

1 **Awareness of symptoms and risk factors of ovarian cancer in a population of**  
2 **women and health care providers**

3 Goldstein, Carol L., PhD<sup>a</sup>

4 Susman, Ellen P., PhD<sup>b</sup>

5 Lockwood, Suzy, MSN, PhD<sup>c</sup>

6 Medlin, Erin E., MD<sup>d</sup>

7 Behbakht, Kian, MD<sup>e</sup>

8

9 <sup>a</sup>Loretto Heights School of Nursing, Regis University, Denver, Colorado

10 <sup>b</sup>Metropolitan State University of Denver, Denver, CO

11 <sup>c</sup>Texas Christian University, Harris College of Nursing and Health Sciences, Fort

12 Worth, Texas

13 <sup>d</sup>University of Wisconsin Hospital and Clinics, Madison, WI

14 <sup>e</sup>University of Colorado Denver and Anschutz Medical Campus, Aurora, CO

15

16 Corresponding Author:

17 Erin E. Medlin, MD, H4/664a CSC, 600 Highland Avenue, Madison, WI 53792

18 Phone 608-263-6606, Fax 608-265-6572, Email: [emedlin@wisc.edu](mailto:emedlin@wisc.edu)

19 **Short title:** Ovarian Cancer Symptom and Risk Awareness

20

21 **Acknowledgements:**

22 Colorado Ovarian Cancer Alliance for providing funding for the completion of this

23 project. 9Health Fair provided access to participants and contributed to participant

24 recruitment. The National Ovarian Cancer Coalition provided additional  
25 information on allocation of funds for ovarian cancer campaigns. The Program of  
26 Excellence in Cancer of the Ovary at the University of Colorado for time in support in  
27 this project. Suzanne White for her guidance in council with this project.

28

29

30 **Precis**

31 A lack of awareness of the symptoms and risk factors for ovarian cancer is prevalent  
32 among women and health care providers.

33

34 **Abstract**

35 *Objective:* Despite ovarian cancer awareness campaigns, awareness among women  
36 and health care providers is poor. The objective of this study was to determine the  
37 level of awareness among a sample of women and providers and compare these two  
38 populations.

39 *Methods:* Surveys were administered to women and health care providers attending  
40 or volunteering at a community health fair. Survey questions were based on  
41 previously published surveys. Survey responses and demographic information was  
42 collected. SPSS, Chi-square test for independence and z-test were used for analysis.

43 *Results:* Over 2200 women and providers were surveyed and 857 women and 188  
44 providers completed surveys. The majority of women were white, non-Hispanic  
45 (80%) 40-59 years of age (50%) and had a college education (55%). The majority of  
46 providers were nurse practitioners (48%) and under 40 years of age (33%). Health  
47 care providers were significantly more likely to identify the symptoms and risk  
48 factors for ovarian cancer ( $p < 0.001$ ). Forty percent of women reported being at  
49 least slightly familiar with the symptoms of ovarian cancer. Women who were  
50 familiar with symptoms were significantly more likely to identify symptoms and  
51 risk factors correctly ( $p < 0.001$ ) and to report symptoms immediately to a provider  
52 ( $p = 0.011$ ), although overall identification of symptoms was poor, ranging from 25-  
53 72%. Identification of symptoms among health care providers ranged from 59-93%.

54 *Conclusions:* Identification of ovarian cancer symptoms and risk factors is poor  
55 among women and knowledge deficits are present in providers.  
56 Increasing familiarity and awareness could lead to improvements in early diagnosis.

57

58 **Introduction**

59 Ovarian cancer is responsible for more deaths per year than all other gynecological  
60 cancers combined. The American Cancer Society estimates that 22,240 women will  
61 be diagnosed with ovarian cancer and 14, 230 are expected to die from it in 2013 [1].  
62 In the U.S., the average five-year survival rate is 35% when diagnosed at stage IIIC,  
63 which accounts for 75% of initial diagnoses [1]. Women diagnosed at an early stage  
64 have a higher five-year survival rate, however, because there is currently no  
65 accepted, reliable screening test, only 15% of women with ovarian cancer are  
66 diagnosed early [2, 3].

