

## Fear of Cancer Recurrence and its Predictive Factors among Iranian Cancer Patients

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### ABSTRACT

**Context:** Fear of cancer recurrence (FOCR) is one of the most important psychological problems among cancer patients. In extensive review of related literature there were no articles on FOCR among Iranian cancer patients.

**Aim:** The aim of present study was to investigate FOCR and its predictive factors among Iranian cancer patients.

**Materials and Methods:** In this descriptive-correlational study 129 cancer patients participated. For data collection, the demographic checklist and short form of fear of progression questionnaire was used. Logistic regression was used to determine predictive factors of FOCR.

**Result:** Mean score of FOCR among participants was 44.8 and about 50% of them had high level of FOCR. The most important worries of participants were about their family and the future of their children and their lesser worries were about the physical symptoms and fear of physical damage because of cancer treatments. Also, women, breast cancer patient, and patients with lower level of education have more FOCR.

**Discussion:** There is immediate need for supportive care program designed for Iranian cancer patients aimed at decreasing their FOCR. Especially, breast cancer patients and the patient with low educational level need more attention.

**Key words:** Cancer, Cancer recurrence, Fear of progress, Fear of recurrence, Iran

### INTRODUCTION

Notable progressions in treating different types of cancers occurred in recent years and as a result, the prognosis of many cancers has improved.<sup>[1-3]</sup> However, the diagnosis and the treatment of cancer still initiate a lot of stress in cancer patients and their families.<sup>[4-6]</sup> Therefore, in many culture, the diagnosis of cancer can be considered equivalent to death and severe disability.<sup>[6]</sup>

One of main stress that many cancer patients may experience during the active phases of cancer treatment<sup>[7]</sup> or in their survivorship period<sup>[8,9]</sup> is the fear of cancer recurrence (FOCR). FOCR can be defined as a fear or anxiety of cancer recurrence in primary location or its metastasis in other organs.<sup>[10]</sup> The result of previous studies showed that even the FOCR may decrease after the active phase of the treatment, but this fear continues in many cancer patients for many years.<sup>[11,12]</sup> In fact, FOCR is one of the most severe distress that many cancer patients may experience during their disease journey.<sup>[13,14]</sup>

The results of some studies in England,<sup>[10]</sup> Australia<sup>[15-18]</sup> and Hong-Kong<sup>[19]</sup> showed that cancer patients considered FOCR as one of their most frequent

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unmet supportive care needs. FOCR can have many negative effects for cancer patients. For example, finding of previous studies showed that FOCR among the cancer patients is associated with decreased quality of life;<sup>[8,9,14,20,21]</sup> increased physical and psychological problems;<sup>[2,7,14,22]</sup> increased stress and depression;<sup>[23]</sup> and decreased in satisfaction with the quality of care.<sup>[21]</sup>

According to the results of previous researches, Iranian cancer patients have high levels of distress and depression,<sup>[24]</sup> decreased quality of life,<sup>[25]</sup> and disappointment about the future.<sup>[26]</sup> However, in extensive review of related literature, we did not find any studies that investigated the FOCR in Iranian cancer patients or cancer patients in other Middle Eastern countries. Of course, one qualitative study reported that FOCR is one of the most stressful experience for Iranian cancer patients.<sup>[27]</sup> On the other hand, assessment of the fear of cancer patients about recurrence of their disease is important for implementation of any supportive care programs. So, the aim of this study was to investigate FOCR and its predictive factors among Iranian cancer patients.

## MATERIALS AND METHODS

This descriptive-correlational study was conducted at inpatient wards and outpatient clinic of Ghazi Tabatabay hospital affiliated to Tabriz University of Medical Sciences (TUOMS). Ghazi Tabatabay hospital is a main institute for cancer treatment in East Azerbaijan province and three neighbour provinces in north-west of Iran. In order to increase the general ability of findings, sampling was conducted at two oncologist offices too.

