



Sociodemographic and Clinical Correlates of Maladaptive Coping among Iranian Women with Breast Cancer Undergoing Chemotherapy: A Cross-Sectional Study

Zahra Rezaei Borojerdi¹, Hediye Barkhordari², *Sajad Ataei Azimi¹

¹Department of Hematology and Oncology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

²Nursing Research Center, Kerman University of Medical Sciences, Kerman, Iran

Abstract

Background: Breast cancer and chemotherapy can cause substantial psychological distress. Maladaptive coping strategies may interfere with psychological adjustment during treatment. This study examined sociodemographic and clinical correlates of maladaptive coping among Iranian women with breast cancer undergoing chemotherapy.

Materials and Methods: This cross-sectional analytical study enrolled 200 women with stage I–III non-metastatic breast cancer receiving outpatient chemotherapy at three tertiary oncology centers in Kerman, Iran. Data were collected using a researcher-developed sociodemographic and clinical questionnaire and six Persian Brief COPE subscales: self-blame, denial, mental distraction, substance use, emotional venting, and behavioral disengagement. Independent-samples t tests and one-way ANOVA with Fisher's least significant difference post-hoc tests assessed subgroup differences.

Results: Participants' mean age was 46.91 ± 6.08 years. Self-blame was associated with education level, perceived income adequacy, primary source of emotional support, and chemotherapy duration (all $p < 0.05$). Women whose primary support came from their spouses reported lower self-blame than those supported by their children or parents; self-blame was highest in the third month of chemotherapy. Denial was higher among unmarried women and participants covered by Social Security insurance (both $p < 0.05$). Substance-use coping differed by marital status, insurance type, source of support, and chemotherapy duration (all $p < 0.05$), with the highest scores among divorced or widowed women. Self-distraction was higher among women with lobular versus ductal carcinoma, right-sided breast involvement, and primary support from children or spouses (all $p < 0.05$). Venting and behavioral disengagement did not differ significantly across subgroups.

Conclusion: Several sociodemographic and clinical factors were associated with maladaptive coping strategies during chemotherapy. Targeted psychosocial screening and supportive interventions may be particularly beneficial for women without spousal support and during vulnerable stages of treatment.

Key Words: Breast Neoplasms, Chemotherapy Adjuvant, Iranian Women, Psychological Adaptation, Psycho-Oncology.

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*Corresponding Author:

Sajad Ataei Azimi, MD, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

Email: ataeiazimis@mums.ac.ir

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1- INTRODUCTION

Breast cancer is the most commonly diagnosed cancer among women worldwide and remains a leading cause of cancer-related mortality. According to GLOBOCAN 2022 estimates, approximately 2.3 million women were newly diagnosed with breast cancer globally, and more than 666,000 deaths were attributed to the disease (1). In Iran, breast cancer is the most common malignancy among women, with an estimated 21,304 new cases in 2022, accounting for 28.4% of all newly diagnosed cancers among Iranian women (2). Despite advances in early detection and treatment, breast cancer continues to impose substantial physical, psychological, social, and economic burdens on affected women and their families.

The management of non-metastatic breast cancer commonly involves multimodal treatment, including surgery, radiotherapy, systemic chemotherapy, endocrine therapy, and targeted therapies, depending on disease stage and tumor biology (3). Chemotherapy remains an important systemic treatment for many women with breast cancer; however, it is frequently associated with distressing adverse effects, including nausea, vomiting, fatigue, alopecia, pain, sleep disturbances, peripheral neuropathy, and increased susceptibility to infection (4, 5). These treatment-related symptoms may impair daily functioning, body image, and social roles, and may contribute to anxiety, depressive symptoms, psychological distress, and poorer quality of life (6–8). A recent systematic review and meta-analysis reported that psychological distress affects approximately half of patients with breast cancer and identified chemotherapy exposure, financial difficulties, negative coping styles, and inadequate social support as important correlates (9).

Coping strategies play a central role in psychological adjustment to breast cancer

and its treatment. Coping refers to the cognitive and behavioral efforts used to manage internal or external demands that are appraised as stressful or as exceeding an individual's available resources (10). The Brief Coping Orientation to Problems Experienced (Brief COPE) is a widely used instrument that assesses a range of coping responses, including active coping, planning, acceptance, emotional support, denial, self-distraction, substance use, venting, behavioral disengagement, and self-blame (11). Although coping responses are often categorized as approach-oriented or avoidant/disengagement-oriented, their adaptiveness may depend on the clinical context, timing, frequency, and consequences of their use. Persistent reliance on avoidant or disengagement-related strategies—such as denial, behavioral disengagement, self-blame, substance use, and excessive self-distraction—has been associated with poorer psychological adjustment, greater emotional distress, and impaired quality of life among individuals with cancer (12, 13).

The selection and use of coping strategies are influenced by factors beyond the cancer diagnosis itself. Sociodemographic characteristics—including age, educational attainment, marital status, employment status, and perceived financial adequacy—as well as clinical characteristics—such as disease stage, tumor characteristics, treatment modality, chemotherapy duration, symptom burden, and available social support—may shape patients' responses to cancer-related stressors (9, 14, 15). Social support is particularly important because support from a spouse, family members, healthcare professionals, and peers may facilitate psychological adjustment and more constructive coping. Conversely, inadequate support may increase vulnerability to psychological distress and maladaptive coping patterns

(14, 16). However, findings across studies remain heterogeneous, and the associations between specific sociodemographic and clinical characteristics and individual maladaptive coping strategies may vary according to sociocultural context and healthcare-system characteristics.

