Received: 04/19/2024 **Accepted:** 09/10/2024

Open Access

Doi.org/10.30473/ijohp.2025.69994.1339

Vol.7, No.4, Serial Number 22, p.37-48, Autumn 2024

Iranian Journal of Health Psychology

Research Article

The Mediating Role of Avoidant Coping in the Relationships Between Psychological Well-Being and Chemotherapy-Induced Delayed Nausea in Women with Breast Cancer in Shiraz

Elahe Aslami[1], Akram Malekzadeh[2], Akram Malekzadeh[3]

1.Department of psychology, Payam Noor University (PNU), Tehran, Iran
2.Department of psychology،Payam Noor University (PNU), Tehran, Iran
3.Department of psychology،Payam Noor University (PNU), Tehran, Iran.

Correspondence:

Elahe Aslami

Email:

Discussion and Conclusion

How to Cite

Aslami, E. , Izadi, M. and Malekzadeh, A. (2024). The Mediating Role of Avoidant Coping in the Relationships Between Psychological Well-Being and Chemotherapy-Induced Delayed Nausea in Women with Breast Cancer in Shiraz. *Iranian Journal of Health Psychology,*7(4), 37-48. doi:10.30473/ijohp.2025.69994.1339

Abstract

Objective: Despite significant antiemetic advances, almost 50 % of treated cancer patients still experience nausea and vomiting. The purpose of this study was to investigate the mediating role of avoidant coping in the relationships between psychological well-being and chemotherapy-induced delayed nausea in women with breast cancer in Shiraz.

Method: The research method was descriptive-correlational. The statistical population of this study consists of women with breast cancer in Shiraz with an average age of 51 to 56 years. In this research, a non-random and voluntary sampling method was used; thus, 211 female patients with breast cancer treated by chemotherapy voluntarily completed the relevant questionnaires, which included psychological well-being questionnaire (Ryff, 1989), chemotherapy-induced delayed nausea questionnaire (Rhodes & McDaniel, 1999), and coping style questionnaire (Endler & Parker, 1990). The data were analyzed by AMOS software.

Results: Research findings showed a negative and significant relationship between psychological well-being and avoidant coping style, and a positive and significant relationship between avoidant coping style and delayed nausea. The Sobel test confirmed the mediating role of avoidant coping style in the relationship between psychological well-being and delayed nausea. Therefore, it can be concluded that there was a relationship between psychological well-being and delayed nausea, with the mediation of avoidant coping style. Also, psychological well-being had an indirect effect on delayed nausea.

Conclusion: Chemotherapy-induced delayed nausea can be reduced by improving coping skills and strategies and the psychological well-being of women with breast cancer.

Keywords: Chemotherapy-induced delayed nausea, Psychological well-being, Avoidant coping style, Breast cancer.

Extended Abstract

Background and Objectives

Chemotherapy is a vital component in the treatment of breast cancer, both in early-stage and metastatic cases. Despite advancements in antiemetic medications, chemotherapy-induced nausea and vomiting (CINV), particularly delayed nausea occurring 24–72 hours after treatment, remains a prevalent and distressing side effect. Delayed nausea negatively impacts nutrition, quality of life, treatment compliance, and emotional well-being. While much of the existing research focuses on physiological and pharmacological predictors of CINV, increasing attention is being paid to psychological factors such as anxiety, emotional distress, and coping styles. Among these, avoidant coping—where individuals mentally or emotionally disengage from stress—has been identified as a maladaptive strategy that may worsen both psychological and physical symptoms. Conversely, individuals with high psychological well-being typically engage in more constructive coping, potentially reducing distress and symptom severity. The purpose of this study was to investigate the mediating role of avoidant coping in the relationship between psychological well-being and delayed nausea in women undergoing chemotherapy for breast cancer in Shiraz, Iran. By identifying psychological mechanisms that influence physical side effects, the study aims to inform integrative approaches to cancer care.

