Validation of a newly developed questionnaire regarding clinical history in patients with breast and colorectal cancers

Zamaneh Vafaei MSc(1), Jamshid Najafian MD(2), Masood Shekarchizadeh MD(3), Samaneh Mostafavi MD(4), Ali Darakhshandeh MD(5), Mohammadreza Khoosravifarsani MD(6), Farzaneh Ashrafi MD(7), Mehran Sharifi MD(8), Noushin Mohammadifard PhD(9), Mohammad Hassan Emami MD(10), Shaghayegh Haghiyou-Javanmard PhD(11), Nizal SarrafaZadegan MD(12)

Abstract

BACKGROUND: Understanding the close interaction between the specialties of cardiology and oncology is necessary for early detection of cardiovascular disease (CVD) events in cancer patients. For the risk assessment of CVD in Breast and Colorectal Cancers (CIBC) study, in the current study we aimed to validate a questionnaire for the assessment of clinical history in patients with breast cancer and colorectal cancer (CRC).

METHODS: We determined the content validity of the questionnaire using the 2 indexes of content validity ratio (CVR) and content validity index (CVI) to examine the specificity, simplicity, clarity, and transparency of the items. Content validity assessment was performed through a panel of experts including 2 oncologists, 5 cardiologists, 2 general practitioners, and 1 epidemiologist. The reliability of the questionnaire was estimated using Cronbach’s alpha coefficient in 50 patients. Intraclass correlation coefficient (ICC) was used to examine the reproducibility of the questionnaire during 1 week.

RESULTS: The CRC and breast cancer questionnaires were designed with 16 and 32 questions, respectively. To obtain acceptable CVR, 5 and 11 questions were removed from the CRC and breast cancer questionnaires, respectively. Cronbach’s alpha was 0.70 in the breast cancer questionnaire and 0.94 in the CRC questionnaire. All questions had a CVI of higher than 80%. The ICC in the breast cancer questionnaire ranged between 0.71 and 0.96 and in CRC questionnaire ranged between 0.78 and 0.98.

CONCLUSION: The validity and reliability of our newly developed questionnaire was desirable. The reliability of the breast cancer questions was acceptable and that of the CRC questions was excellent. Thus, this questionnaire can be used in this group of patients regardless of whether the goal is cardiac care or not.

Keywords: Breast Cancer; Colorectal Cancer; Cardiovascular Disease; Questionnaire; Validity; Reliability

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Cancers is the third leading cause of death after heart disease and accidents. Breast cancer is one of the most common malignancies among women worldwide and the second leading cause of death in American women, and during a woman’s lifetime the chance of having invasive breast cancer is approximately 1 in 8. In Iran, breast cancer is recognized as the most common type of cancer, and according to studies, it accounts for 16% of all cancers. Colorectal cancer (CRC) is also one of the 4 most common cancers worldwide. According to the annual report of the Iranian Ministry of Health, CRC has been the second most common cancer in women and the fourth in men, the incidence of which has increased over the last 25 years.

Cancer treatments include a combination of treatments such as surgery, chemotherapy, hormone replacement therapy, targeted therapy, and radiotherapy, which are usually used to improve overall survival. Some of these treatments, such as chemotherapy, left-handed radiotherapy, and targeted therapy are associated with cardiac toxicity, and women who have survived breast cancer are at greater risk of developing cardiovascular diseases (CVDs) than women without breast cancer. Cardiotoxicity is a common complication of many drugs prescribed for the treatment of cancer and poses a serious threat to the safety and prognosis of patients. Cardiac manifestations of anticancer drugs include hypotension, ischemia, heart failure, QT prolongation, arrhythmia, and thromboembolism.

Close interaction between these 2 specialties is needed for the early detection of cardiac injury and the optimal care of many cancer patients.