Evidence regarding these associations among Iranian women with breast cancer undergoing chemotherapy remains limited. Identifying characteristics associated with greater reliance on maladaptive coping strategies may help oncology nurses, midwives, and other members of the multidisciplinary cancer-care team identify women who require more comprehensive psychosocial assessment and timely supportive interventions. Therefore, this study aimed to examine the associations between sociodemographic and clinical characteristics and maladaptive coping strategies among Iranian women with non-metastatic breast cancer undergoing chemotherapy.

2- MATERIALS AND METHODS

2-1. Study Design and Setting

This cross-sectional analytical study examined the associations between sociodemographic and clinical characteristics and maladaptive coping strategies among women with breast cancer undergoing chemotherapy. The study was conducted over a 9-month period between 2021 and 2022 at three tertiary oncology centers in Kerman, southeastern Iran: Javad-al-Aemeh Oncology Center, affiliated with Kerman University of Medical Sciences; Yas Cancer Charity Center; and specialized outpatient oncology referral clinics.

The study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations for cross-sectional studies (17). The STROBE statement recommends transparent

reporting of the study setting, recruitment period, eligibility criteria, participant selection, measurement methods, potential sources of bias, study-size rationale, and statistical methods.

2-2. Sample Size and Sampling

The required sample size was estimated using Cochran's formula for a single population proportion:

$$n = \frac{Z^2 p(1 - p)}{d^2}$$

Assuming a 95% confidence level ($Z = 1.96$), a conservative estimated proportion of 0.50 ($p = 0.50$), and a margin of error of 0.070 ($d = 0.070$), the minimum sample size was estimated as 200 participants. To compensate for an anticipated nonresponse or incomplete-response rate of approximately 10%, 220 women were invited to participate.

Assuming a 95% confidence level ($Z = 1.96$), a conservative estimated proportion of 0.50 ($p = 0.50$), and a margin of error of 0.069 ($d = 0.070$), the minimum required sample size was calculated to be 200 participants. To account for an anticipated nonresponse or incomplete-response rate of approximately 10%, 220 women were invited to participate.

Participants were recruited using consecutive convenience sampling. Women attending the participating outpatient chemotherapy centers during the study period were screened for eligibility. Of the 220 women invited, 200 completed the questionnaires and were included in the final analysis.

2-3. Participants

Eligible participants were women aged 18 years or older with a histologically confirmed diagnosis of non-metastatic primary breast cancer (stages I–III) who were receiving outpatient chemotherapy.

To ensure that participants had experienced active chemotherapy, women were eligible only if at least 1 month had elapsed since the initiation of chemotherapy.

Additional inclusion criteria were the ability to read and understand Persian, adequate cognitive capacity to complete the questionnaire, and provision of written informed consent. Women were excluded if they had metastatic breast cancer (stage IV), a documented severe psychiatric disorder that could interfere with informed consent or questionnaire completion, or more than 10% missing responses on the questionnaire.

2-4. Measures

2-4-1. Sociodemographic and Clinical Characteristics

Data were collected using a researcher-developed sociodemographic and clinical information form. Sociodemographic variables included age, marital status, educational level, employment status, place of residence, living arrangement, perceived income adequacy, and primary source of emotional support. Clinical variables included cancer stage, histopathological subtype, tumor grade, breast laterality, duration of chemotherapy, and other relevant treatment-related characteristics documented in medical records.

Clinical information was extracted from participants' medical records. Sociodemographic characteristics, perceived income adequacy, and primary source of emotional support were self-reported by participants.

2-4-2. Brief COPE Inventory

Coping strategies were assessed using the Persian version of the Brief Coping Orientation to Problems Experienced (Brief COPE) inventory. The conceptual framework for coping was based on the

transactional model of stress and coping proposed by Lazarus and Folkman (10).

The original COPE inventory, developed by Carver, Scheier, and Weintraub, consists of 60 items covering 15 coping domains (18). The Brief COPE was subsequently developed by Carver as a 28-item self-report instrument comprising 14 two-item coping subscales (11). The 14 subscales assess self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. psy.miami.edu

Each item is rated on a 4-point Likert scale ranging from 1 ("I have not been doing this at all") to 4 ("I have been doing this a lot") (11). For each subscale, scores for the two corresponding items are summed, yielding a score ranging from 2 to 8; higher scores indicate more frequent use of the respective coping strategy. The Brief COPE provides separate scores for each subscale rather than a single overall coping score (11). The original scoring structure identifies the specific item pairs for all 14 subscales and does not require reverse scoring.

2-4-3. Maladaptive Coping Subscales

To examine potentially maladaptive coping responses during active cancer treatment, this study focused on six Brief COPE subscales: self-blame, substance use, denial, behavioral disengagement, venting, and self-distraction. Each subscale comprises two items rated on a 4-point Likert scale, yielding scores ranging from 2 to 8; higher scores indicate more frequent use of the respective strategy (11, 19).

