

The Association Between Marital Status and Suicide Mortality Among Patients with Breast Cancer

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Abstract

We examined the association between marital status and suicide mortality after breast cancer diagnosis and whether it varied by county-level income or rural–urban residence. This SEER cohort included adults diagnosed with first primary breast cancer during 2000–2022. Stabilized inverse probability of treatment weighting and multivariable Fine–Gray regression were used, treating non-suicide deaths as competing events. Cox, landmark, treatment-adjusted sensitivity, and exploratory interaction analyses were performed. Among 825,047 patients, 40.7% were unmarried/non-partnered. All baseline standardized mean differences were below 0.01 after weighting. During 6,816,981 person-years, 506 suicide deaths occurred (7.42 per 100,000 person-years). Unmarried/non-partnered patients had a higher suicide subdistribution hazard than married/partnered patients (sHR 1.34, 95% CI 1.12–1.60). Cox analysis yielded a consistent association (HR 1.45, 95% CI 1.21–1.73); landmark sHRs at 1, 3, and 5 years were 1.39, 1.46, and 1.34. The treatment-adjusted sensitivity estimate was 1.26 (95% CI 0.99–1.60; $P = 0.064$). The association varied by income category (joint interaction $P = 0.042$): conditional sHRs were 2.74 (95% CI 1.43–5.26) in the lowest and 1.06 (95% CI 0.80–1.39) in the highest category. The highest-versus-lowest income interaction ratio was 0.39 (95% CI 0.19–0.78; $P = 0.008$). Rural–urban interaction was not statistically significant ($P = 0.488$). Unmarried/non-partnered status was associated with higher suicide mortality, although the absolute rate was low. Exploratory findings suggest a weaker association in higher-income settings, with no clear evidence of variation by residence. Observational limitations and sensitivity-analysis uncertainty warrant cautious interpretation and independent validation.

Keywords

Breast Cancer, Marital Status, Suicide Mortality, Social Buffering Framework