67  
68 Ovarian cancer has an insidious onset, and signs and symptoms are vague and non-  
69 specific. Symptoms include bloating, pelvic or abdominal pain, frequent urination  
70 and early satiation or difficulty eating [4]. Women associate these symptoms with  
71 a variety of every day conditions and therefore often do not seek medical care [5].  
72 This results in the delay of diagnosis and most patients present with advanced  
73 disease [6]. Nonetheless, most women recall having symptoms before diagnosis  
74 [4]. When they consult their HCP, they report being prescribed medication for  
75 abdominal discomfort without thorough investigation of all complaints [4, 7].

76  
77 Numerous national ovarian cancer organizations cite “raising awareness” in their  
78 mission statements. However, there have been few studies on the levels of  
79 awareness among women. Those that have been done have shown that women in  
80 the general population are not aware of, or have low awareness of the symptoms of

81 ovarian cancer ([3, 8-10]). There is also evidence that many primary care providers  
82 do not follow up with patients who complain of these symptoms ([3], [8], [11], [12]).  
83 Therefore, the importance of raising awareness and increasing knowledge of these  
84 symptoms among women and primary care providers cannot be overstated.

85  
86 The primary purpose of this study was to establish and compare the current level of  
87 awareness of ovarian cancer symptoms and risk factors among 1) a population of  
88 women seeking health care screening and 2) HCPs. We hypothesized that, in spite of  
89 numerous efforts, women and HCPs continue to have knowledge deficits about the  
90 signs and symptoms of ovarian cancer.

91

## 92 **Materials and Methods**

### 93 *Survey Development*

94 Surveys were developed for women and HCPs (see Appendix 1 & 2). Questions were  
95 developed based on data from previously published studies [4, 9], with the addition  
96 of a question inquiring a woman's ability to finish a meal, as this was frequently  
97 observed in our practice. (Question 1m or 2m, see Appendix 1&2). Three incorrect  
98 symptoms were added to examine possible response bias. Surveys were  
99 administered in English and Spanish.

100 The survey for HCPs was similar to that distributed to women and contained  
101 questions regarding their knowledge about the symptoms and risk factors for  
102 ovarian cancer. General demographic information was collected from all  
103 participants.

104 *Recruitment*

105 The 9Health Fair, a not-for-profit organization in the state of Colorado, performs  
106 free health screenings annually. These events take place at over 140 sites in rural  
107 and urban areas, with over 87,000 attendees and 14,000 volunteers annually.  
108 Approximately one-half of the volunteers are health care professionals. Of those  
109 seeking screening in 2013, approximately 59% were women (Personal  
110 communication, C. Belz, 2013). Eleven sites were selected based on projected high  
111 attendance and a representative sample of counties across the state of Colorado.  
112 The first 200 women and all HCPs presenting at each selected site were surveyed. In  
113 addition, one primary care clinic and all providers in two women's health clinics  
114 were asked to complete the survey. The 9Health Fair Medical Advisory Board and  
115 the institutional review board at the University of Colorado approved the study.

116

117 *Statistics*

118 The data were analyzed using SPSS Ver.21. Chi square tests for independence was  
119 performed on speed of reporting symptoms by the presence or absence of having a  
120 regular health care provider. Z-tests were performed for comparisons of women's  
121 awareness of symptoms to HCP's knowledge and for the comparison of women  
122 familiar with symptoms to those who were not. Ninety-five percent confidence  
123 intervals were also computed for each difference between the women's and HCP's  
124 proportions. A power analysis was not performed due to the exploratory nature of  
125 this study.