The study population included all the cancer patients who were referred to Ghazi Tabatabay hospital for receiving of curative or palliative treatments during the study period. The inclusion criteria: 18 years or above; having definite diagnosis of cancer; be aware about exact diagnosis of cancer for at least 3 months; having no other chronic disease; and has physical and psychological ability to participate in the study. The sample size of 115 cancer patients was determined after pilot study on a 20 cancer patients and the data of 129 cancer patients was collected during the study period.

The instrument used in this study has two parts. The first part is a researcher prepared checklist that investigated some demographic characters of cancer patients. Some disease-related characteristics of participants were obtained from their medical records. The second part was a short form

of fear of progression questionnaire.<sup>[28]</sup> This questionnaire is a 12-items instrument and was designed based on fear of recurrence questionnaire.<sup>[29]</sup> The response to each item is based on five-point Likert scale ranging from 1 (never) to 5 (often). The final score was obtained by collecting of all items' scores and higher score indicate higher FOCR. If 50% of items had 4 or more score, it was considered as a moderate FOCR and if 75% of items had 4 or more score, it was considered as a high FOCR.<sup>[28]</sup> So, according to this instruction and the result of the present study the score of 46.5 was selected as a cut of point for high FOCR.

For using the questionnaire, first English questionnaire was translated and back translated by two independent English translators. The face and content validity of translated questionnaire was determined by 15 academic members from TUOMS and some small changes were done according to their comments. The internal consistency of questionnaire was determined by  $\alpha$  Cronbach coefficient (0.87) after pilot study on 20 cancer patients.

For data collection the research protocol was approved by Regional Ethics Committee at TUOMS. Then two researchers invited patients who meet the inclusion criteria from Ghazi Tabatabay hospital and private offices to participate in the study. One of the important criteria for these patients was their awareness about the exact cancer diagnosis. For this purpose, the first patients' awareness about their exact diagnosis was asked from their family members, nurses or treating physicians. Then, this awareness was confirmed by a private interview with patients. This method is approved by Regional Ethics Committee. After that, some oral explanation about aims of the study and participants' right was given to all potential participants and informed consent was obtained from all patients who accepted to participate in the study. The questionnaire was given to educated patients for completion in a private place. In low educated or illiterate patients, data was collected using the private interview conducted by researchers. This survey lasted from March to July in 2013. During this period 139 patients were invited to participate in the study and finally the data of 129 patients were collected (participation rate = 93%).

The data analyses were performed using SPSS software (version 16, SPSS Inc., Chicago, IL, USA). Descriptive statistics were calculated for demographic and disease-related variables and FOCR. The Chi-square and independent samples t-test was used for comparison FOCR in two groups; patients with scores lower and higher than determined the cut of point. Logistic regression analyses were conducted determining the

predictive factors of FOQR.  $P < 0.05$  was considered statistically significant in this study.

## RESULTS

### Demographic and disease-related characters in participants

Some demographic and disease-related characters of participants are reported in Table 1. According to this table, most of participants were women, married, educated at primary level, housewife and lived with their husband and children. Mean age of participants was 45 years and average time passed since their awareness about exact diagnosis was 24 months.

Variables	N (%)
Sex	
Female	82 (63.6)
Male	47 (36.4)
Marital status	
Single	19 (14.7)
Married	105 (81.4)
Divorced/widow	5 (3.9)
Educational level	
Illiterate	36 (27.9)
Primary	45 (34.9)
Diploma degree	27 (20.9)
University degree	21 (16.3)
Employment status	
Employed	27 (20.9)
Housewife	70 (54.3)
Worker	25 (19.4)
Unemployed	7 (5.4)
Living situation	
Single	5 (3.9)
With spouse	21 (16.3)
With spouse and children	84 (65.1)
With parent	19 (14.7)
Type of primary treatment	
Chemotherapy	117 (90.7)
Radiotherapy	18 (14)
Surgery	15 (11.6)
Type of cancer	
Leukemia	30 (24.4)
Gastro-intestinal	14 (10.9)
Breast	66 (51.6)
Lung	7 (5.5)
Other	11 (8.6)
Mean age in years, mean (SD)	45.23 (13.79)
Mean months since initial diagnosis, mean (SD)	24.66 (21.89)

SD-Standard deviation

### Response to items of fear of progression questionnaire

Participants' response to each items of fear of progression questionnaire is reported in Table 2. According to this table, the most patients' fear was about their family and the future of their children and the lesser fear was about physical symptoms and fear of physical damage because of cancer treatments. Also, it has been identified that 49.6% of participants have high FOQR according to determined cut-off point.