The six subscales were analyzed individually rather than combined into a single maladaptive coping score because the Brief COPE assesses distinct coping dimensions and does not provide a

universally validated global maladaptive-coping total score (11,19). The subscales were selected based on their conceptual classification as potentially dysfunctional or avoidant coping responses and their clinical relevance in oncology settings (12, 13, 19).

The Persian version of the Brief COPE has been evaluated among Persian-speaking wives of patients undergoing hemodialysis, with findings supporting its validity and reliability (20). In that validation study, Cronbach's alpha coefficients for the selected subscales ranged from 0.77 to 0.91: behavioral disengagement, 0.91; substance use, 0.90; denial, 0.85; self-blame, 0.78; venting, 0.77; and self-distraction, 0.77 (20). In the present study, Cronbach's alpha coefficients for the six selected Brief COPE subscales ranged from 0.72 to 0.88, indicating acceptable to good internal consistency.

2-5. Data Collection Procedure

Eligible women were identified through review of medical records and screening during scheduled outpatient chemotherapy visits. The researcher or a trained research assistant explained the study objectives, procedures, voluntary nature of participation, and confidentiality safeguards to eligible women. Written informed consent was obtained before data collection.

Participants completed self-administered questionnaires in a quiet area of the chemotherapy unit or waiting area during a treatment break. The researcher remained available to clarify instructions and answer procedural questions without influencing participants' responses. Completed questionnaires were reviewed for completeness at the time of collection. No personally identifying information was included in the analytical dataset.

2-6. Ethical considerations

The study protocol was reviewed and approved by the Ethics Committee of Kerman University of Medical Sciences, Kerman, Iran (ethics code: IR.KMU.REC.1400.246). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki (21) and applicable institutional and national regulations governing research involving human participants.

Before enrollment, eligible women received verbal and written information regarding the study objectives, procedures, voluntary nature of participation, potential benefits and minimal anticipated risks, data-collection process, and measures undertaken to protect confidentiality. All participants provided written informed consent before completing the study questionnaires.

Participation was entirely voluntary. Participants were informed of their right to decline participation or withdraw from the study at any time without providing a reason and without any effect on their access to chemotherapy, other medical services, or the quality of their clinical care. No financial incentive was provided for participation.

To protect confidentiality, questionnaires were identified using study codes rather than personally identifiable information. Clinical data extracted from medical records were linked to questionnaire data using coded identifiers and were accessible only to the research team. All collected information was stored securely and used solely for the purposes of the present study.

2-7. Statistical Analysis

Data were analyzed using IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were summarized using means and standard deviations (SDs), whereas categorical variables were summarized using frequencies and percentages.

For each Brief COPE subscale, the scores of the two relevant items were summed to obtain raw scores ranging from 2 to 8. To facilitate comparison across subscales, raw scores were transformed to a 0–100 scale using the following formula:

$$\text{Transformed score} = \frac{\text{Raw subscale score} - 2}{6} \times 100$$

Higher scores indicated more frequent use of the respective coping strategy.

The distribution of continuous variables was assessed using histograms, skewness, kurtosis, and the Kolmogorov–Smirnov test. Homogeneity of variances was assessed using Levene's test. Independent-samples *t* tests were used to compare mean coping scores between two groups, whereas one-way analysis of variance (ANOVA) was used for comparisons involving three or more groups. Fisher's least significant difference (LSD) post hoc test was performed when the overall ANOVA result was statistically significant.

Cases with missing data were excluded from the relevant analyses. Analyses of behavioral disengagement were based on 190 participants because 10 participants had missing responses for this subscale. All statistical tests were two-sided, and a *p* value of less than .05 was considered statistically significant.

3- RESULTS

3-1. Sociodemographic and Clinical Characteristics

A total of 200 women with breast cancer were included in the study. The mean age of participants was 46.91 years (SD = 6.08). Most participants were married (*n* = 174, 87.0%) and had either a high-school diploma (*n* = 68, 34.0%) or university education (*n* = 72, 36.0%). Participants were nearly equally distributed between Social Security Insurance (*n* = 102, 51.0%) and Health Services Insurance (*n* = 98, 49.0%). Most participants reported relatively sufficient income (*n* = 134, 67.0%).

Invasive ductal carcinoma was the most common histological subtype (*n* = 174, 87.0%), and most participants had grade II tumors (*n* = 130, 65.0%). The left breast was affected in 114 participants (57.0%), and 122 participants (61.0%) reported a family history of cancer. Time since diagnosis ranged from 3 to 6 years, whereas chemotherapy duration ranged from 2 to 5 months. Among the 132 participants who had undergone surgery, partial mastectomy was more common than total mastectomy (*n* = 80, 60.6% vs. *n* = 52, 39.4%). The spouse was the most frequently reported primary source of emotional support (*n* = 102, 51.0%), followed by children (*n* = 52, 26.0%) and parents (*n* = 46, 23.0%) (**Table 1**).

Table-1: Sociodemographic and Clinical Characteristics of Participants (*n* = 200).