Materials and Methods

This descriptive-correlational study used structural equation modeling (SEM) with AMOS software to test a proposed mediation model. Participants were 211 women with breast cancer undergoing chemotherapy in 2022 at Motahari Clinic and Amir Hospital in Shiraz. The sample was drawn purposively from an initial group of 261 patients, with outliers excluded. Inclusion criteria included: being female, diagnosed with breast cancer, undergoing chemotherapy (excluding the first session), prior chemotherapy experience, and not taking psychoactive medications. All participants voluntarily completed questionnaires face-to-face after informed consent was obtained. Three validated instruments were used: 1. Ryff's Psychological Well-Being Scale (18-item short form), covering six components of well-being. 2. Coping Inventory for Stressful Situations (CISS) by Endler & Parker—only the avoidant coping subscale was used. 3. Rhodes Index of Nausea and Vomiting (Form 2)—specifically assessing delayed-phase nausea. Reliability coefficients (Cronbach's alpha) for all tools ranged from 0.73 to 0.89. Data normality and model fit assumptions were verified using statistical indices such as skewness, kurtosis, Durbin-Watson, and multicollinearity diagnostics.

Results

The mean age of participants was 51.56 years. Mean scores were as follows: psychological well-being = 71.44, avoidant coping = 54.80, and delayed nausea = 11.52. The correlation analysis showed: Negative correlation between psychological well-being and avoidant coping ($r = -0.56$, $p < 0.001$). Positive correlation between avoidant coping and delayed nausea ($r = 0.35$, $p < 0.001$). Negative correlation between psychological well-being and delayed nausea ($r = -0.27$, $p < 0.001$). Path analysis revealed that the direct effect of psychological well-being on delayed nausea was not significant ($\beta = -0.11$, $p = 0.16$), but its indirect effect through avoidant coping was significant ($\beta = -0.16$, $p < 0.001$). Specifically, Psychological well-being had a strong negative effect on avoidant coping ($\beta = -0.56$, $p < 0.001$). Avoidant coping had a positive effect on delayed nausea ($\beta = 0.29$, $p < 0.001$). Fit indices confirmed the model's adequacy: $\chi^2/df = 2.77$, CFI = 0.98, NFI = 0.93, IFI = 0.93, RMSEA = 0.05.

Discussion

The study confirmed that avoidant coping mediates the relationship between psychological well-being and chemotherapy-induced delayed nausea. Patients with higher psychological well-being were less likely to use avoidant strategies and therefore experienced less severe nausea. These findings align with previous studies highlighting the detrimental impact of avoidant coping on psychological and physical health in cancer patients. Avoidant coping may provide temporary relief by suppressing cancer-related thoughts, but over time, it can lead to unresolved stress and somatic symptoms. This style has also been linked to increased anxiety and lower adherence to medical instructions. In contrast, psychological

well-being—encompassing traits such as purpose in life, optimism, and resilience—enables patients to cope more adaptively with treatment-related stress. Importantly, the absence of a direct effect of psychological well-being on nausea underscores the role of coping behavior as a pathway. The findings suggest that enhancing psychological well-being indirectly reduces symptom severity by promoting healthier coping patterns.

Conclusion

This study provides evidence that avoidant coping significantly mediates the relationship between psychological well-being and delayed nausea in women undergoing chemotherapy for breast cancer. Interventions aimed at reducing avoidant coping and enhancing psychological well-being may help patients manage treatment side effects more effectively. Incorporating mental health support into oncology care is recommended. Interventions such as stress management, resilience training, and cognitive-behavioral therapy may empower patients with better emotional regulation and coping skills. Future studies should explore these variables in other cancer populations and with longitudinal designs to clarify causality and long-term outcomes.

Introduction

The prevalence and occurrence of non-communicable diseases, such as cancer, in the world are increasing due to the increase in life expectancy, lifestyle changes, and exposure to risk factors. In this century, cancer is one of the most important diseases and is the second leading cause of death after cardiovascular diseases (Naito et al., 2020). According to 2020 data, around 19.3 million new cancer cases were reported worldwide, resulting in nearly 10 million deaths. Specifically, 2.3 million breast cancer cases were diagnosed in 2021, leading to 685,000 reported deaths (WHO, 2023). Uncontrolled and abnormal growth of cells that grow and divide without any control causes the formation of tumors, which can lead to breast cancer. This type of cancer is the most psychologically and emotionally affecting cancer in women (Nicholson et al., 2024).