126 **Results**

127 *Demographics*

128 **Women**

129 There were 857 women who completed the survey. However, two questions were  
130 inadvertently omitted on 256 surveys. Therefore, the results for these two  
131 questions are reported for 601 women. Based on attendance, approximately 2200  
132 women received the survey with a response rate of approximately 39%.

133

134 The women's demographic information is presented in Table 1. Most women were  
135 40-59 years of age (50%) self-identified as white, non-Hispanic (80%) and were  
136 college educated (55%). More than a third (37%) of respondents said they knew  
137 someone with ovarian cancer and 1% reported being diagnosed with ovarian cancer.

138

139 **Health Care Providers**

140 For Health Care Providers (HCP), 188 completed the survey with 40 of these self-  
141 described as family practice physicians, 52 as nurses, 34 as nurse practitioners and  
142 six obstetricians/gynecologists. The largest group of HCPs was under 40 years of age  
143 (33%).

144

145 *Comparison of awareness of symptoms and risk factors*

146 The ability to recognize the signs and symptoms of ovarian cancer for both HCPs  
147 and women is presented in Table 2. For each symptom presented, HCPs were  
148 significantly more knowledgeable than the women. Pelvic or abdominal pain, along  
149 with bloating or abdominal swelling was recognized as indicative of ovarian cancer



150 more than any other symptoms. The inability to finish a meal was the least correctly  
151 identified symptom with only 59.5% of HCPs and 25.1% of women indicating this as  
152 a symptom of ovarian cancer. There was no significant difference between the two  
153 groups for frequent headaches and continuous fever. HCPs were more accurate in  
154 indicating that an abnormal Papanicolaou (Pap) test was not a symptom of ovarian  
155 cancer compared to the women ( $p < 0.001$ ).

156

157 Identification of risk factors is listed in Table 3. Five of the six factors are known risk  
158 factors for ovarian cancer ([13],[14],[15],[16],[17]) with the effect of high dose  
159 estrogen without progesterone on ovarian cancer unknown ([18]). Personal or  
160 family history of ovarian, breast or colon cancer was identified as a risk factor more  
161 than any other for both groups, with 90.9% of HCPs and 83.5% of women correctly  
162 identifying this risk factor. HCPs were significantly more knowledgeable compared  
163 to the women's group for each risk factor with the exception of high dose estrogen.

164

#### 165 *Women's knowledge of symptoms*

166 A total of 303 (40%) women were at least slightly familiar with the symptoms of  
167 ovarian cancer. Women who self-reported as familiar with ovarian cancer  
168 symptoms were significantly more accurate with the identification of symptoms for  
169 ovarian cancer as compared to women unfamiliar with ovarian cancer symptoms  
170 (Table 4). For the three non-ovarian cancer symptoms, there was no significant  
171 difference between groups.

#### 172 *Women's speed of reporting symptoms*

173 In order to ascertain if familiarity with ovarian cancer symptoms translated into  
174 earlier reporting of suspicious symptoms to one's doctor, women reporting each  
175 symptom immediately were compared by familiarity level. When women were  
176 asked which symptoms they would report to their doctor immediately, there was no  
177 difference between women who described themselves as familiar and those who  
178 were not familiar with ovarian cancer for every symptom with the exception of  
179 pelvic or abdominal pain. In that case, the proportion of those who were familiar  
180 with ovarian cancer reporting the symptom immediately was significantly greater  
181 than those who were not familiar ( $z=2.55$ ,  $p=0.0108$ ).

182

183 In this study, 663 (81%) women reported having a regular health care provider. The  
184 reporting of several symptoms of ovarian cancer was found to be significantly  
185 related to the presence or absence of having a HCP by chi-squared analysis. An  
186 unexplained weight gain or loss ( $p=0.006$ ), difficulty eating or feeling full quickly ( $p$   
187  $=0.026$ ), unexplained changes in bowel habits ( $p=0.022$ ), continuous fever ( $p=$   
188  $0.004$ ), ongoing unusual tiredness ( $p<0.001$ ) were more quickly reported for those  
189 women who had a regular HCP. There were not significant associations between  
190 speed of reporting and having a regular HCP for all other listed symptoms and tests.

