# Predictors of Symptom-Related Mobility Disability in Women with Ovarian Cancer

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## BACKGROUND

Women with Ovarian Cancer (OC) experience distressing disease- and treatment-related symptoms. Common symptoms include fatigue, nausea, vomiting, and peripheral neuropathy. The impact of these symptoms on physical function, including mobility, is not known.

## PURPOSE

To explore:

1) Occurrence of symptom-related mobility disability among OC survivors.

2) Factors associated with mobility disability among OC survivors.

## METHODS

### Design

Descriptive, correlational secondary analysis.

### Sample (n=700)

Participants were 713 respondents to a survey mailed by the National Ovarian Cancer Coalition (NOCC).

Excluded women with history of diabetes or fibromyalgia (n = 10) and those with incomplete data on key variables (n = 3).

### Study Variables and Instruments

1) **Symptom Severity: Symptom Severity Index**
- Respondents rate severity of 24 common symptoms
- 11-point scale (0 = "Did not have the symptom;" 10 = "As bad as I can imagine")

2) **Mobility Disability: MD Anderson Symptom Assessment Instrument Interference Scale (MDASI-Walking Item)**
- Participants answer, "How much have symptoms interfered with the walking during the past week?"
- 11-point scale (0 = "Did not interfere;" 10 = "Interfered completely")

3) **Covariates**
- Disease- and treatment-related factors (e.g. time since diagnosis; number of recurrences; currently receiving chemotherapy)
- Sociodemographic characteristics (e.g. age, education)

## RESULTS

### Sample Characteristics

| | Entire Sample (n = 700) | | Women Endorsing Mobility Disability (n =427; 61% of sample) | |
|---|---|---|---|---|
| | n (%) | Mean (SD) | n (%) | Mean (SD) |
| Age | | 53.44 (11.48) | | 53.87 (11.08) |
| Race (% white) | 664 (95) | | 373 (87) | |
| Education (% ≥ 12 years) | 682 (97) | | 384 (90) § | |
| Income < $60,000 | 344 (49) | | 211 (49) | |
| Months since diagnoses | | 59.10 (49.19) | | 52.42 (39.19)* |
| Number of recurrences | | 2.39 (2.34) | | 2.65 (2.30)* |
| Currently receiving chemotherapy | 156 (22) | | 124 (31)^ | |
| Months since chemotherapy | | 33.02 (43.77) | | 52.42 (39.19)* |

Key: § $p$ = .01;    * $p$ = .001;    ^ = $p$ < .001

Self Reported Level of Symptom-Related Mobility Disability
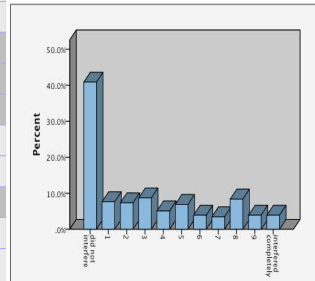


### Bivariate Correlations: Factors Associated with Mobility Disability (Interference with Walking)

#### Correlations Between Mobility Disability and Sociodemographics, Disease and Treatment Factors, & Symptoms (Small Effect Sizes*)

| | Age | Educa-tion | Months Since Dx | Stage at Dx | Sexuality Concerns | # of Recur-rences | Income | Hot Flashes | Hair Loss | Presence of Comor-bidities | Head-aches | Weight Gain | Current Chemo | Elevated CA-125 | Weight Loss | Urinary Problems | Vomiting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Interference with Walking | .020 | -.099 | -.102 | .111 | .113 | .139 | -.144 | .162 | .165 | .170 | .213 | .210 | .224 | .227 | .229 | .246 | .267 |

#### Correlations Between Mobility Disability and Cancer- and Treatment-Related Symptoms (Medium and Large Effect Sizes*)

| | Dizzi-ness | Bowel Disturb-ance | Memory Problems | Mood Swings | Abdom-inal Bloating | Appetite | Sleep Distur-bance | Depres-sion | Nausea | Numb-ness | SOB | Drowsi-ness | Pain | # of Symp-toms | Fatigue |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Interference with Walking | .305 | .307 | .309 | .310 | .333 | .339 | .343 | .345 | .351 | .357 | .370 | .388 | .455 | .456 | .560 |

*Key:   Small Effect Size (ES; r = ≤ 0.29)--      Medium ES ($r$ = 0.30 − 0.49)--      Large Effect Size ($r$ ≥ 0.50)--

### Predictors of Mobility Disability

| | B | SE | β | p | R²Δ | p Δ |
|---|---|---|---|---|---|---|
| **Block 1: Covariates** | | | | | .221 | < .001 |
| Elevated CA-125 | .838 | .337 | .122 | .013 | | |
| Currently receiving chemotherapy | .745 | .370 | .100 | .045 | | |
| Presence of comorbidities | .722 | .275 | .345 | < .001 | | |
| Number of symptoms | .235 | .029 | .345 | < .001 | | |
| | | | | | | |
| **Block 2: Symptoms** | | | | | .179 | < .001 |
| Elevated CA-125 | .417 | .314 | .061 | .185 | | |
| Currently receiving chemotherapy | .945 | .372 | .127 | .011 | | |
| Presence of comorbidities | .522 | .258 | .079 | .044 | | |
| Number of symptoms | -.039 | .047 | -.058 | .407 | | |
| Numbness/Tingling | .140 | .043 | .134 | .001 | | |
| Fatigue | .362 | .067 | .328 | < .001 | | |
| Pain | .233 | .048 | .216 | < .001 | | |

Shortness of breath tended toward significance in final model (p=.06). Variables not significant in any step of the model: Age, education, income, stage at diagnosis, number of recurrences, abdominal bloating, bowel disturbances, depression, dizziness, drowsiness, hair loss, headaches, hot flashes, lack of appetite, memory problems, mood swings, nausea, sexuality concerns, sleep disturbance, urinary problems, vomiting, weight gain, weight loss.

## METHODS, cont'd

### Analysis

- Bivariate correlation ($r$) to determine variables to be entered into regression model (p < 0.30):
  - Disease- and treatment-related factors;
  - Sociodemographic factors.
- A multiple linear regression model was constructed with significantly correlated covariates, numbness and tingling, and all assessed symptoms (regardless of strength of association) to determine predictors of mobility disability.

## CONCLUSIONS

- A majority (61%) of participants endorsed some degree of mobility disability during or after treatment for OC. Greater than 1/3 (35.5%) of participants experienced moderate to severe symptom-related mobility disability.

- Time since chemotherapy was not associated with mobility disability, suggesting that mobility disability may persist beyond active chemotherapy treatment.

- Currently receiving chemotherapy and presence of medical comorbidities are associated with higher levels of mobility disability.

- Symptoms most predictive of mobility disability in the final model were numbness/tingling, pain, and fatigue. While not predictive of mobility disability, abdominal bloating, bowel disturbance, dizziness, and shortness of breath were also associated with mobility disability in the bi-variate analyses. These may represent a symptom cluster characteristic of patients experiencing chemotherapy-induced neuropathy (CIN).

- Age was not associated with mobility disability, although age has been associated with mobility disability in other populations (e.g. older adults).

- Longitudinal research is needed to explore the trajectory of CIN symptoms and development of mobility disability, and whether improvement in CIN symptoms can restore compromised mobility.

- Clinicians should be alert to the high prevalence of mobility disability in women, with OC and incorporate measures to address symptoms that may be associated with mobility disability into survivorship care plans.