Survival of breast cancer patients has improved dramatically due to effective screening systems and advances in multimodality treatment, including surgery, radiotherapy, and systemic therapy. Chemotherapy currently plays an essential role in both postoperative and metastatic settings (Naito et al., 2020). Chemotherapy treatment lasts for weeks or months and often has side effects such as hair loss, psychological problems, changes in weight, and most importantly, nausea and vomiting (Corner & Bailey, 2009). During the chemotherapy process, different body systems are affected by this treatment, including the digestive system. One of the side effects of chemotherapy on the digestive system is nausea and vomiting, and based on its onset time, CINV can be subdivided into acute and delayed nausea and vomiting according to onset time, which may last from 24 to 72 hours (Patel et al., 2022).

Despite significant improvements in the treatment of emesis using serotonin (5-HT3) and neurokinin (NK-1) receptor antagonists and antiemetic prescription guidelines over the past 20 years (Jordan et al., 2014; Feyer & Jordan, 2011), chemotherapy-induced nausea and vomiting (CINV) remain one of the most critical problems reported by cancer patients, with approximately 45-65% of patients experiencing significant nausea (mainly delayed) and 15-25% experience vomiting (mainly delayed). Nausea is even more harmful than vomiting from the patient's point of view (Patel et al., 2022). Frequent and severe nausea and vomiting can elicit a loss of appetite, which leads to nutritional deficiency, decreased immunity, metabolic disorders, and additional adverse outcomes that affect the patient's quality of life and chemotherapy efficacy. Nausea and vomiting are associated with the intolerance of patients under treatment and can even cause them to refuse to continue treatment. Uncontrollable nausea and vomiting can cause a delay in the periodic schedule of chemotherapy, and reduce the daily performance and quality of life can have very negative consequences for the person (Grassi et al., 2015). Therefore, investigating the variables affecting CINV is very important.

Much research has been conducted on physical and pharmacological predictors of CINV (Roila et al.,

2010), but psychological variables have received less attention. Researchers showed that nonpharmacological management of CINV was useful (Li et al., 2022), and this means that psychological factors play a role in CINV. Some retrospective studies to investigate the role of psychological variables in CINV have shown that emotional distress, anxiety, and expectations of patients may play a role in the perception, frequency, and severity of nausea and other side effects caused by chemotherapy (Li et al., 2022; Montgomery & Bovbjerg, 2003). In a small prospective study of 56 patients with cancer, a significant relationship was found between distress before treatment and the severity of subsequent delayed nausea in patients (Higgins, Montgomery & Bovbjerg, 2003). Trait anxiety and fatigue (Molassiotis, Stamataki & Kontopantelis, 2013), Pre-cancer distress, moderate to severe depression and neuroticism (Pirri et al, 2011), fear of dying and inability to relax were also identified as potential predictors of CINV (Yap et al, 2012). Some of the data related to this hypothesis, presented by Zhang et al. (2023), showed that negative emotions and depression affect the reporting of physical complications by cancer patients.

Patients whose nausea affected their daily lives had higher scores in emotional distress measured before chemotherapy compared to patients who did not develop CINV. These results confirm other studies that show that lower levels of anxiety and positive emotions are associated with better quality of life related to CINV (Grassi et al., 2015). Notably, positive psychological constructs, including optimism and self-efficacy, significantly contribute to the quality of life and satisfaction of cancer patients, and as a result, improve mental health outcomes, followed by a reduction in distress and CINV (Cui, 2021). Thus, Positive emotions, such as psychological well-being, seem to reduce distress, anxiety, and depression and thereby reduce the CINV.

The high prevalence of distress, anxiety, and depression in cancer survivors makes distress and anxiety management one of the most common unmet needs of breast cancer survivors (BCS). Although some BCS use adaptive coping strategies to manage distress, others rely on less adaptive coping strategies such as avoidant coping in particular, avoidant coping of trying not to think about cancer may provide a brief escape from distressing thoughts, but over time, these thoughts may become more distressing and intrusive (Akbari, Alipour, & Zare, 2015). Because cancer requires constant monitoring, breast cancer survivors often feel uncomfortable recalling their disease experience. Avoidant coping can negatively affect survivors' ability to focus on solutions and necessary actions, such as adherence to instructions; in particular, avoidant coping has a more significant effect on depression, anxiety, cancer-related concerns, and general distress than other coping methods (Cohee et al., 2021). However, how patients cope with cancer in terms of cognitive and behavioral responses, which have been shown to influence several aspects of the cancer experience, such as quality of life, psychological distress, physical symptoms, and pain (Grassi et al., 2015), has not been studied for CINV.