Due to the importance of CVD events and their impact on mortality and morbidity in cancer patients, we decided to perform a cohort study to evaluate a cardiovascular risk assessment model that can predict the occurrence of CVD events in patients with breast cancer and CRC (CIBC study). To the best of our knowledge, there were few questionnaires regarding cancer history in Iran. Thus, this study aimed to validate the questionnaire used for patients with either breast cancer or CRCs, which are the most common cancers in our country.

**Materials and Methods**

**Questionnaire development:** To develop the initial questionnaire, we searched different databases including PubMed, Scopus, ISI, and Google Scholar and extracted the basic questions on breast cancer and CRC. We drew the flow chart and designed the initial questionnaire after reviewing and approving of 3 oncologists.

**Face validity:** The face validity, reasonableness, appropriateness, attractiveness, and logical sequence of items of the questionnaire were evaluated by 5 oncologists and cardiologists.

**Content Validity:** Content validity ratio (CVR) and content validity index (CVI) were used to evaluate the content validity of the questionnaire. The content validity was evaluated by an expert panel. The panel members included 2 oncologists, 5 cardiologists, 2 general practitioners, and 1 epidemiologist.

To calculate CVR, we asked experts to specify whether an item was necessary. Then, each item was scored on a 3-point scale ranging between 1 and 3 (not necessary, useful but not essential, and essential).

Subsequently, CVR was calculated based on Lawshe’s CVR, \( CVR = \frac{N_e - N/2}{N/2} \), where \( N_e \) is the number of panelists indicating “essential” and \( N \) is the total number of panelists. In validating the questionnaire, CVR value was computed for each item using the following formula:

\[
CVR = \frac{N_e - N/2}{N/2}
\]

The numeric value of CVR is determined using Lawshe’s table. In this table the minimum acceptable CVR for each item is determined based on the number of experts who evaluated the questions. Questions for which the calculated CVR value is less than the number specified in tables 1 and 2 were excluded from the questionnaire.

Based on the number of experts (\( n = 10 \)) in this study, the acceptable value is 0.62.

To examine the CVI, panel members rated each of the questions for their specificity, simplicity, clarity, or transparency based on a 4-point Likert scale ranging from 1 to 4 (I disagree, I have no opinion, I agree, and I agree very much). Finally, it was calculated using the following formula:

\[
CVI = \frac{N_i}{n}
\]
where \( n_i \) is the number of experts who have given a score of 3 and 4 and \( n \) is the total number of panel members. The minimum acceptable CVI is 79\%, and if the index was lower than 79\%, the item was deleted.\(^1\)

**Reliability:** Cronbach’s alpha coefficient was applied to assess the questionnaire’s internal consistency (the level of relationship between the different items in the scale) in 50 patients. To evaluate reproducibility over time, the questionnaires were completed by 50 patients twice within 1 week. Then, intraclass correlation coefficient (ICC) was measured.

### Results

The study participants included 50 patients with breast cancer and CRC who were referred to the cardio-oncology clinic of Isfahan Cardiovascular Research Center, Iran, for cardiac evaluation.

The CRC and breast cancer questionnaires were designed with 16 and 32 questions, respectively. After CVR calculation, questions with an index value of less than 0.62 were considered unacceptable and were removed. In the CRC questionnaire, 5 questions were deleted, (Table1) and in the breast cancer questionnaire, 11 questions were deleted (Table 2).

In terms of specificity, simplicity, clarity, and transparency in the CVI, the index level of all questions in all areas was above 80\% (Tables 1 and 2).

Cronbach’s alpha of the breast cancer and CRC questionnaires was 0.70 and 0.94, respectively.

The ICC of the breast cancer questionnaire ranged between 0.71 (95\% CI: 0.39-0.86) and 0.96 (95\% CI: 0.92-0.98), and the ICC of the CRC questionnaire ranged between 0.78 (95\% CI: 0.44-0.91) and 0.98 (95\% CI: 0.94-0.99).

### Discussion

We can conclude that the validity and reliability of the questionnaire developed in the present study for the purpose of conducting the CIBC study were desirable. The CVR value for 30 questions (62.5\%) was above 90\% and 46 questions (95.8\%) had a CVI of above 90\%. The reliability of the breast cancer questions was acceptable, and that of the CRC questions was excellent.

