}<0.05, \textit{fp}<0.10