191

#### 192 *Women's knowledge of risk factors*

193 Women's knowledge of ovarian cancer risk factors separated by familiarity with  
194 ovarian cancer symptoms is presented in Table 5. Women familiar with symptoms  
195 of ovarian cancer were significantly more likely to identify risk factors correctly

196 except for the unknown factor of high dose estrogen. For both groups, personal or  
197 family history of cancer were identified as an ovarian cancer risk factor more often  
198 than the other listed factors, as 90% of familiar women and 80% of unfamiliar  
199 women were able to identify this risk factor.

200

## 201 **Discussion**

202 This study showed over half of the women sampled were unfamiliar with the  
203 symptoms of ovarian cancer. Health care providers, although more familiar, were  
204 unable to identify all symptoms of ovarian cancer or all risk factors correctly. Our  
205 study is one of the largest surveys to measure the level of awareness of ovarian  
206 cancer symptoms in a sample of women and compare it to health care providers.

207

208 We found familiarity with the symptoms of ovarian cancer to be low with only 14%  
209 of women reporting being very familiar or familiar with the symptoms. Forty  
210 percent of women reported being at least slightly familiar with the symptoms of  
211 ovarian cancer. Similar findings have been reported elsewhere ([9],[19],[20],[21]).  
212 Lockwood et al., conducted a national mail survey of women and found the level of  
213 awareness of ovarian cancer symptoms to be 15%, although 52% of the sample had  
214 previously had breast cancer ([9]). Even among an at risk population, Anderson et  
215 al., reported a low level of awareness (24%) of ovarian cancer symptoms ([21]).

216

217 Although symptom identification was relatively poor overall among the women  
218 sampled, pelvic discomfort or pain was correctly identified by 70% of women, but

219 gastrointestinal and genitourinary symptoms were poorly identified. In a telephone  
220 survey of women in the United Kingdom, Low et al., found poor recognition of  
221 difficulty eating or feeling full as symptoms of ovarian cancer in this population  
222 [\[\[22\]\]](#). Pap test abnormalities are frequently wrongly identified as a sign of ovarian  
223 cancer, as noted by Jones et al., and Hawkins et al., [\[\[23\]\]](#). In our study, the Pap test  
224 was misidentified by 58% of the women.

225  
226 Although health care providers were able to identify symptoms more accurately  
227 than women, knowledge deficits were still found. The inability to finish a meal and  
228 early satiety were only identified by 59% and 64% respectively. Misconceptions  
229 about the Pap test persisted within this group as well, with 33% incorrectly  
230 identifying an abnormal pap test as a symptom of ovarian cancer. Gajjar et al., have  
231 previously addressed this general lack of awareness among primary care physicians  
232 showing that these physicians poorly identified gastrointestinal symptoms as alerts  
233 to ovarian cancer [\[\[2\]\]](#).

234  
235 Identification of risk factors was high among HCPs with over 80% identifying family  
236 history and genetic disposition as risk factors. In spite of this and the moderate  
237 knowledge of the symptoms of ovarian cancer, delays in diagnosis occur frequently  
238 [\[\[5, 8, 11, 12\]\]](#)

239  
240 This population did not report a significant barrier to care as 81% reported having a  
241 regular primary care physician. Symptoms are frequently reported to HCPs many

242 months before women are diagnosed with ovarian cancer with up to 93% of women  
243 reporting symptoms prior to diagnosis [\[\[24\]\]](#). The notion of ovarian cancer as a  
244 “silent killer” has been debunked by numerous studies. Our study showed that the  
245 presence of a primary care physician improved recognition of symptoms and also  
246 improved early reporting of some symptoms.