According to what was said, psychological well-being and avoidant coping styles can affect CINV. Based on this, the main goal of the present study is to investigate the mediating role of avoidant coping styles in the relationship between psychological well-being and CINV (Figure 1).

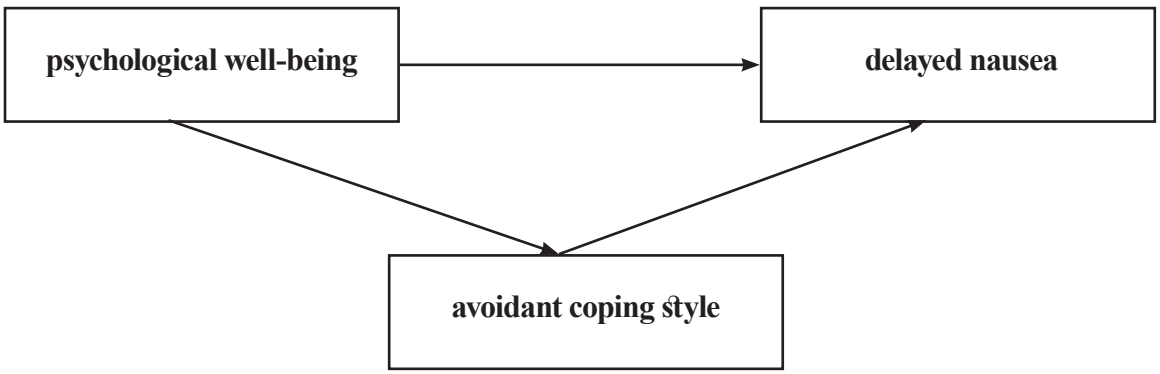

Figure 1. The tested model of the mediating role of avoidant coping style in the relationship between psychological well-being and delayed nausea

Research design

The design of this study was descriptive-correlational. In this study, a model of the causal pattern of the relationship between psychological well-being and delayed nausea caused by chemotherapy has been tested. Therefore, in terms of nature and method, it describes the type of correlation because, in such research, the researcher seeks to investigate the possible relationship and the effect size of the correlation between the variables mentioned in the study.

Method

Participants and Procedure

The statistical population included women with breast cancer in Shiraz City in 2022. Using the purposeful sampling method, 211 people were finally selected as the research sample. The mentioned people were referred to Motahari Clinic and Amir Hospital to undergo chemotherapy procedures. Thus, the number of 261 female patients with breast cancer who were treated with chemotherapy were selected for the study of the current research, and considering that the outlier data were around 50 people, in the end, 211 people were studied. These patients voluntarily completed relevant questionnaires, which included Ryff's psychological well-being, Rhodes and McDaniel's chemotherapy-induced delayed nausea, and Parker and Endler's coping styles questionnaires. The entry criteria for people to participate in this research were being female, suffering from breast cancer, undergoing chemotherapy, having a history of chemotherapy in the past (not the first session of chemotherapy), and not using psychoactive drugs. Patients were told that their information and answers would be confidential. It should be noted that the questionnaires were completed Face-to-face. Finally, the data were analyzed using AMOS version 23 software.

Ethical Statement

All procedures used in collecting survey data, on which this article relies, are by the ethical standards of the Helsinki Declaration of 1964 and subsequent amendments or ethical standards. All data were collected anonymously, and no association could be established between the questionnaires and the responders. Informed Consent: All participants were informed of the aim of the research verbally, and all data about the confidentiality and anonymity of their responses were explained. Human and Animal Rights: Current research does not contain any interventions or studies with animals executed by any of the authors.

Measures

In the present study, to measure the research variables, the following instruments have been used:

Ryff's Psychological Well-Being Scales (PWB): The psychological well-being scale was designed in 1989 by Ryff (1989). The main form of this questionnaire has 120 items, but in the subsequent reviews, shorter forms with 84, 54, and 18 items were also suggested (Sefidi & Farzad, 2012). The questionnaire used in this research has 18 items, and its scoring is based on a six-point Likert scale from 1 (completely disagree) to 6 (completely agree). The minimum score that can be obtained on this scale is 18, and the maximum score is 108. It has six components, three questions for each component, and a total score. In this questionnaire, questions 3, 4, 5, 9, 10, 13, 16, and 17 are scored in reverse, and the rest are scored directly. This questionnaire includes six components: self-acceptance, positive relationships with others, autonomy or independence, mastery of the environment, purposeful life, and personal growth (Sefidi & Farzad, 2012). Ryff and Keyes (1995) reported the internal consistency coefficient of the whole test using Cronbach's alpha method to be about 0.55. Vahid and Jafari Harandi (2017) measured the reliability of this questionnaire using the internal consistency method. Cronbach's alpha coefficient has been obtained at 0.72. In this research, the reliability of the psychological well-being questionnaire was reported as 0.73.