### Relationship between demographic and disease-related factor with FOQR

In Table 3 the relationship of some demographic and disease-related characters of participants was examined with their FOQR in two groups; patents with scores lower and higher than determined cut-off point. According to this table, FOQR was higher in women, illiterate patients, patients who live with their husband and children, breast cancer patients, and patients with experience of radiotherapy.

### Predictive factors of FOQR

Predictive factors of FOQR are reported on Table 4. According to this table, being female, having breast cancer and having education lower than university are predictive factors of FOQR.

## DISCUSSION

According to extensive review of related literature, this

Variables	Mean	SD	CI 95%
Being afraid of disease progression	3.81	1.32	4.04-3.58
Being nervous prior to doctors' appointments or periodic examinations	3.50	1.52	3.76-3.23
Being afraid of pain	3.90	1.41	4.15-.66
Being afraid of becoming less productive at work	3.58	1.35	3.82-3.34
Having physical symptoms, e.g., rapid heartbeat, stomach ache, nervousness	2.88	1.71	3.18-.58
Being afraid by the possibility that the children could contract cancer	4.30	1.06	4.49-4.12
Being afraid of relying on strangers for activities of daily living	3.87	1.35	4.11-3.64
Being afraid of no longer be able to pursue hobbies	3.75	1.40	4.00-3.51
Being afraid of severe medical treatments in course of the illness	3.75	1.37	3.99-3.52
Worrying that medications could damage the body	3.49	1.49	3.75-3.23
Worrying about what will become of the family if something should happen to the patient	4.07	1.29	4.30-3.85
Being afraid of not being able to work anymore	3.86	1.49	4.14-3.59
Total score, mean±SD (range)	44.8±13.3		(12-60)

SD-Standard deviation

**Table 3: Demographic and disease characteristics of the patients by fear score**

Variable	Fear		P value
	Lower N (%)	Higher N (%)	
Gender			
Male	29 (61.7)	18 (38.3)	0.052
Female	36 (43.9)	46 (56.1)	
Marital status			
Single, divorced and widow	16 (66.7)	8 (33.3)	0.077
Married	49 (46.7)	56 (53.3)	
Education			
Illiterate	13 (36.1)	23 (63.9)	0.008
Primary	24 (53.3)	21 (46.7)	
Diploma degree	11 (40.7)	16 (59.3)	
University degree	17 (81.0)	4 (19.0)	
Living situation			
Spouse and children	37 (44.0)	47 (56.0)	0.049
Others	28 (62.2)	17 (37.8)	
Disease			
Leukemia	21 (70.0)	9 (30.0)	0.003
Breast	1 (7.1)	13 (92.9)	
Lung	35 (53.0)	31 (47.0)	
Gastro-intestinal	3 (42.9)	4 (57.1)	
Other	4 (36.4)	7 (63.6)	
Chemotherapy			
No	9 (75.0)	3 (25.0)	0.073
Yes	56 (47.9)	61 (52.1)	
Radiotherapy			
No	60 (54.1)	51 (45.9)	0.039
Yes	5 (27.8)	13 (72.2)	
Surgery			
No	60 (52.6)	54 (47.4)	0.160
Yes	5 (33.3)	10 (66.7)	
Age in years, mean±SD	44.7±14.6	45.8±13.0	0.674
Mean months since initial diagnosis, mean±SD	25.4±23.3	23.9±20.6	0.691

SD-Standard deviation

**Table 4: Logistic regression analysis of the relationship between fear score and demographic and disease characteristics**