Variables	Category	<i>n</i>	%
Age, years	Mean ± SD	46.91 ± 6.08	—
Education	Primary education	48	24.0
	Middle school	12	6.0
	High-school diploma	68	34.0
	University education	72	36.0
Marital status	Single	10	5.0
	Married	174	87.0
	Divorced/widowed	16	8.0
Insurance type	Social Security Insurance	102	51.0
	Health Services Insurance	98	49.0
Perceived income adequacy	Sufficient	32	16.0

	Relatively sufficient	134	67.0
	Insufficient	34	17.0
Family history of cancer	Yes	122	61.0
	No	78	39.0
Histological type	Invasive ductal carcinoma	174	87.0
	Lobular carcinoma	8	4.0
	Not otherwise specified	18	9.0
Affected breast	Left	114	57.0
	Right	86	43.0
Tumor grade	I	8	4.0
	II	130	65.0
	III	62	31.0
Time since diagnosis, years	3	54	27.0
	4	52	26.0
	5	54	27.0
	6	40	20.0
Chemotherapy duration, months	2	54	27.0
	3	52	26.0
	4	54	27.0
	5	40	20.0
Surgery (n = 132)	Partial mastectomy	80	60.6
	Total mastectomy	52	39.4
Primary source of emotional support	Spouse	102	51.0
	Children	52	26.0
	Parents	46	23.0

Note. Data are presented as n (%) unless otherwise indicated. Age is presented as mean $\pm$ standard deviation. Sixty-eight participants (34.0%) had not undergone surgery. SD: standard deviation.

3-2. Maladaptive Coping Strategies Across Sociodemographic Characteristics

Associations between sociodemographic characteristics and maladaptive coping strategies were examined using one-way analysis of variance (ANOVA) for educational level, marital status, and perceived income adequacy, and independent-samples *t* tests for insurance type. Fisher's least significant difference (LSD) post hoc tests were conducted when the corresponding omnibus ANOVA was statistically significant. Complete results are presented in **Table 2**.

Self-blame differed significantly by educational level, $F(3,196) = 4.201$, $p = .007$, and perceived income adequacy, $F(2,197) = 3.914$, $p = .021$. Participants with a middle-school education reported the highest mean self-blame score ($M = 67.75$, $SD = 28.32$), whereas those with university education reported the lowest

mean score ($M = 39.42$, $SD = 25.75$). Regarding income adequacy, participants reporting sufficient income had the highest mean self-blame score ($M = 78.12$, $SD = 19.60$), followed by those reporting relatively sufficient income ($M = 66.66$, $SD = 24.36$) and insufficient income ($M = 60.78$, $SD = 35.27$). Marital status and insurance type were not significantly associated with self-blame (both $p > .05$).

Denial differed significantly by marital status, $F(2,197) = 4.081$, $p = .018$, and insurance type, $t(198) = 2.275$, $p = .024$. Divorced or widowed participants reported the highest mean denial score ($M = 60.00$, $SD = 24.63$), followed by single participants ($M = 47.50$, $SD = 23.94$) and married participants ($M = 43.43$, $SD = 22.95$). Participants covered by Social Security Insurance reported higher mean denial scores ($M = 66.66$, $SD = 21.50$) than those covered by Health Services Insurance

($M = 59.18$, $SD = 24.88$). Educational level and perceived income adequacy were not significantly associated with denial (both $p > .05$).

Substance use differed significantly by marital status, $F(2,197) = 3.396$, $p = .035$, and insurance type, $t(198) = 2.063$, $p = .040$. Divorced or widowed participants had the highest mean substance-use score ($M = 56.38$, $SD = 23.36$), followed by married participants ($M = 41.05$, $SD = 22.18$) and single participants ($M = 39.80$, $SD = 19.34$). Participants covered by Social Security Insurance reported higher mean substance-

use scores ($M = 16.01$, $SD = 24.81$) than those covered by Health Services Insurance ($M = 9.52$, $SD = 19.14$). Educational level and perceived income adequacy were not significantly associated with substance use (both $p > .05$).

No statistically significant associations were observed between sociodemographic characteristics and self-distraction, venting, or behavioral disengagement (all $p > .05$). Analyses of behavioral disengagement were based on 190 participants because 10 participants had missing responses for this subscale (Table 2).

Table-2: Comparison of Maladaptive Coping Strategies Across Sociodemographic Characteristics.