247

248 There are several strengths to this study. The relatively large sample size of women  
249 and providers from both urban and rural settings allows generalization of the  
250 results to a broader population. We were able to compare HCPs and women’s level  
251 of awareness of the symptoms and risk factors for ovarian cancer within a  
252 geographic region, which can help to focus the development of educational  
253 interventions in the future.

254

255 Limitations of this study include the use of a convenience sample of individuals  
256 presenting to a health fair, which presents a source of response bias. Additionally,  
257 two questions were inadvertently left off some of the surveys potentially biasing the  
258 responses to those specific questions. Furthermore, although sample numbers were  
259 relatively large, the sample did not accurately represent the geographic area in  
260 terms of racial or educational level [\[\[25\]\]](#). Overall, more participants in our study  
261 had college and postgraduate degrees than the general population of Colorado or  
262 the United States (55% vs 36% vs 29.1%) (U.S. Census Bureau, 2013). Although it  
263 might be assumed that this sample of women is more motivated to care for their  
264 health, they still had low levels of awareness of the symptoms of ovarian cancer. The

265 sample of HCPs was drawn from those participating in the health fair, which may  
266 indicate a bias to providers who are especially interested in health care screening  
267 and prevention. The majority of HCPs sampled were nurse practitioners and family  
268 practitioners, which may not accurately represent the number of types of providers  
269 caring for women in the community [\[\[26-28\]\]](#).  
270  
271 This study demonstrates the lack of awareness and knowledge among women about  
272 the symptoms of ovarian cancer as well as deficits in awareness among providers.  
273 Ovarian cancer is no longer the silent killer it was once thought to be and has  
274 repeatedly been shown to cause symptoms prior to diagnosis even in early stages  
275 [\[\[4, 24, 29\]\]](#). Health care providers must be taught and encouraged to query women  
276 at all health care encounters about symptoms of ovarian cancer. The incorporation  
277 of symptoms into medical curricula has been done, although penetration to older  
278 generations is lacking. An educational campaign, the *In the Know Campaign*,  
279 developed by the Centers for Disease Control, is currently underway for all  
280 gynecologic malignancies and is a step in the right direction [\[\[30\]\]](#). However,  
281 funding for further development of interventions specifically for ovarian cancer is  
282 uncertain and greater efforts are needed on the local and national levels. The  
283 declaration of September as Ovarian Cancer Awareness Month is encouraging, but if  
284 increased awareness is to be achieved, a higher investment of funds, energy and  
285 effort is required.  
286

## 291 | References

- 292 1. American Cancer Society, *Facts & Figures*. Atlanta: American Cancer Society.  
293 2013.
- 294 2. Gajjar, K., et al., *Symptoms and risk factors of ovarian cancer: a survey in*  
295 *primary care*. ISRN Obstet Gynecol, 2012. **2012**: p. 754197.
- 296 3. Jayde, V. and M. Boughton, *The diagnostic journey of ovarian cancer: a review*  
297 *of the literature and suggestions for practice*. Contemp Nurse, 2012. **41**(1): p.  
298 5-17.
- 299 4. Goff, B.A., et al., *Frequency of symptoms of ovarian cancer in women presenting*  
300 *to primary care clinics*. JAMA, 2004. **291**(22): p. 2705-12.
- 301 5. Cooper, C.P., et al., *Gynaecologic cancer symptom awareness, concern and care*  
302 *seeking among US women: a multi-site qualitative study*. Fam Pract, 2013.  
303 **30**(1): p. 96-104.
- 304 6. Luce, T.L., K.H. Dow, and L. Holcomb, *Early diagnosis key to epithelial ovarian*  
305 *cancer detection*. Nurse Pract, 2003. **28**(12): p. 41-7; quiz 48-9.
- 306 7. Goff, B.A., et al., *Ovarian carcinoma diagnosis*. Cancer, 2000. **89**(10): p. 2068-  
307 75.
- 308 8. Koldjeski, D., et al., *Health seeking related to ovarian cancer*. Cancer Nurs,  
309 2004. **27**(5): p. 370-8; quiz 379-80.
- 310 9. Lockwood-Rayermann, S., et al., *Women's awareness of ovarian cancer risks*  
311 *and symptoms*. Am J Nurs, 2009. **109**(9): p. 36-45; quiz 46.