Variable	OR	CI 95%	P value
Sex (female/male)	15.4	1.5-56.6	0.021
Disease			
Leukemia	1		
Breast	14.0	1.08-81.8	0.044
Lung	0.18	0.02-1.9	0.155
Gastro-intestinal	3.5	0.59-21.2	0.166
Other	2.2	0.41-12.0	0.358
Education			
Illiterate	1		
Primary	0.61	0.22-1.70	0.346
Diploma degree	0.98	0.31-3.31	0.967
University degree	0.14	0.03-0.60	0.008
Radiotherapy	3.0	0.83-10.80	0.094

OR-Odd ratio; CI-Confidence interval

study is the first of its kind that investigated the FOCR and its predictive factors from the viewpoints of cancer patients in Iran or other Middle Eastern countries.

The result of this study showed that about half of the participants reported high levels of FOCR. In fact, an average score of 45 out of 60 showed the high level FOCR in participants. The results of related studies that investigated the FOCR among the cancer patient were inconsistent. For example, some studies in United States,<sup>[9,11,12]</sup> England,<sup>[17]</sup> Norway,<sup>[14]</sup> and Germany<sup>[9]</sup> showed that, although some of the cancer patients have a moderate to high levels of FOCR, but most of the cancer patients have low level of FOCR. On the other hand, some studies results in Spain<sup>[3]</sup> and United States<sup>[21]</sup> reported high levels of FOCR among the cancer patients.

It seems that type of cancer and time elapsed since diagnosis are two main factors in intensity of FOCR and resulted in obtaining different results in previous studies.<sup>[30]</sup> In this regard, results of some previous studies showed that FOCR was decreased by passing time from initial diagnosis to survivorship.<sup>[31,32]</sup> We can conclude that the results of present studies correlated with the results of previous studies. But, it should be noted that about half of participants reported high levels of FOCR. This level of FOCR did not reported in any previous studies. However, one qualitative study in Iran reported that, in spite of high levels of hope for recovery, Iranian cancer patients were worried about recurrence or progression of their disease.<sup>[27]</sup> Of course, the present study is the first reported high levels of FOCR quantitatively. It should be noted that there is no any established study aimed at providing supportive care for Iranian cancer patients.<sup>[33]</sup> On the other hand, Iranian health care providers and family members of cancer patients avoid from giving information about the cancer to cancer patients. So, many Iranian cancer patients do not have accurate perception about the prognosis of their disease.<sup>[34]</sup> It seems that these items may results in high levels of FOCR among the participants.

These results of the present study showed that women, breast cancer patients, and patients without university degree have more FOCR. The results of previous studies about predictors of FOCR are different. For example, results of a study in England showed that age, sex, and educational levels have no any statistical correlation with FOCR in head and neck cancer patients.<sup>[17]</sup> On the other hand, results of one study in Germany indicated that breast cancer patients had high level of FOCR and having a child was a main risk factor for FOCR.<sup>[9]</sup> Similarly, the results of other study showed that the fear about family and especially about the future

of children is one of the most important worries of cancer patients.<sup>[17]</sup> Also, the results of one Iranian qualitative study showed that female cancer patients have more worries about their disease.<sup>[27]</sup> As evident, these results are consistent with the results of present study. Finally, according to extensive review of relevant literature it can be articulated that the results of previous studies about predictive factors of FOCR is inconsistent and further studies is needed in this regard.

The results of this research can be used for providing psychological programs for Iranian cancer patients or cancer patients in countries with similar cultural context. This research indicates that half of Iranian cancer patients have a high level of FOCR and need psychological interventions. Also, it is cleared that women and low educated patients noticeably have more FOCR and need more attention.

Results of the present study have some limitations that should be considered for its generalization. This study has been conducted in one province of Iran and does not cover cultural and religious diversity in Iranian society. In this study patients with all cancer types entered and the stage of cancer did not determined for them. In addition, in this study we did not compare the inpatient and outpatient patients. It is possible that there were differences between these patients in their FOCR. Also, the number of women was further than men patients. So, we suggested that another studies should be conducted by considering other important factors, such as cancer stage and hospitalization status of patients. Similar studies should be conducted in other culture and religions in the Middle East for increasing the general ability of the results.