In a study by Danesh et al., for determining the status of knowledge, attitude, and practice of women employed by the board of education in the field of breast self-examination in Shahrekord, Iran, a demographic characteristics questionnaire as well as a knowledge, attitude, and practice in breast self-examination questionnaire were prepared, and the reliability of the questionnaire was determined to be 85\% (\( n = 84 \)) using Cronbach’s alpha.\(^12\)

In another study by Naghibi et al., the theoretical face validity of the questionnaire was created.\(^13\) This was done by identifying factors associated with breast cancer screening based on the PEN-3 model (one of the models for examining and studying behavior in health education and promotion factors that influence an individual’s behavior) among teachers in the city of Kerman, Iran, using the content validity method, followed by consultation with 10 experts and specialists. The reliability of the questionnaire was determined by the Cronbach’s alpha of each of the sections of the questionnaire, which included screening performance (\( \alpha = 0.80 \)), perceptual factors (\( \alpha = 0.81 \)), enabling factors (\( \alpha = 0.78 \)), and reinforcing factors (\( \alpha = 0.77 \)).\(^13\)

The value of Cronbach’s alpha in the studies by Naghibi et al.\(^13\) was higher than that of our breast cancer questionnaire. Perhaps this is due to the larger sample size in those studies. In our questionnaire of another study that assessed the motivation theory among Iranian women regarding participation in breast cancer preventive behaviors, the reliability of the questionnaire was assessed using internal consistency and Cronbach’s alpha coefficient, and values equal to or higher than 0.7 were considered as acceptable.\(^14\) The Cronbach’s alpha of their questionnaire was similar to that of our study.\(^14\) In a study by Shouri Bidgoli et al. on the knowledge, attitude, and practice of people over 50 years of age regarding CRC screening, the content validity of the questionnaire was confirmed by experts with a Cronbach’s alpha of 78\% in 30 individuals.\(^15\) In another study on physical activity in patients with CRC, the content validity of the questionnaire was confirmed based on the opinion of 10 experts and Cronbach’s alpha of 0.7.\(^16\)

The Cronbach’s alpha obtained in our study was higher than that in the studies by Shouri Bidgoli et al.\(^15\) and Mahmoodi Rad et al.\(^16\)

In other similar studies, the value of Cronbach’s alpha ranged between 0.61\% and 0.094\%, which was in line with the results of our study.\(^17\)\(^20\)

In the studies by Heidari and Feizi\(^18\) and Ashton-Prolla et al.,\(^21\) the ICC of the questionnaire was 0.84, which was similar to that obtained in our study.\(^18\)\(^21\)

In the studies by Grarup et al.\(^22\) and Momayyezi and Fallahzadeh,\(^23\) ICC values ranged between 0.84 and 0.95. This is also in line with our study findings.
### Table 1. The content validity of the colorectal cancer questionnaire