Coping strategy	Sociodemographic characteristic	Subgroup	<i>n</i>	Mean	SD	<i>P</i> value
Self-blame	Educational level	Primary education	48	45.60	23.33	.007
		Middle school	12	67.75	28.32	
		High-school diploma	68	50.04	26.04	
		University education	72	39.42	25.75	
	Marital status	Single	10	37.50	28.16	.139
		Married	174	46.47	25.68	
		Divorced/widowed	16	57.50	29.84	
	Insurance type	Social Security Insurance	102	66.66	28.14	.648
		Health Services Insurance	98	68.36	24.23	
	Perceived income adequacy	Sufficient	32	78.12	19.60	.021
		Relatively sufficient	134	66.66	24.36	
		Insufficient	34	60.78	35.27	
Denial	Educational level	Primary education	48	40.50	23.46	.341
		Middle school	12	55.00	27.67	
		High-school diploma	68	46.07	22.99	
		University education	72	45.26	23.46	
	Marital status	Single	10	47.50	23.94	.018
		Married	174	43.43	22.95	
		Divorced/widowed	16	60.00	24.63	
	Insurance type	Social Security Insurance	102	66.66	21.50	.024
		Health Services Insurance	98	59.18	24.88	
	Perceived income adequacy	Sufficient	32	62.50	22.00	.112
		Relatively sufficient	134	61.19	23.55	
		Insufficient	34	70.59	23.59	
Self-distraction	Educational level	Primary education	48	40.75	14.88	.858
		Middle school	12	43.33	16.59	
		High-school diploma	68	41.07	15.54	
		University education	72	42.93	14.49	
	Marital status	Single	10	45.20	14.50	.569
		Married	174	41.44	15.01	
		Divorced/widowed	16	43.50	15.93	

	Insurance type	Social Security Insurance	102	58.49	14.97	.427	
		Health Services Insurance	98	56.80	15.10		
	Perceived income adequacy	Sufficient	32	59.37	16.90	.642	
		Relatively sufficient	134	57.71	13.35		
		Insufficient	34	55.88	19.19		
	Venting	Educational level	Primary education	48	39.52	16.71	.926
Middle school			12	42.92	20.31		
High-school diploma			68	39.69	17.06		
University education			72	41.09	17.15		
Marital status		Single	10	39.50	18.99	.981	
		Married	174	40.35	17.10		
		Divorced/widowed	16	40.88	17.65		
Insurance type		Social Security Insurance	102	53.59	17.96	.536	
		Health Services Insurance	98	55.10	16.30		
Perceived income adequacy		Sufficient	32	54.16	20.30	.658	
		Relatively sufficient	134	54.97	16.86		
		Insufficient	34	51.96	15.22		
Substance use		Educational level	Primary education	48	44.58	22.38	.410
			Middle school	12	49.75	23.90	
			High-school diploma	68	43.14	22.58	
	University education		72	38.52	21.94		
	Marital status	Single	10	39.80	19.34	.035	
		Married	174	41.05	22.18		
		Divorced/widowed	16	56.38	23.36		
	Insurance type	Social Security Insurance	102	16.01	24.81	.040	
		Health Services Insurance	98	9.52	19.14		
	Perceived income adequacy	Sufficient	32	13.54	23.35	.129	
		Relatively sufficient	134	10.94	19.29		
		Insufficient	34	19.61	30.83		
Behavioral disengagement†	Educational level	Primary education	48	46.85	25.10	.511	
		Middle school	12	45.67	28.53		
		High-school diploma	62	46.33	28.72		
		University education	68	40.78	26.16		
	Marital status	Single	8	42.38	27.69	.781	
		Married	166	43.83	26.83		
		Divorced/widowed	16	47.94	28.02		
	Insurance type	Social Security Insurance	102	17.97	27.91	.599	
		Health Services Insurance	88	15.91	25.76		
	Perceived income adequacy	Sufficient	30	16.67	26.26	.929	
		Relatively sufficient	126	16.67	26.83		
		Insufficient	34	—	—		

Note. Values are presented as mean (SD). Raw scores for each Brief COPE subscale were transformed to a 0–100 scale, with higher scores indicating more frequent use of the respective coping strategy. *p* values were obtained using one-way analysis of variance (ANOVA) for educational level, marital status, and perceived income adequacy, and independent-samples *t* tests for insurance type. Fisher's least significant difference (LSD) post hoc comparisons were conducted only when the omnibus ANOVA result was statistically significant.

† Analyses of behavioral disengagement were based on 190 participants because 10 participants had missing responses for this subscale. Variations in subgroup sample sizes reflect missing data.

3-3. Maladaptive Coping Strategies Across Clinical and Treatment Characteristics

Associations between maladaptive coping strategies and clinical and treatment characteristics were examined using one-way analysis of variance (ANOVA) and independent-samples *t* tests. Fisher's least significant difference (LSD) post hoc tests were conducted when the corresponding omnibus ANOVA result was statistically significant. Complete results are presented in **Table 3**.

Self-blame differed significantly according to the primary source of emotional support, $F(2,197) = 5.922$, $p = .003$, and chemotherapy duration, $F(3,196) = 3.250$, $p = .023$. Participants who identified their spouse as their primary source of emotional support reported lower mean self-blame scores ($M = 61.43$, $SD = 27.65$) than those whose primary source of support was their children ($M = 73.71$, $SD = 16.94$; $p = .005$) or parents ($M = 73.91$, $SD = 28.90$; $p = .007$). Participants who had received chemotherapy for 3 months reported higher mean self-blame scores ($M = 76.28$, $SD = 26.48$) than those who had received chemotherapy for 4 months ($M = 62.96$, $SD = 29.44$; $p = .009$) or 5 months ($M = 61.66$, $SD = 15.19$; $p = .008$). Self-blame was not significantly associated with histological type, affected breast, or tumor grade (all $p > .05$).

