# Knowledge, Attitude and Practice of Gynecological Oncologists on Breast Cancer-related Risks in BRCA1/2 Germline Mutation-related Ovarian Cancer Patients

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ID：PS3-03-14

## Background

BRCA1/2 germline mutations (gBRCAm) increase the risk of breast and ovarian cancers. Multidisciplinary collaboration between gynecological oncologists and breast specialists is crucial for the comprehensive assessment and personalized treatment of patients. Breast specialists often recommend gBRCAm breast cancer patients consult gynecological oncologists for ovarian cancer issues, but they rarely receive referrals from gynecologists for gBRCAm ovarian cancer patients to consult about breast cancer. This study aimed to investigate gynecological oncologists' knowledge, attitudes, and practices (KAP) regarding breast cancer-related risks in ovarian cancer patients with gBRCAm.

## Methods

A cross-sectional online survey was conducted among gynecological oncologists from November 19 to December 7, 2024. The data were collected using a self-designed electronic questionnaire assessing general characteristics of respondents, KAP regarding breast cancer risks in ovarian cancer with gBRCAm. A total of 625 valid questionnaires were collected. Descriptive analysis and logistic regression analysis were performed on the collected data.

## Results

The participants' mean age was 44.04 years, with 85.6% being female, and 64.5% held senior professional titles. Regarding KAP on breast cancer risks in ovarian cancer with gBRCAm, 11.4% of participants reported being unfamiliarity of the breast cancer risk; 88.0% believed it necessary to refer ovarian cancer patients with gBRCAm to breast specialists; 61.6% had previously referred such patients. Primary reasons for non-referral included: prioritizing ovarian cancer treatment due to its high lethality (46.4%), lack of focus on breast cancer risk (43.4%), and concurrent breast evaluation during ovarian cancer management (5.4%). The annual number of ovarian cancer patients treated was ≤10 for 310 participants (49.6%), 11-50 for 243 (38.9%), and >50 for 72 (11.5%). 67.7% had treated ovarian cancer patients carrying gBRCAm. 334 participants (53.4%) had been consulted by breast cancer patients carrying gBRCAm regarding ovarian cancer risks.

**Table 1. General characteristics , KAP of gynecological oncologists**

| | N | % |
|---|---|---|
| **Gender** | | |
| Male | 90 | 14.4 |
| Female | 535 | 85.6 |
| **Years of clinical work experience** | | |
| ≤10years | 158 | 25.3 |
| 11-20years | 194 | 31.0 |
| >20years | 273 | 43.7 |
| **Professional title** | | |
| Resident physician | 52 | 8.3 |
| Chief Physician | 170 | 27.2 |
| Associate Chief Physician | 188 | 30.1 |
| Chief Physician | 215 | 34.4 |
| **Knowledge of the breast cancer risk** | | |
| Being unfamiliarity | 71 | 11.4 |
| Understanding | 554 | 89.6 |
| **Attitudes about necessity to refer ovarian cancer patients with gBRCAm to breast specialists** | | |
| Yes | 550 | 88.0 |
| No | 11 | 1.8 |
| unknown | 64 | 10.2 |
| **Having referred patients** | | |
| Yes | 385 | 61.6 |
| No | 240 | 38.4 |
| **Primary reasons for non-referral** | | |
| Prioritizing ovarian cancer treatment due to its high lethality | 290 | 46.4 |
| Lack of focus on breast cancer risk | 270 | 43.2 |
| Concurrent breast evaluation during ovarian cancer management | 34 | 5.4 |
| **Annual number of ovarian cancer patients** | | |
| ≤10 | 310 | 49.6 |
| 11-50 | 243 | 38.9 |
| >50 | 72 | 11.5 |

**Table 1. General characteristics , KAP of gynecological oncologists (continued)**

| | N | % |
|---|---|---|
| **Having treated ovarian cancer patients with gBRCAm** | | |
| Yes | 423 | 67.7 |
| No | 202 | 32.3 |
| **Having treated breast cancer patients** | | |
| Yes | 334 | 53.4 |
| No | 291 | 46.6 |

Multivariate logistic regression revealed that understanding the breast cancer risk (P<0.001), treating >10 ovarian cancer patients annually (11-50 patients: P=0.041; >50 patients: P=0.003), having treated ovarian cancer patients with gBRCAm (P<0.001), and having been consulted by breast cancer patients carrying gBRCAm (P<0.001) were significantly associated with higher referral rates to breast specialists.

**Table 2. Results of multivariate logistic regression**

| | OR(95.0% CI) | P value |
|---|---|---|
| **Annual number of ovarian cancer patients** | | |
| ≤10 | reference | |
| 11-50 | 1.587(1.019-2.474) | 0.041 |
| >50 | 3.775(1.579-9.020) | 0.003 |
| **Having treated ovarian cancer patients with gBRCAm** | | |
| No | reference | |
| Yes | 4.698(2.963-7.449) | <0.001 |
| **Knowledge of the breast cancer risk** | | |
| Understanding | reference | |
| Being unfamiliarity | 4.305(2.009-9.227) | <0.001 |
| **Having treated breast cancer patients** | | |
| No | reference | |
| Yes | 2.305(1.520-3.493) | <0.001 |

Regarding opportunistic salpingectomy, 71.7% of participants agreed that all women should consider prophylactic salpingectomy concurrent with other pelvic surgery after completing childbearing. 70.6% agreed that prophylactic salpingectomy (preserving ovaries) could potentially reduce cancer risk while preserving ovarian function, and would consider this procedure for young carriers (≤40 years) with gBRCAm who had completed childbearing.

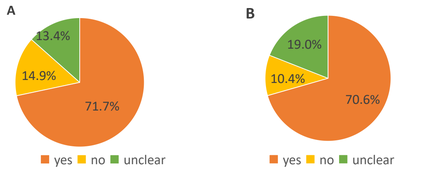



**Chart 1.** Attitude towards opportunistic salpingectomy. A represents attitude towards that all women should consider prophylactic salpingectomy concurrent with other pelvic surgery after completing childbearing, B represents attitude towardspreventive removal of the fallopian tubes.

## Conclusions

Gynecologic oncologists' knowledge regarding breast cancer risk in ovarian cancer patients with gBRCAm and their referral rates of these patients to breast specialists need improvement. Enhancing gynecologic oncologists' understanding of BRCA1/2-related breast cancer risks will help increase referral rates to breast specialists, and promote multidisciplinary collaboration, and facilitate holistic healthcare for patients carrying gBRCAm.

## Acknowledgements

This study is jointly funded by National Key R&D Program of China (No. 2022YFC2505101); Guangzhou Science and Technology Program (No. 2025A03J4113).

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