| Number | Colorectal cancer Questions                                                                 | CVR | CVI specificity | CVI simplicity and fluency | CVI clarity and transparency | Status       |
|--------|--------------------------------------------------------------------------------------------|-----|----------------|----------------------------|-----------------------------|--------------|
| 1      | Have you ever had colitis or Crohn's disease?  
1- Yes  
2- No                                            | 0.4 | 1              | 1                          | 1                           | Rejected     |
| 2      | Have you ever had familial colon polyps?  
1- Yes  
2- No                                           | 0.8 | 1              | 1                          | 1                           | Accepted     |
| 3      | Have you ever had a history of other cancers?  
1- Yes  
2- No  
If yes, the type?                                  | 1   | 1              | 1                          | 1                           | Accepted     |
| 4      | Do you have a history of cancer treatment?  
1- Yes  
2- No  
If yes, the type?                                  | 1   | 1              | 1                          | 1                           | Accepted     |
| 5      | Have you had weight loss in the last six months?  
1- Yes  
2- No  
If yes, how many kilograms?                        | 0.8 | 0.9            | 1                          | 1                           | Accepted     |
| 6      | Have you recently had chronic diarrhea?  
1- Yes  
2- No  
If yes, your period of diarrhea:  
1- Less than 2 weeks (acute)  
2- 24 weeks (subacute)  
3- More than 4 weeks (chronic)                     | 1   | 0.8            | 1                          | 0.9                         | Accepted     |
| 7      | Has any of your relatives had a colorectal tumor?  
1- Yes  
2- No  
If yes, who?  
1- 1st degree (father, mother, sister, brother, child)  
2- 2nd degree (aunt, uncle)  
3- 3rd degree (offspring of an aunt or uncle or uncle or aunt) | 0.8 | 1              | 1                          | 1                           | Accepted     |
| 8      | Have you had a long history of taking painkillers other than acetaminophen?  
1- Yes  
2- No                                            | -0.2 | 0.9          | 0.9                        | 0.9                         | Rejected     |
| 9      | Do you have a history of stomach disease?  
1- Yes  
2- No  
If yes, which case?  
1- Gastric Ulcer  
2- Reflux  
3- Gastritis  
4- Gastric Tumor                                    | 0.4  | 0.9            | 0.9                        | 0.9                         | Rejected     |
| Number | Colorectal cancer Questions                                                                 | CVR | CVI specificity | CVI simplicity and fluency | CVI clarity and transparency | Status  |
|--------|----------------------------------------------------------------------------------------------|-----|----------------|---------------------------|-----------------------------|---------|
| 10     | Have you ever done a stool-screening test?                                                   | 1   | 0.9            | 0.9                       | 0.9                         | Accepted|
|        | 1- Yes                                                                                       |     |                |                           |                             |         |
|        | 2- No                                                                                        |     |                |                           |                             |         |
| 11     | If yes, stool test results:                                                                   | 1   | 0.9            | 1                         | 1                           | Accepted|
|        | 1- Abnormal                                                                                  |     |                |                           |                             |         |
|        | 2- Normal                                                                                   |     |                |                           |                             |         |
|        | 3- I do not know                                                                             |     |                |                           |                             |         |
| 12     | Have you ever undergone gastric endoscopy?                                                   | 0.4 | 1              | 1                         | 1                           | Accepted|
|        | 1- Yes                                                                                       |     |                |                           |                             |         |
|        | 2- No                                                                                       |     |                |                           |                             |         |
|        | If yes, how long ago?                                                                       |     |                |                           |                             |         |
| 13     | If yes, present the document                                                                 | 0.4 | 1              | 1                         | 1                           | Rejected|
|        | Endoscopy result:                                                                            |     |                |                           |                             |         |
|        | 1- Normal                                                                                   |     |                |                           |                             |         |
|        | 2- Wound and inflammation                                                                   |     |                |                           |                             |         |
|        | 3- Tumor                                                                                    |     |                |                           |                             |         |
|        | 4- I do not know                                                                             |     |                |                           |                             |         |
| 14     | Have you ever had gastrointestinal bleeding?                                                 | 0.8 | 1              | 1                         | 1                           | Accepted|
|        | 1- Yes                                                                                       |     |                |                           |                             |         |
|        | 2- No                                                                                       |     |                |                           |                             |         |
|        | If yes, how was it?                                                                         |     |                |                           |                             |         |
|        | 1- Light color bleeding                                                                      |     |                |                           |                             |         |
|        | 2- excretion of dark stool                                                                  |     |                |                           |                             |         |
| 15     | Have you ever had a colonoscopy?                                                             | 1   | 1              | 1                         | 1                           | Accepted|
|        | 1- Yes                                                                                       |     |                |                           |                             |         |
|        | 2- No                                                                                       |     |                |                           |                             |         |
| 16     | If yes, colonoscopy results:                                                                  | 1   | 1              | 1                         | 1                           | Accepted|
|        | 1- Normal                                                                                   |     |                |                           |                             |         |
|        | 2- Inflammation                                                                             |     |                |                           |                             |         |
|        | 3- Polyp                                                                                    |     |                |                           |                             |         |
|        | 4- Tumors                                                                                   |     |                |                           |                             |         |
|        | 5- I do not know                                                                             |     |                |                           |                             |         |

