Ovarian Cancer Survival in Missouri, 1996-2014

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1. Background

- Population-based survival provides an indicator of the effectiveness of screening (when indicated), early diagnosis and treatment.
- Survival differences between groups suggest disparities in access to early diagnosis and optimal treatment.
- In addition to broad population-based implications, accurate survival statistics offer patients an understanding of the disease nature and course and guide clinicians in counseling and management.
- Invasive ovarian cancer (OC) is the tenth most common cancer among Missouri (MO) women, but this cancer ranks fifth in cancer mortality. Detailed population-based information on OC cancer survival among MO women is needed.

2. Purpose

- To describe the relative survival (RS) for OC in MO overall, by demographic and by clinicopathological characteristics.

3. Methods

- Survival data from the Missouri Cancer Registry were obtained for cases diagnosed from 1996 through 2014.
- Using SEER*Stat, we analyzed 5-year RS rates with follow-up through 2015 by year of diagnosis, stage (localized, late [regional & distant] & unknown), age (<40, 40-49, 50-64 & 65+), race (white, black & other), geographical region (Central, Southwestern, Southeastern, Northwestern, Northeastern, Kansas City metro & St. Louis metro), metro v. non-metro status, MO's three most populous areas (St. Louis City, St. Louis County & Jackson County), treatment, grade, histology & marital status. Assessments were made by comparing confidence intervals.

The Missouri Cancer Registry and Research Center (MCR-ARC) is supported in part by a cooperative agreement between the Centers for Disease Control and Prevention (CDC) and the Missouri Department of Health and Senior Services (DHSS) (NU58/DP006299-01&02) and a Surveillance Contract between DHSS and the University of Missouri.

4. Results

Table 1. 5-year relative survival for ovarian cancer by demographic characteristics in Missouri, 1996-2014.

	Relative survival	Number of cases
	% (95% CI)	
Age group		
<40	77.9 (73.8-81.5)	510
40-49	65.1 (61.6-68.5)	842
50-64	51.8 (49.5-54.1)	2296
65+	27.6 (25.8-29.4)	3398
Race		
White	44.2 (42.8-45.6)	6443
Black	38.9 (34.0-43.7)	501
Other	57.0 (41.2-70.0)	65
Marital status		
Single	52.9 (49.3-56.4)	968
Married	51.0 (49.1-52.9)	3454
Separated	47.0 (31.2-61.2)	48
Divorced	47.0 (41.1-49.2)	726
Widowed	23.1 (20.7-25.7)	1630
Unknown	39.7 (32.5-46.9)	210
Geographical regions		
Kansas City Metro	45.4 (42.3-48.5)	1307
Jackson County	43.6 (39.6-47.6)	786
St. Louis Metro	45.8 (43.5-48.0)	2492
St. Louis City	38.8 (33.1-44.5)	364
St. Louis County	46.6 (43.6-49.6)	1385
Central	41.4 (37.3-45.4)	757
Southwestern	44.1 (40.7-47.4)	1090
Southeastern	39.5 (35.6-43.4)	744
Northwestern	43.0 (36.8-49.1)	317
Northeastern	40.7 (34.5-46.8)	339
Metro vs. non-metro		
Metro	45.7 (44.1-47.3)	4962
Non-Metro	39.7 (37.3-42.1)	2084

Table 2. 5-year relative survival of ovarian cancer by clinicopathologic characteristics in Missouri, 1996-2014.

	Relative survival	Number of cases
	% (95% CI)	
Stage of diagnosis		
Localized stage	92.7 (90.2-94.6)	1137
Late stage (regional & distant)	35.9 (34.4-37.3)	5332
Unknown	19.4 (15.9-23.1)	577
First course treatment		
Surgery*	55.1 (53.5-56.6)	5411
No surgery	6.1 (4.7-7.7)	1330
Unknown	44.0 (42.6-45.3)	305
Grade		
Well-differentiated	88.1 (83.9-91.2)	548
Moderately differentiated	60.9 (57.3-64.2)	1004
Poorly differentiated	40.0 (37.8-42.1)	2702
Undifferentiated	37.0 (29.8-44.3)	322
Unknown	32.1 (30.0-34.2)	2470
Histology		
Serous	40.6 (38.6-42.6)	3052
Epithelial, not otherwise specified	26.1 (23.2-29.0)	1121
Endometrioid	78.5 (74.5-82.0)	675
Mucinous	68.4 (62.9-73.3)	419
Clear cell	68.5 (62.4-73.8)	338
Other epithelial, including mixed histology	23.9 (19.3-28.8)	385

* Surgery includes total removal of tumor or (single) ovary, unilateral or bilateral oophorectomy, debulking, cytoreductive surgery and pelvic exenteration.

- Patients who underwent surgery (e.g.,debulking surgery or oophorectomy) during treatment appeared to have much improved survival compared to patients undergoing no surgery. We are cautious in our interpretation here due to uncontrollable confounding factors in the population-based cancer surveillance data.
- OC survival differed by histology. Serous carcinoma had lower survival compared to endometrioid, mucinous or clear cell carcinoma; this may be related to later diagnosis.
- This study showed an improved OC survival over time in MO and suggested demographic and clinicopathological disparities in OC. Race- and age-related variations in survival improvements may be explained, at least in part, by differences in care across these subpopulations.

5. Discussion

- Similar to the increasing national trend, OC survival has improved from 1996 to 2014 in MO. This improved survival was observed especially in late-stage tumors.
- We found a white-black OC survival gap in MO. Fewer black OC patients underwent surgery compared to their white counterparts (67% vs. 77%). For those black patients who received surgery, their RS was similar to white patients who received surgery: RS 54.1 vs.55.0 (results not in tables).
- We saw a survival gap between older adults (i.e., 65+) and younger groups. The proportion of OC patients receiving surgery decreased as age increased. Elderly cancer patients are less likely to receive treatments with potentially debilitating side effects, such as surgery or chemotherapy, regardless of the cancer stage.

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The authors would like to thank MCR-ARC Quality Assurance staff and the staff of facilities throughout MO and other states' central cancer registries with which MCR-ARC has case-sharing agreements for their dedication in continuous quality improvement and submitting their reportable cases to MCR-ARC.