## CONCLUSION

This study is the first study investigating the FOCR among Iranian cancer patients. The results showed that Iranian cancer patients have high level of FOCR. In addition the results showed that women, breast cancer patient, and patients with lower level of education have more FOCR. There is immediate need for supportive care program designed for Iranian cancer patients aimed at decreasing their FOCR.

## REFERENCES

- Hyung WJ, Kim SS, Choi WH, Cheong JH, Choi SH, Kim CB, *et al.* Changes in treatment outcomes of gastric cancer surgery over 45 years at a single institution. *Yonsei Med J* 2008;49:409-15.
- Mitry E, Bouvier AM, Esteve J, Faivre J. Improvement in colorectal cancer survival: A population-based study. *Eur J Cancer* 2005;41:2297-303.
- Vivar CG, Canga N, Canga AD, Arantzamendi M. The psychosocial impact of recurrence on cancer survivors and family members: A narrative review. *J Adv Nurs* 2009;65:724-36.
- Banning M, Hassan M, Faisal S, Hafeez H. Cultural interrelationships and the lived experience of Pakistani breast cancer patients. *Eur J Oncol Nurs* 2010;14:304-9.
- Carlson LE, Angen M, Cullum J, Goodey E, Koopmans J, Lamont L, *et al.* High levels of untreated distress and fatigue in cancer patients. *Br J Cancer* 2004;90:2297-304.
- Mystakidou K, Parpa E, Tsilila E, Katsouda E, Vlahos L. Cancer information disclosure in different cultural contexts. *Support Care Cancer* 2004;12:147-54.
- Crist JV, Grunfeld EA. Factors reported to influence fear of recurrence in cancer patients: A systematic review. *Psychooncology* 2013;22:978-86.
- Kim Y, Carver CS, Spillers RL, Love-Ghaffari M, Kaw CK. Dyadic effects of fear of recurrence on the quality of life of cancer survivors and their caregivers. *Qual Life Res* 2012;21:517-25.
- Liu Y, Pérez M, Schootman M, Aft RL, Gillanders WE, Jeffe DB. Correlates of fear of cancer recurrence in women with ductal carcinoma *in situ* and early invasive breast cancer. *Breast Cancer Res Treat* 2011;130:165-73.
- Vickberg SM. The Concerns About Recurrence Scale (CARS): A systematic measure of women's fears about the possibility of breast cancer recurrence. *Ann Behav Med* 2003;25:16-24.
- Bellizzi KM, Latini DM, Cowan JE, DuChane J, Carroll PR. Fear of recurrence, symptom burden, and health-related quality of life in men with prostate cancer. *Urology* 2008;72:1269-73.
- Campbell BH, Marbella A, Layde PM. Quality of life and recurrence concern in survivors of head and neck cancer. *Laryngoscope* 2000;110:895-906.
- McGinty HL, Goldenberg JL, Jacobsen PB. Relationship of threat appraisal with coping appraisal to fear of cancer recurrence in breast cancer survivors. *Psychooncology* 2012;21:203-10.
- Skaali T, Fosså SD, Bremnes R, Dahl O, Haaland CF, Hauge ER, *et al.* Fear of recurrence in long-term testicular cancer survivors. *Psychooncology* 2009;18:580-8.
- Rainbird K, Perkins J, Sanson-Fisher R, Rolfe I, Anseline P. The needs of patients with advanced, incurable cancer. *Br J Cancer* 2009;101:759-64.
- Beesley VL, Price MA, Webb PM, O'Rourke P, Marquart L, Butow PN; Australian Ovarian Cancer Study Group; Australian Ovarian Cancer Study-Quality of Life Study Investigators. Changes in supportive care needs after first-line treatment for ovarian cancer: Identifying care priorities and risk factors for future unmet needs. *Psychooncology* 2013;22:1565-71.
- McDowell ME, Occhipinti S, Ferguson M, Dunn J, Chambers SK. Predictors of change in unmet supportive care needs in cancer. *Psychooncology* 2010;19:508-16.
- Minstrell M, Winzenberg T, Rankin N, Hughes C, Walker J. Supportive care of rural women with breast cancer in Tasmania, Australia: Changing needs over time. *Psychooncology* 2008;17:58-65.
- Au A, Lam W, Tsang J, Yau TK, Soong I, Yeo W, *et al.* Supportive care needs in Hong Kong Chinese women confronting advanced breast cancer. *Psychooncology* 2013;22:1144-51.
- Van Liew JR, Christensen AJ, Howren MB, Hynds Karnell L, Funk GF. Fear of recurrence impacts health-related quality of life and continued tobacco use in head and neck cancer survivors. *Health Psychol* 2014; 33: 373-81.
- Hart SL, Latini DM, Cowan JE, Carroll PR; CaPSURE Investigators. Fear of recurrence, treatment satisfaction, and quality of life after radical prostatectomy for prostate cancer. *Support Care Cancer* 2008;16:161-9.
- Black EK, White CA. Fear of recurrence, sense of coherence and posttraumatic stress disorder in haematological cancer survivors. *Psychooncology* 2005;14:510-5.
- Humphris GM, Rogers S, McNally D, Lee-Jones C, Brown J, Vaughan D. Fear of recurrence and possible cases of anxiety and depression in orofacial cancer patients. *Int J Oral Maxillofac Surg* 2003;32:486-91.
- Malekian A, Alizadeh A, Ahmadzadeh GH. Anxiety and depression in cancer patients. *J Res Behav Sci* 2007;5:115-8. [In Persian].
- Mardani-Hamule M, Shahraki-Vahed A. Relationship between Mental Health and quality of life in cancer patients. *The Journal of Shahid Sadoughi*