CVR: Content validity ratio; CVI: Content validity index
### Table 2. The content validity of the breast cancer questionnaire

| Number | Breast cancer Questions                                                                 | CVR | CVI specificity | CVI simplicity and fluency | CVI clarity and transparency | Status |
|--------|-----------------------------------------------------------------------------------------|-----|-----------------|----------------------------|-----------------------------|--------|
| 1      | When was your menstruation?                                                             | 1   | 0.9             | 1                          | 1                           | Accepted |
| 2      | Currently, are you pregnant?                                                            | 0.8 | 0.9             | 1                          | 1                           | Accepted |
|        | 1- Yes                                                                                 |     |                 |                            |                             |        |
|        | 2- No                                                                                  |     |                 |                            |                             |        |
| 3      | At what age was your first pregnancy?                                                   | 1   | 0.9             | 1                          | 1                           | Accepted |
| 4      | How old were you at your first live birth or full pregnancy?                           | 1   | 0.9             | 1                          | 1                           | Accepted |
| 5      | How old were you in your last pregnancy?                                               | 1   | 0.9             | 0.9                        | 0.9                         | Accepted |
| 6      | How long ago was your last pregnancy?                                                   | 0.63| 0.9             | 1                          | 1                           | Accepted |
| 7      | To date, how many pregnancies have you had (including: live birth, stillbirth, abortion, ectopic)? |     | 0.63            | 0.9                        | 0.9                         | Rejected |
| 8      | How many years were your pregnancy intervals?                                          | 0.4 | 0.9             | 0.9                        | 1                           | Rejected |
| 9      | Lowest interval: ................ years                                                    | 0.4 | 0.9             | 0.9                        | 0.9                         | Rejected |
| 10     | Highest interval: ................ years                                                    | 0.4 | 0.9             |                           |                             |        |
| 11     | How many live births have you had?                                                      | -0.2| 0.9             |                            |                             | Rejected |
| 12     | How many miscarriages and stillbirths have you had?                                     | 0   | 0.9             |                            |                             | Rejected |
| 13     | Have you breastfed your babies?                                                         | 0.8 | 0.9             |                            |                             | Accepted |
|        | 1- Yes                                                                                 |     |                 |                            |                             |        |
|        | 2- No                                                                                  |     |                 |                            |                             |        |
| 14     | How many months was the lactation?                                                     | 1   | 1               |                            |                             | Accepted |
|        | If yes, at what age did you start taking the pill?                                      |     |                 |                            |                             |        |
|        | How many months have you been taking the pill?                                         |     |                 |                            |                             |        |
| 15     | Have you taken birth control pills?                                                     | 1   | 1               |                            |                             | Accepted |
|        | 1- Yes                                                                                 |     |                 |                            |                             |        |
|        | 2- No                                                                                  |     |                 |                            |                             |        |
| 16     | Has your period permanently stopped?                                                    | 0.8 | 1               |                            |                             | Accepted |
|        | 1- Yes                                                                                 |     |                 |                            |                             |        |
|        | 2- No                                                                                  |     |                 |                            |                             |        |
| 17     | Do you know at what age your menstrual cycle stopped?                                  | 0.4 | 1               |                            |                             | Accepted |
|        | 1- Yes                                                                                 |     |                 |                            |                             |        |
|        | 2- No                                                                                  |     |                 |                            |                             |        |
Table 2. The content validity of the breast cancer questionnaire (continue)