Self-distraction differed significantly according to histological type, $F(2,197) = 3.506$, $p = .032$; affected breast, $t(198) = 1.99$, $p = .048$; and primary source of emotional support, $F(2,197) = 4.195$, $p = .017$. Participants

with lobular carcinoma reported higher mean self-distraction scores ($M = 70.83$, $SD = 7.72$) than those with invasive ductal carcinoma ($M = 56.89$, $SD = 15.11$; $p = .010$). Participants with right-sided breast cancer reported higher mean self-distraction scores ($M = 60.07$, $SD = 11.51$) than those with left-sided breast cancer ($M = 55.84$, $SD = 17.03$). Participants whose primary source of support was their parents reported lower mean self-distraction scores ($M = 52.17$, $SD = 19.44$) than those whose primary source of support was their spouse ($M = 59.14$, $SD = 12.55$; $p = .009$) or children ($M = 59.61$, $SD = 14.14$; $p = .010$).

Substance use differed significantly according to the primary source of emotional support, $F(2,197) = 4.864$, $p = .009$, and chemotherapy duration, $F(3,196) = 3.321$, $p = .021$. Participants whose primary source of support was their children reported higher mean substance-use scores ($M = 19.87$, $SD = 22.87$) than those whose primary source of support was their spouse ($M = 8.50$, $SD = 19.72$; $p = .003$). Participants who had received chemotherapy for 4 months reported lower mean substance-use scores ($M = 6.17$, $SD = 15.96$) than those who had received chemotherapy for 3 months ($M = 17.31$, $SD = 22.62$; $p = .010$) or 5 months ($M = 18.33$, $SD = 24.98$; $p = .009$).

Denial, venting, and behavioral disengagement were not significantly associated with any clinical or treatment characteristics (all $p > .05$). Analyses of behavioral disengagement were based on 190 participants because 10 participants had missing responses for this subscale (**Table 3**).

Table-3: Comparison of Maladaptive Coping Strategies Across Clinical and Treatment Characteristics.

Coping strategy	Characteristic	Subgroup	<i>n</i>	Mean (SD)	<i>P</i> value
Self-blame	Histological type	Invasive ductal carcinoma	174	66.66 (27.06)	.212
		Lobular carcinoma	8	83.33 (17.82)	
		Not otherwise specified	18	68.51 (18.87)	
	Breast side	Left	114	67.25 (27.15)	.878
		Right	86	67.83 (25.15)	
	Tumor grade	I	8	66.67 (37.80)	.777
		II	130	68.46 (23.68)	
		III	62	65.59 (29.86)	
	Primary emotional support	Spouse ^a	102	61.43 (27.65)	.003
		Children ^b	52	73.71 (16.94)	
		Parents ^b	46	73.91 (28.90)	
	Chemotherapy duration	2 months ^{ab}	54	67.90 (27.44)	.023
		3 months ^a	52	76.28 (26.48)	
		4 months ^b	54	62.96 (29.44)	
		5 months ^b	40	61.66 (15.19)	
Denial	Histological type	Invasive ductal carcinoma	174	63.02 (23.70)	.857
		Lobular carcinoma	8	66.67 (33.33)	
		Not otherwise specified	18	61.11 (16.17)	
	Breast side	Left	114	63.45 (24.38)	.755
		Right	86	62.40 (22.31)	
	Tumor grade	I	8	58.33 (19.92)	.095
		II	130	65.64 (21.94)	
		III	62	58.06 (26.26)	
	Primary emotional support	Spouse	102	62.42 (23.42)	.766
		Children	52	62.18 (21.67)	
		Parents	46	65.21 (25.78)	
	Chemotherapy duration	2 months	54	62.34 (20.27)	.459
		3 months	52	67.31 (27.41)	
		4 months	54	61.73 (19.33)	
		5 months	40	60.00 (26.90)	
Mental distraction	Histological type	Invasive ductal carcinoma ^a	174	56.89 (15.11)	.032
		Lobular carcinoma ^b	8	70.83 (7.72)	
		Not otherwise specified ^{ab}	18	59.25 (14.26)	
	Breast side	Left	114	55.84 (17.03)	.048
		Right	86	60.07 (11.51)	
	Tumor grade	I	8	62.49 (7.71)	.651
		II	130	57.43 (15.54)	
		III	62	57.52 (14.68)	
	Primary emotional support	Spouse ^a	102	59.14 (12.55)	.017
		Children ^a	52	59.61 (14.14)	
		Parents ^b	46	52.17 (19.44)	
	Chemotherapy duration	2 months	54	57.40 (14.72)	.435
		3 months	52	55.12 (19.11)	
		4 months	54	59.87 (12.34)	
		5 months	40	58.33 (12.52)	
Emotional venting	Histological type	Invasive ductal carcinoma	174	54.98 (17.40)	.275
		Lobular carcinoma	8	54.16 (14.77)	
		Not otherwise specified	18	48.14 (15.00)	
	Breast side	Left	114	55.26 (17.22)	.379
		Right	86	53.10 (17.06)	
	Tumor grade	I	8	54.16 (14.77)	.999
		II	130	54.35 (15.33)	