- 312 10. Jones, S.C., et al., *Australian women's awareness of ovarian cancer symptoms,*  
313 *risk and protective factors, and estimates of own risk.* *Cancer Causes Control,*  
314 2010. **21**(12): p. 2231-9.
- 315 11. Evans, J., S. Ziebland, and A. McPherson, *Minimizing delays in ovarian cancer*  
316 *diagnosis: an expansion of Andersen's model of 'total patient delay'.* *Fam Pract,*  
317 2007. **24**(1): p. 48-55.
- 318 12. Seibaek, L., et al., *Symptom interpretation and health care seeking in ovarian*  
319 *cancer.* *BMC Womens Health,* 2011. **11**: p. 31.
- 320 13. King, M.C., et al., *Breast and ovarian cancer risks due to inherited mutations in*  
321 *BRCA1 and BRCA2.* *Science,* 2003. **302**(5645): p. 643-6.
- 322 14. Lynch, H.T., et al., *Gynecologic cancer clues to Lynch syndrome II diagnosis: a*  
323 *family report.* *Gynecol Oncol,* 1992. **44**(2): p. 198-203.
- 324 15. Heintz, A.P., et al., *Carcinoma of the ovary. FIGO 26th Annual Report on the*  
325 *Results of Treatment in Gynecological Cancer.* *Int J Gynaecol Obstet,* 2006. **95**  
326 **Suppl 1**: p. S161-92.
- 327 16. Engeland, A., S. Tretli, and T. Bjorge, *Height, body mass index, and ovarian*  
328 *cancer: a follow-up of 1.1 million Norwegian women.* *J Natl Cancer Inst,* 2003.  
329 **95**(16): p. 1244-8.
- 330 17. Negri, E., et al., *Pooled analysis of 3 European case-control studies: I.*  
331 *Reproductive factors and risk of epithelial ovarian cancer.* *Int J Cancer,* 1991.  
332 **49**(1): p. 50-6.
- 333 18. Beral, V., et al., *Ovarian cancer and hormone replacement therapy in the*  
334 *Million Women Study.* *Lancet,* 2007. **369**(9574): p. 1703-10.



- 335 19. Cooper, C.P., L. Polonec, and C.A. Gelb, *Women's knowledge and awareness of*  
336 *gynecologic cancer: a multisite qualitative study in the United States.* J  
337 *Womens Health (Larchmt)*, 2011. **20**(4): p. 517-24.
- 338 20. Robb, K., et al., *Public awareness of cancer in Britain: a population-based*  
339 *survey of adults.* Br J Cancer, 2009. **101 Suppl 2**: p. S18-23.
- 340 21. Andersen, M.R., et al., *Awareness and concern about ovarian cancer among*  
341 *women at risk because of a family history of breast or ovarian cancer.* Am J  
342 *Obstet Gynecol*, 2003. **189**(4 Suppl): p. S42-7.
- 343 22. Low, E.L., et al., *Ovarian cancer symptom awareness and anticipated time to*  
344 *help-seeking for symptoms among UK women.* J Fam Plann Reprod Health Care,  
345 2013. **39**(3): p. 163-71.
- 346 23. Hawkins, N.A., et al., *Why the Pap test? Awareness and use of the Pap test*  
347 *among women in the United States.* J Womens Health (Larchmt), 2011. **20**(4):  
348 p. 511-5.
- 349 24. Bankhead, C.R., S.T. Kehoe, and J. Austoker, *Symptoms associated with*  
350 *diagnosis of ovarian cancer: a systematic review.* BJOG, 2005. **112**(7): p. 857-  
351 65.
- 352 25. *United States Census.* November 9, 2013.
- 353 26. Visscher, H.C., *The role of the obstetrician/gynecologist in primary health care.*  
354 *Clin Obstet Gynecol*, 1995. **38**(1): p. 206-12.
- 355 27. Scroggs, J.A., et al., *Obstetrician-gynecologists as primary care physicians: the*  
356 *perspectives of health maintenance organization medical directors and*  
357 *obstetrician-gynecologists.* *Obstet Gynecol*, 1997. **90**(2): p. 291-5.