| Number | Breast cancer Questions                                                                 | CVR | CVI specificity | CVI simplicity and fluency | CVI clarity and transparency | Status   |
|--------|-----------------------------------------------------------------------------------------|-----|----------------|---------------------------|----------------------------|----------|
| 18     | Have you ever taken hormone replacement after menstruation cessation?                   | 1   | 1              | 1                         | 0.9                        | Accepted |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
|        | 3- I do not know                                                                       |     |                |                           |                            |          |
| 19     | Are you currently taking an alternative hormone medication after menstruation cessation? | 1   | 1              | 1                         | 0.9                        | Accepted |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
|        | 3- I do not know                                                                       |     |                |                           |                            |          |
|        | If yes, how long have you been taking the hormone replacement:                         |     |                |                           |                            |          |
|        | Month: Year                                                                            |     |                |                           |                            |          |
| 20     | Have you been treated for infertility?                                                 | 1   | 1              | 1                         | 1                          | Accepted |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
|        | If yes, the name of the medicine?                                                      |     |                |                           |                            |          |
| 21     | How long are your menstrual intervals?                                                 | 0.4 | 1              | 1                         | 1                          | Rejected |
|        | 1- Less than 21 days                                                                  |     |                |                           |                            |          |
|        | 2- Between 21 and 35 days                                                             |     |                |                           |                            |          |
|        | 3- More than 35 days                                                                  |     |                |                           |                            |          |
|        | 4- Irregular                                                                           |     |                |                           |                            |          |
| 22     | Have any of your relatives been diagnosed with breast cancer?                          | 1   | 1              | 1                         | 1                          | Accepted |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
|        | If yes, who?                                                                           |     |                |                           |                            |          |
|        | -1st degree (father, mother, sister, brother, child)                                   |     |                |                           |                            |          |
|        | -2nd degree (aunt, uncle)                                                              |     |                |                           |                            |          |
|        | -3rd degree (offspring of an aunt or uncle or uncle or aunt)                           |     |                |                           |                            |          |
| 23     | Do you have a history of surgery on the uterus?                                         | 0.2 | 1              | 1                         | 1                          | Rejected |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
|        | If yes, at what age?                                                                   |     |                |                           |                            |          |
|        | Type of diagnosis                                                                      |     |                |                           |                            |          |
| 24     | Do you have a history of ovarian resection surgery?                                     | 0.8 | 1              | 1                         | 1                          | Accepted |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
|        | If yes, at what age?                                                                   |     |                |                           |                            |          |
|        | Type of diagnosis                                                                      |     |                |                           |                            |          |
| 25     | Have you done regular monthly or non-monthly examinations of your breasts?            | 1   | 1              | 1                         | 1                          | Accepted |
|        | 1- Yes                                                                                 |     |                |                           |                            |          |
|        | 2- No                                                                                  |     |                |                           |                            |          |
| Number | Breast cancer Questions | CVR | CVI specificity | CVI simplicity and fluency | CVI clarity and transparency | Status |
|--------|-------------------------|-----|----------------|---------------------------|----------------------------|--------|
| 26     | Have you ever had a mammogram? | 1   | 1              | 1                         | Accepted                    |
|        | 1- Yes                   |     |                |                           |                            |        |
|        | 2- No                    |     |                |                           |                            |        |
|        | If yes, how many times?  |     |                |                           |                            |        |
|        | How long ago?            |     |                |                           |                            |        |
|        | After how many mammograms, did suspicion arise for tumors? |     |                |                           |                            |        |
| 27     | When was the last mammogram diagnosed with a tumor? | 0.8 | 1              | 1                         | Accepted                    |
|        | 1- Less than 6 months ago|     |                |                           |                            |        |
|        | 2- 6 months to 1 year ago|     |                |                           |                            |        |
|        | 3- 1 to 2 years ago      |     |                |                           |                            |        |
|        | 4- over 2 years ago      |     |                |                           |                            |        |
| 28     | Do you have a history of benign breast disease that has led to a breast biopsy? | 1   | 1              | 0.9                       | Accepted                    |
|        | 1- Yes                   |     |                |                           |                            |        |
|        | 2- No                    |     |                |                           |                            |        |
|        | If yes, how many times?  |     |                |                           |                            |        |
|        | How many biopsies have led to the diagnosis? |     |                |                           |                            |        |
| 29     | Do you have a history of specific birth defects in your family or relatives? | 0.2 | 0.9            | 0.9                       | Rejected                    |
|        | 1- Yes                   |     |                |                           |                            |        |
|        | 2- No                    |     |                |                           |                            |        |
| 30     | If yes, who:             | 0.2 | 0.9            | 0.9                       | Rejected                    |
|        | -1" degree (father, mother, sister, brother, child) |     |                |                           |                            |        |
|        | -2nd degree (aunt, uncle) |     |                |                           |                            |        |
|        | -3rd degree (offspring of an aunt or uncle or uncle or aunt) |     |                |                           |                            |        |
| 31     | Who has diagnosed your illness? | 0   | 0.8            | 0.8                       | Rejected                    |
|        | 1- Myself                |     |                |                           |                            |        |
|        | 2- General practitioner  |     |                |                           |                            |        |
|        | 3- Midwife               |     |                |                           |                            |        |
|        | 4- Specialist physician  |     |                |                           |                            |        |
| 32     | Which of your breasts was involved? | 0.8 | 1              | 0.9                       | Accepted                    |
|        | 1- Right                 |     |                |                           |                            |        |
|        | 2- Left                  |     |                |                           |                            |        |
|        | 3- Both                  |     |                |                           |                            |        |