	Primary emotional support	III	62	54.30 (20.89)	.238
		Spouse	102	55.88 (16.85)	
		Children	52	54.48 (15.17)	
		Parents	46	50.72 (19.55)	
	Chemotherapy duration	2 months	54	56.17 (14.59)	.775
		3 months	52	53.84 (20.51)	
		4 months	54	54.32 (16.88)	
		5 months	40	52.50 (16.26)	
Substance use	Histological type	Invasive ductal carcinoma	174	12.45 (22.55)	.285
		Lobular carcinoma	8	25.00 (29.54)	
		Not otherwise specified	18	11.11 (16.17)	
	Breast side	Left	114	14.62 (24.90)	.195
		Right	86	10.46 (18.44)	
	Tumor grade	I	8	16.67 (30.86)	.392
		II	130	14.10 (24.06)	
		III	62	9.68 (16.95)	
	Primary emotional support	Spouse ^a	102	8.50 (19.72)	.009
		Children ^b	52	19.87 (22.87)	
		Parents ^{ab}	46	14.49 (25.48)	
	Chemotherapy duration	2 months ^{ab}	54	11.11 (24.23)	.021
		3 months ^a	52	17.31 (22.62)	
		4 months ^b	54	6.17 (15.96)	
		5 months ^a	40	18.33 (24.98)	
Behavioral disengagement [†]	Histological type	Invasive ductal carcinoma	165	17.07 (26.71)	.998
		Lobular carcinoma	8	16.67 (30.86)	
		Not otherwise specified	17	16.67 (28.54)	
	Breast side	Left	108	16.67 (27.53)	.837
		Right	82	17.48 (26.17)	
	Tumor grade	I	8	12.50 (23.14)	.448
		II	124	18.82 (27.62)	
		III	58	13.79 (25.77)	
	Primary emotional support	Spouse	94	18.08 (27.40)	.833
		Children	52	16.67 (28.39)	
		Parents	44	15.15 (24.33)	
	Chemotherapy duration	2 months	52	16.02 (24.91)	.259
		3 months	50	22.66 (28.92)	
		4 months	50	12.00 (23.09)	
		5 months	38	17.54 (30.74)	

Note. Data are presented as mean (SD). *p* values were calculated using one-way analysis of variance (ANOVA), except for breast side, which was analyzed using an independent-samples *t* test. Fisher's least significant difference (LSD) post hoc tests were performed only when the omnibus ANOVA was statistically significant. Statistically significant *p* values are shown in bold. SD: standard deviation.

Different superscript letters indicate statistically significant pairwise differences based on Fisher's LSD post hoc test ($p < .05$). Groups sharing at least one superscript letter did not differ significantly.

[†] Analyses of behavioral disengagement were based on 190 participants because responses were missing for 10 participants. For chemotherapy duration, the sample sizes were 52, 50, 50, and 38 for the 2-, 3-, 4-, and 5-month groups, respectively.

4- DISCUSSION

This cross-sectional study examined associations between sociodemographic and clinical characteristics and selected maladaptive coping strategies among

Iranian women with non-metastatic breast cancer undergoing chemotherapy. Educational level and perceived income adequacy were associated with self-blame; marital status and insurance type were associated with denial and substance use;

and primary source of emotional support and chemotherapy duration were associated with self-blame and substance use. Mental distraction was associated with histological type, affected breast side, and primary source of emotional support. In contrast, emotional venting and behavioral disengagement were not significantly associated with the sociodemographic, clinical, or treatment characteristics examined.

Self-blame was significantly associated with educational level and perceived income adequacy. Descriptively, women with middle-school education had the highest self-blame scores, whereas university-educated women had the lowest scores. Participants reporting sufficient income also had higher self-blame scores than those reporting relatively sufficient or insufficient income. These findings should be interpreted cautiously because of unequal group sizes, including the relatively small middle-school subgroup. Nevertheless, they suggest that self-blame may not follow a simple socioeconomic gradient. Self-blame may reflect personal attributions of responsibility for illness or treatment-related difficulties and could represent an important marker of psychological vulnerability during chemotherapy. Previous research has linked maladaptive coping responses, including denial, behavioral disengagement, and self-blame, with higher symptom burden and poorer psychological outcomes in patients with cancer (13).

Marital status was associated with denial and substance use. Although the omnibus tests were statistically significant, divorced or widowed participants had the highest descriptive mean scores for both strategies. This pattern may indicate greater psychosocial vulnerability among women without current partner support, although the cross-sectional design cannot establish that marital status causes maladaptive

coping. Partner loss, marital disruption, social isolation, economic insecurity, and caregiving responsibilities may coexist and influence coping responses. Because only 16 participants were divorced or widowed, this finding should be interpreted cautiously and replicated in larger samples. Previous studies have similarly identified associations between demographic characteristics, social support, and coping among women affected by breast cancer (14, 16, 22).

Insurance type was associated with denial and substance use, with participants covered by Social Security Insurance reporting higher scores than those covered by Health Services Insurance. Insurance type may act as a proxy for socioeconomic position, employment circumstances, service availability, or access to supportive care. However, the present study did not collect detailed information on insurance benefits, out-of-pocket costs, treatment access, or use of psychosocial services. Consequently, this association should not be interpreted as an effect of insurance coverage itself. Future health-services research should investigate whether insurance-related differences in access to supportive care contribute to coping patterns among women receiving chemotherapy.