- 358 28. Scholle, S.H., et al., *Trends in women's health services by type of physician seen:*  
359 *data from the 1985 and 1997-98 NAMCS.* *Womens Health Issues*, 2002. **12**(4):  
360 p. 165-77.
- 361 29. Wynn, M.L., S. Chang, and L.A. Peipins, *Temporal patterns of conditions and*  
362 *symptoms potentially associated with ovarian cancer.* *J Womens Health*  
363 *(Larchmt)*, 2007. **16**(7): p. 971-86.
- 364 30. Rim, S.H., et al., *A national initiative for women and healthcare providers:*  
365 *CDC's Inside Knowledge: Get the Facts About Gynecologic Cancer campaign.* *J*  
366 *Womens Health (Larchmt)*, 2011. **20**(11): p. 1579-85.

367

368

369

370 | [Table 1. Women and Provider Participant Demographics](#)

Demographics	Percentage (n) (total n = 857) <sup>a</sup>
<b>Women</b>	
Age	
Under 40 years	18 (145)
40-59 years	50 (417)
60 and over years	32 (261)
Race	
White	80 (649)
Latina/Hispanic	15 (121)
African American	2 (18)
Other	3 (26)
Education	
College/Post-graduate	55 (439)
Some College	29 (234)
High School or less	16 (128)
Familiarity with Ovarian Cancer	
Knew someone	37 (309)
Didn't know someone	63 (518)
<b>Health Care Providers</b>	(total n=188) <sup>a</sup>
Specialty	
Family Practitioner	22 (40)
Nurse/Nurse Practitioner	48 (86)
Obstetrician/Gynecologist	3 (6)
Other	27(46)
Age	
Under 40 years	33 (60)
40-49 years	24 (44)
50-59 years	26 (48)
60 and over years	17 (31)

Erin Medlin 1/14/2014 3:11 PM  
Formatted Table

371 | <sup>a</sup>Differences in total number due to missing response data

372

Erin Medlin 1/14/2014 3:17 PM  
Formatted: Line spacing: double

373 | Table 2. Identification of symptoms of ovarian cancer

Symptom	Percent HCPs (n) Total N = 188 <sup>b</sup>	Percent Women (n) Total N = 857 <sup>b</sup>	Percent Difference Between HCPs and Women	95% Confidence Interval of Difference	2-sided p-value-
Frequent or urgent need to urinate	60.9 (112)	23.3 (194)	37.6	29.8, 44.9	<0.001
Bloating; pelvic or abdominal swelling	90.4 (170)	72.2 (613)	18.2	12.5, 22.9	<0.001
Unexplained weight gain or loss	89.2 (166)	55.5 (467)	33.7	27.6, 38.8	<0.001
Difficulty eating or feeling full quickly	64.1 (116)	33.0 (275)	31.1	23.2, 38.4	<0.001
Vague or persistent stomach discomfort such as gas, nausea or indigestion	80.1 (149)	52.1 (442)	28.0	20.8, 34.1	<0.001
Unexplained changes in bowel habits	73.0 (135)	41.6 (350)	31.4	23.8, 38.1	<0.001
Ongoing unusual tiredness	81.1 (150)	48.4 (403)	32.7	25.6, 38.7	<0.001
Pelvic or abdominal pain	93.6 (117)	70.9 (429) (n=601) <sup>a</sup>	22.7	17.3, 32.2	<0.001
Inability to finish a meal you would ordinarily be able to finish	59.5 (75)	25.1 (151) (n=601) <sup>a</sup>	34.4	25.0, 43.2	<0.001
Frequent headaches (Not a symptom of OC)	13.7 (25)	14.8 (124)	-1.1	-5.1, 6.1	0.704
Continuous fever (Not a symptom of OC)	29.0 (54)	22.0 (182)	7.0	0.0, 14.4	0.041
Abnormal Pap test (Not a symptom of OC)	32.6 (61)	57.7 (490)	-25.1	-32.2, 17.3	<0.001