CVR: Content validity ratio; CVI: Content validity index
Conclusion
This questionnaire has good validity and reliability and can be used in breast cancer and CRC patients. Of the 48 questions designed for this questionnaire, 18 questions with a CVR of less than 0.62 were deleted from the questionnaire. Our goal was to make a tool for collecting data on a patient's clinical history in breast cancer and CRC patients.

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Conflict of Interests
Authors have no conflict of interests.

Authors’ Contribution
NS, NM, SH, and FA formulated the concept, designed the research, ZV, JN, MS, SM, AD, MK, FA, MS and MHE collected the data, ZV analyzed and interpreted the obtained data and wrote the text of the article, and NM and NS critically revised the article. All authors approved the final manuscript.

References
1. Torabi Parizi M, Kalantari M, Ghavidel F. Evaluation of head and neck cancer patients’ knowledge regarding complications of chemotherapy and radiotherapy in patients referring to Kerman University of Medical Sciences treatment centers. J Dent Med Tehran Univ Med Sci 2018; 31(2): 83-90. [In Persian].
2. Sasser AC, Rousculp MD, Birnbaum HG, Oster EF, LuSKin E, Mallet D. Economic burden of osteoporosis, breast cancer, and cardiovascular disease among postmenopausal women in an employed population. Womens Health Issues 2005; 15(3): 97-108.
3. Malekzade M, Peykani S, Amani O. Comparative study of quality of life in women survived with those suffered from breast cancer while under chemotherapy. J Health Promot Manag 2017; 6(4): 8-14. [In Persian].
4. Hosseinzadeh A, Daraei A. Environmental factors associated with sporadic colorectal cancer. J Health Syst Res 2012; 8(2): 229-36. [In Persian].
5. Moamer S, Baghestani A, Pourhoseingholi MA, Maboudi A, Shalsavari S, Zali M, et al. Application of the parametric regression model with the four-parameter log-logistic distribution for determining of the effecting factors on the survival rate of colorectal cancer patients in the presence of competing risks. Iran Red Crescent Med J 2017; 19(6): e55609.
6. Kirkham AA, Davis MK. Exercise Prevention of cardiovascular disease in breast cancer survivors. J Oncol 2015; 2015: 917606.
7. Esplugas R, Arenas M, Serra N, Belles M, Bonet M, Gascon M, et al. Effect of radiotherapy on the expression of cardiovascular disease-related miRNA-146a, -155, -221 and -222 in blood of women with breast cancer. PLoS One 2019; 14(5): e0217443.
8. Nhola LF, Abdelmoneim SS, Villarraga HR, Kohli M, Grothey A, Bordun KA, et al. Echocardiographic assessment for the detection of cardiotoxicity due to vascular endothelial growth factor inhibitor therapy in metastatic renal cell and colorectal cancers. J Am Soc Echocardiogr 2019; 32(2): 267-76.
9. Tang XM, Chen H, Liu Y, Huang BL, Zhang XQ, Yuan JM, et al. The cardiotoxicity of cetuximab as single therapy in Chinese chemotherapy-refractory metastatic colorectal cancer patients. Medicine (Baltimore) 2017; 96(3): e5946.