The primary source of emotional support was associated with self-blame, mental distraction, and substance use. Women relying primarily on their spouse reported lower self-blame scores than those relying on children or parents and lower substance-use scores than women relying primarily on their children. Conversely, women relying mainly on their parents reported lower mental-distraction scores than those supported primarily by a spouse or children. These findings suggest that the source of support may be relevant to coping; however, they do not establish that spousal support is uniformly protective. The study assessed the person identified as

the primary support source rather than support quality, adequacy, satisfaction, reciprocity, or relationship conflict. Existing evidence indicates that social support and coping strategies are associated with psychological adjustment and quality of life among women with breast cancer, although the direction and magnitude of these associations vary across settings and patient populations (12, 14, 16, 22).

Chemotherapy duration was associated with self-blame and substance use. Self-blame was higher among women who had received chemotherapy for 3 months than among those receiving chemotherapy for 4 or 5 months. In contrast, substance-use scores were lower among women receiving chemotherapy for 4 months than among those receiving chemotherapy for 3 or 5 months. These cross-sectional results should not be interpreted as within-person changes over time because women at different chemotherapy durations were different participants and may have differed in unmeasured clinical, social, or psychological characteristics. Nevertheless, longitudinal research has shown that anxiety and depression may increase during the early cycles of adjuvant chemotherapy, while quality of life may decline during this period, providing relevant context for the present findings (23, 24).

Mental distraction differed according to histological type, affected breast side, and primary source of emotional support. Women with lobular carcinoma reported higher mental-distraction scores than those with invasive ductal carcinoma. However, only eight participants had lobular carcinoma; therefore, this estimate is imprecise and should be regarded as exploratory. Similarly, the association between right-sided breast cancer and higher mental-distraction scores requires replication and should not be assigned a specific clinical explanation based on the

present data. Although invasive lobular carcinoma may be associated with distinct psychological considerations, the present study was not designed to identify mechanisms underlying coping differences by histological type or breast laterality (25).

Emotional venting and behavioral disengagement were not significantly associated with the examined sociodemographic, clinical, or treatment characteristics. These null findings may indicate that these coping responses are more strongly influenced by unmeasured psychological variables, including anxiety, depression, illness perceptions, emotion regulation, experiential avoidance, and personality characteristics. Previous research has identified associations between emotion-regulation strategies and cancer-related psychological symptoms, supporting the inclusion of these variables in future studies (8).

4-1. Clinical Implications

The findings suggest practical directions for psychosocial care during chemotherapy. Oncology nurses, midwives, physicians, and psycho-oncology professionals may consider brief assessment of coping patterns alongside routine symptom and distress screening, particularly for women without current partner support, women relying predominantly on non-spousal support, and women receiving chemotherapy during the early-to-middle treatment period.

When self-blame, denial, or substance-use coping is identified, supportive interventions may focus on challenging self-blaming illness attributions, strengthening adaptive problem-solving and emotion-regulation skills, and improving access to family- and partner-inclusive support. Group psychoeducation may improve cognitive emotion-regulation strategies, including positive reappraisal

and acceptance, among women with breast cancer (26). Cognitive-behavioral and mindfulness-based interventions have also demonstrated beneficial effects on psychological outcomes and quality of life among women with breast cancer (27). Internet-based cognitive-behavioral interventions may represent an additional scalable option for psychosocial support, particularly when delivered for a sufficient duration (28).

4-2. Study Limitations

This study has several limitations. First, its cross-sectional design prevents causal inference and cannot establish whether the observed characteristics preceded or resulted from coping patterns. Second, participants were recruited through consecutive convenience sampling from oncology centers in Kerman, Iran; therefore, the findings may not generalize to women in other geographic, cultural, or healthcare settings. Third, the self-report design may have introduced recall bias and social-desirability bias, particularly for sensitive coping responses such as substance use.

Fourth, several clinical and sociodemographic subgroups had small and unequal sample sizes, which may reduce statistical power, yield unstable mean estimates, and increase the likelihood of chance findings. Fifth, multiple comparisons were conducted across six coping subscales and several participant characteristics, increasing the probability of type I error. Sixth, potentially influential variables—including depression, anxiety, symptom severity, treatment regimen, cancer stage, comorbidities, financial toxicity, perceived social-support quality, relationship functioning, and use of psychosocial services—were not included in the analyses.

Finally, the study assessed the source of primary emotional support but not its

quality, availability, adequacy, or satisfaction. Future studies should use longitudinal, adequately powered, multicenter designs and include psychological, clinical, social-support, and health-services variables to clarify the mechanisms underlying coping patterns across the course of treatment.

5- CONCLUSION

Among Iranian women with non-metastatic breast cancer undergoing chemotherapy, selected sociodemographic and clinical characteristics were associated with specific maladaptive coping strategies. Educational level and perceived income adequacy were associated with self-blame; marital status and insurance type were associated with denial and substance use; and primary source of emotional support and chemotherapy duration were associated with self-blame and substance use. These findings support the incorporation of coping assessment into oncology care, while emphasizing that the observed associations are exploratory and require confirmation in larger longitudinal studies.

6- CONFLICT OF INTEREST: None.

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