- University of Medical Sciences 2010;18:111-7. [In persian].
26. Rahemi SH. A content analysis of concerns of cancer clients. *Iran J Nurs Res* 2006;1:47-57.
  27. Rahmani A. Hope inspiring process among Iranian cancer patients. PhD Dissertation. Nursing and Midwifery faculty, Tabriz University of Medical Sciences. 2012. [In persian].
  28. Mehnert A, Berg P, Henrich G, Herschbach P. Fear of cancer progression and cancer-related intrusive cognitions in breast cancer survivors. *Psychooncology* 2009;18:1273-80.
  29. Herschbach P, Berg P, Dankert A, Duran G, Engst-Hastreiter U, Waadt S, *et al.* Fear of progression in chronic diseases: Psychometric properties of the fear of progression questionnaire. *J Psychosom Res* 2005;58:505-11.
  30. Koch L, Jansen L, Brenner H, Arndt V. Fear of recurrence and disease progression in long-term ( $\geq 5$  years) cancer survivors--a systematic review of quantitative studies. *Psychooncology* 2013;22:1-11.
  31. Harrison JD, Young JM, Price MA, Butow PN, Solomon MJ. What are the unmet supportive care needs of people with cancer? A systematic review. *Support Care Cancer* 2009;17:1117-28.
  32. Mehnert A, Koch U, Sundermann C, Dinkel A. Predictors of fear of recurrence in patients one year after cancer rehabilitation: A prospective study. *Acta Oncol* 2013;52:1102-9.
  33. Nasrabadi AN, Bahabadi AH, Hashemi F, Valiee S, Seif H. Views of Iranian patients on life with cancer: A phenomenological study. *Nurs Health Sci* 2011;13:216-20.
  34. Zamanzadeh V, Rahmani A, Valizadeh L, Ferguson C, Hassankhani H, Nikanfar AR, *et al.* The taboo of cancer: The experiences of cancer disclosure by Iranian patients, their family members and physicians. *Psychooncology* 2013;22:396-402.

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