10. Hong RA, Iimura T, Sumida KN, Eager RM. Cardio-oncology/onco-cardiology. Clin Cardiol 2010; 33(12): 733-7.
11. Lawshe CH. A quantitative approach to content validity. Pers Psychol 1975; 28(4): 563-75.
12. Danesh A, Amiri M, Zamani A, Tazhibi M, Ganji F. Knowledge, attitude and practice (KAP) rate of women employees of education organization about breast self-examination, Shahrekord, 1998. J Shahrekord Univ Med Sci 2002; 4(2): 47-52. [In Persian].
13. Naghibi A, Jamshidi P, Yazdani J, Rostami F. Identification of factors associated with breast cancer screening based on the PEN-3 Model among female school teachers in Kermanshah. Iran J Health Educ Health Promot 2016; 4(1): 58-64. [In Persian].
14. Khodayarian M, Peyghambhari F, Mazloomoymooodbad S, Morowatisharifabad MA, Lamyan M. Development and psychometric evaluation of a protection motivation theorybased scale assessing the adherence of Iranian women breast cancer prevention behaviors. Iran J Breast Dis 2019; 12(1): 8-18. [In Persian].
15. Shouri Bidgoli AR, Taheri Kharame Z, Asayesh H, Sharififard F, Sheydaiany Arani M, Hajaligol A, et al. A study of knowledge, attitude, and practice on colorectal cancer screening among individuals older than 50 years based on Health Belief Model. Qom Univ Med Sci J 2015; 9(1): 59-65. [In Persian].
16. Mahmoodi Rad G, Fotoorchi F, Mogharab M, Korbasi SH, Tavakoli MR. Physical activity in patients with colorectal cancer. J Birjand Univ Med Sci 2005; 12(1): 9-15. [In Persian].
17. Kawthaïsong C, Promthet S, Kamsa-Ard S,
Duangsong R. questionnaire validation of colorectal cancer literacy scale among Thai people in northeastern Thailand. Asian Pac J Cancer Prev 2019; 20(2): 645-51.
18. Heidari Z, Feizi A. Transcultural adaptation and validation of the Persian version of the breast cancer awareness measure (BCAM) questionnaire. Cancer Med 2018; 7(10): 5237-51.
19. Norsa'adah B, Aminu AR, Zaidi Z. Validity and reliability of questionnaire on knowledge, attitude and dietary practices related to colorectal cancer. Malays J Med Sci 2020; 27(1): 115-23.
20. Kwok C, Ogunsiji O, Lee CF. Validation of the breast cancer screening beliefs questionnaire among African Australian women. BMC Public Health 2016; 16: 117.
21. Ashton-Prolla P, Giacomazzi J, Schmidt AV, Roth FL, Palmero EI, Kalakun L, et al. Development and validation of a simple questionnaire for the identification of hereditary breast cancer in primary care. BMC Cancer 2009; 9: 283.
22. Grarup KR, Devoogdt N, Strand LI. The Danish version of Lymphoedema Functioning, Disability and Health Questionnaire (Lymph-ICF) for breast cancer survivors: Translation and cultural adaptation followed by validity and reliability testing. Physiother Theory Pract 2019; 35(4): 327-40.
23. Momayyezi M, Fallahzadeh H. Construction and validation of Breast Cancer Awareness Scale in Iranian women. J Caring Sci 2020; 9(3): 140-7.