Assessing Black-White Disparities in Financial Toxicity and Quality of Life Among Survivors Diagnosed with Endometrial Cancer

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Background

- "Financial toxicity" (FT) is defined as the financial distress or hardship experienced by patients due to the cost of medical care.
- FT is linked to poorer quality of life, treatment non-adherence, and in some cases, higher mortality rates.[1,2]
- Black cancer patients are more than twice as likely to experience FT.[3]
- No published studies to date exploring FT and endometrial cancer.
- The Carolina Endometrial Cancer Study aims to identify the demographic and clinical factors that correlate with FT in endometrial cancer patients.

Objective

Utilizing data from the Carolina Endometrial Cancer Study, this study first examines key demographic and clinical factors, particularly race, associated with FT among women with endometrial cancer. Second, it explores associations between financial toxicity and patient quality of life.

Methods

Data Collection & Study Population

- CECS baseline data from 623 participants, diagnosed after January 1, 2020.
- Oversampling of Black patients
- Excluded if race other than Black or White or missing data for any of the covariates

Outcome Variables

- FT measured by COST tool scores (range: 0-44, lower scores indicate higher toxicity).
- Created tertiles to determine high vs. low FT
- Quality of life assessed by FACT-G questionnaire scores (range: 0-108, higher scores indicate better QoL).

Explanatory Variables

- Main variable: self-reported race
- Covariates: age, comorbidities, income, insurance status, education, relationship status, cancer stage.

Primary Analysis

- Logistic regression to evaluate associations between variables and FT
- Associations expressed as odds ratios with 95% confidence intervals.

Secondary Analysis

- Multivariate linear regression to assess association between FT and quality of life.

*Both analyses adjusted for covariates

Results

- Median COST score was 29.3, low FT range of 0-23.1, high FT range of 23.8-44
- Black participants had higher unadjusted odds of financial toxicity; however, the racial disparity was not significant when adjusted for socio-demographic factors.
- Advanced disease stage and lower income were significant predictors of higher financial toxicity.
- Financial toxicity was inversely associated with quality of life scores.

Table 2: Association between financial toxicity and race, n=332

Model	Odds Ratio	95% CI	P-value
Unadjusted estimate of Black race only (ref. White)	1.78	[1.09, 2.89]	0.020
Estimate of Black race, adjusted for clinical factors only [a]	1.80	[1.04, 3.12]	0.035
Estimate of Black race, adjusted for clinical and sociodemographic factors [b]	1.08	[0.59, 1.99]	0.793

[a] Adjusted for hypertension, BMI, diabetes, and cancer stage.
[b] Adjusted for clinical variables and age at enrollment, annual household income, insurance status, educational attainment, age at enrollment, and relationship status.

Table 3: Multivariate analyses of sociodemographic and clinical factors associated with financial toxicity

Characteristic	Odds Ratio	95% CI	P-value
Race			
White	Ref		
Black	1.08	[0.59, 1.98]	0.799
Hypertension			
No	Ref		
Yes	0.68	[0.37, 1.24]	0.208
BMI ≥ 30			
No	Ref		
Yes	1.08	[0.53, 2.21]	0.833
Diabetes			
No	Ref		
Yes	1.45	[0.78, 2.70]	0.234
Cancer stage			
Stage 1	Ref		
Stage 2	5.31	[1.83, 15.43]	0.002
Stage 3	4.31	[1.54, 12.04]	0.005
Annual income			
> $100,000	Ref		
≤ $30,000	8.84	[2.63, 29.71]	0.001
$30,001-$50,000	4.97	[1.64, 15.08]	0.005
$50,001-$100,000	2.91	[1.03, 8.18]	0.043
Insurance status			
Private	Ref		
Public	0.54	[0.26, 1.14]	0.108
Uninsured	1.90	[.54, 6.64]	0.315
Educational attainment			
College graduate or advanced degree	Ref		
Associates/technical/some college	1.49	[0.77, 2.89]	0.233
High school graduate or less	1.18	[0.54, 2.55]	0.678
Relationship status			
Partnered	Ref		
Single	1.62	[0.87, 3.01]	0.130
Age at enrollment	0.98	[0.95, 1.02]	0.304

Table 4: Association between quality of life (FACT-G score) and financial toxicity, n=215

Characteristic	Coefficient	95% CI	P-value
Financial toxicity			
Low	Ref		
High	-11.45	[-17.00, -5.90]	< 0.001
Race			
White	Ref		
Black	2.16	[-2.71, 7.03]	0.382
Hypertension			
No	Ref		
Yes	-0.78	[-3.73, 3.16]	0.696
BMI ≥ 30			
No	Ref		
Yes	-0.86	[-5.76, 4.04]	0.730
Diabetes			
No	Ref		
Yes	-7.13	[-11.78, -2.47]	0.003
Cancer stage			
Stage 1	Ref		
Stage 2	-4.39	[-11.91, 3.14]	0.252
Stage 3	0.44	[-8.48, 9.37]	0.922
Annual income			
> $100,000	Ref		
≤ $30,000	-8.07	[-16.14, 0.00]	0.05
$30,001-$50,000	-1.95	[-7.92, 4.01]	0.519
$50,001-$100,000	2.28	[-7.63, 3.09]	0.404
Insurance status			
Private	Ref		
Public	-3.44	[-8.06, 1.19]	0.145
Uninsured	2.71	[-9.96, 15.39]	0.673
Educational attainment			
College graduate or advanced degree	Ref		
Associates/technical/some college	-1.63	[-5.77, 2.50]	0.437
High school graduate or less	1.11	[-4.81, 7.03]	0.673
Relationship status			
Partnered	Ref		
Single	3.89	[-0.96, 8.74]	0.115
Age at enrollment	0.41	[0.14, 0.68]	0.003

Conclusion

- Black participants have higher odds of experiencing FT, even after adjusting for clinical factors.
- Adjusting for sociodemographic characteristics, racial disparities in financial toxicity become non-significant, suggesting intrinsic sociodemographic inequalities.
- Advanced cancer stage and lower income associated with high FT after adjusting for covariates.
- Financial toxicity has a significant negative relationship with quality of life, remaining significant after adjusting for covariates.

Lessons Learned

- Socio-demographic factors intrinsic to disparities should be carefully considered in analyses to avoid masking true inequities.
- Future research should focus on longitudinal studies to explore causality and progression of financial toxicity.
- The strong link between financial stress and reduced quality of life suggests a need for supportive interventions.
- Policy changes and financial counseling should be prioritized to mitigate the economic burden of cancer care.

References

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