Erin Medlin 1/14/2014 3:17 PM  
Formatted: Line spacing: double

374 <sup>a</sup> This question was inadvertently left off 256 surveys

375 <sup>b</sup> Totals varied slightly due to missing values.

376

377 Table 3. Identification of risk factors for ovarian cancer

<u>Risk Factor</u>	<u>Percent HCP (n) Total N = 188<sup>b</sup></u>	<u>Percent Women Total N = 857<sup>b</sup></u>	<u>Percent Difference</u>	<u>95% Confidence Interval for the Difference</u>	<u>2-sided asymptotic p-value</u>
<u>Personal or family history of ovarian, breast or colon cancer</u>	90.9 (170)	83.5 (707)	7.4	1.9, 11.7	0.011
<u>Genetic predisposition</u>	84.8 (156)	74.8 (628)	10.0	3.5, 15.4	0.004
<u>Increasing age</u>	71.4 (132)	44.1 (368)	27.3	19.5, 34.1	<0.001
<u>Use of high dose estrogen without progesterone <sup>a</sup></u>	50.0 (92)	45.3 (380)	4.7	-3.2, 12.6	0.250
<u>Obesity</u>	61.3 (114)	34.6 (291)	26.7	18.8, 34.0	<0.001
<u>Undesired infertility</u>	41.9 (78)	25.7 (216)	16.2	8.7, 24.0	<0.001

378 <sup>a</sup> Unknown effect on risk of ovarian cancer

379 <sup>b</sup> Totals varied slightly due to missing values

Erin Medlin 1/14/2014 3:17 PM  
Formatted: Line spacing: double

380

381 Table 5. Women's knowledge of ovarian cancer risk factors by self reported

382 familiarity with symptoms

<u>Risk factors</u>	<u>Total N=759</u>	<u>Familiar with OC symptoms N=303<sup>a</sup></u>	<u>Unfamiliar with OC symptoms N=456<sup>a</sup></u>	<u>p-value</u>
	<u>% (n)</u>	<u>% (n)</u>	<u>% (n)</u>	
<u>Personal or family history of ovarian, breast or colon cancer</u>	83.9 (630)	90.4 (273)	79.5 (357)	<0.001

<u>Genetic predisposition</u>	<u>75.3 (561)</u>	<u>84.8 (251)</u>	<u>69.0 (310)</u>	<u>&lt;0.001</u>
<u>Increasing age</u>	<u>43.9 (325)</u>	<u>48.6 (144)</u>	<u>40.8 (181)</u>	<u>0.034</u>
<u>Use of high dose estrogen without progesterone (Unknown if risk factor)</u>	<u>45.1 (335)</u>	<u>48.8 (144)</u>	<u>42.6 (191)</u>	<u>0.097</u>
<u>Obesity</u>	<u>34.4 (256)</u>	<u>42.8 (127)</u>	<u>28.8 (129)</u>	<u>&lt;0.001</u>
<u>Undesired infertility</u>	<u>25.1 (187)</u>	<u>30.9 (92)</u>	<u>21.3 (95)</u>	<u>0.003</u>

383

<sup>a</sup> Totals varied slightly due to missing values.

Erin Medlin 1/14/2014 3:13 PM

Formatted: Font:Not Bold