Parker and Endler Coping Styles Questionnaire (CISS): This self-report questionnaire was created by

Parker and Endler in 1990 to measure the coping styles of teenagers and adults in critical and stressful situations. Using factor analysis, Endler and Parker (1990) interpreted the data and extracted three primary coping methods, which were "problem-oriented coping," emotion-oriented coping, and "avoidance-oriented coping." The questionnaire used in this research has 48 items, and its scoring is based on a five-point Likert scale from 1 (very little) to 5 (very much). The participants of this study only answered questions related to avoidant coping styles. According to the findings of the creators of the test, Endler and Parker (1990), and the opinion of experts and clinical psychologists, it is concluded that the question test has good validity for measuring coping styles. The validity of this questionnaire has also been proven during the research conducted in Iran (Shokri et al., 2009). In this study, the reliability of the avoidant coping style questionnaire was reported as 0.79.

Rhodes Index of Nausea and Vomiting Rhodes Form 2 (INV-2) (Rhodes & McDaniel, 1999): The Rhodes Index of Nausea and Vomiting questionnaire is a validated and objective form used to grade the presence and severity of nausea and vomiting and to follow the clinical progression of the disorder. It was proposed by Rhodes and McDaniel in 1999 to evaluate nausea and vomiting in patients with tumoral disease receiving chemotherapy. This scoring system is based on a five-point scale. It has a total of eight items capturing nausea, vomiting, and the components (duration, severity, and distress) of each symptom in the preceding 12 hours after chemotherapy (acute phase) and in 24 to 72 hours after chemotherapy (delayed phase), to calculate the total score of the questionnaire, add the score of all the questionnaire items together. The score range of this questionnaire will be between 0 and 32. The higher the score obtained from this questionnaire, the more it will be more nausea and vomiting, and vice versa. In the research of Zhou, Brien, and Soken (2001), while measuring the face and content validity of this tool, its reliability is also reported to be appropriate. In Noorani's research (2004), the face validity of this tool has been confirmed by professors. The reliability of the acute phase nausea questionnaire in this research is 0.89, and the delayed phase is 0.86.

Results

Regarding the demographic characteristics among the 211 participants, their average age was 51.56, and their standard deviation was 8.13. Also, 3.8% of the participants in the research were single, and 78.8% were married; 25.19% had an associate degree, 50.43% had a bachelor's degree, 33% had a master's degree, and 4.25% had a doctorate. Table 1 refers to the presentation of the descriptive indicators of the research variables. The mean and standard deviation of avoidant coping style was 54.80 (9.52), delayed nausea was 11.52 (6.85), and psychological well-being was 71.44 (10.05). The skewness was between -2 and +2, which indicates the relative normal distribution of the data. The assumption of independence of errors was checked with Durbin-Watson's statistic of the research model, and the obtained value of 1.53 indicated the establishment of this assumption. In addition, tolerance statistics and variance inflation factors were calculated to check multiple collinearities. The results showed that the values of the tolerance statistic are within the allowed range between 0 and 1, and none of the variance inflation factor values are more significant than the limit of 10. Therefore, based on the two mentioned indicators, multiple collinearities were not observed in these data.

Table 1. Descriptive indicators of research variables

Variable	stress	crookedness	standard deviation	Middle	Average
Avoidant coping style	-0.65	-0.11	9.52	56	54.80

Delayed nausea	-1.09	-.024	6.85	12	11.52
Psychological well-being	-0.74	0.22	10.05	70	71.44

The findings of Table 2 show a negative and significant relationship between psychological well-being and delayed nausea (r=-0.27, P<0.001) and a negative and significant relationship between psychological well-being and avoidant coping style (P<0.001). There is a positive and significant relationship between avoidant coping style and delayed nausea (r=0.35, P < 0.001).

Table 2. Correlation matrix of research variables

Variable	1	2	3
Avoidant coping style	1	-	-
Delayed nausea	0.35**	1	-
Psychological well-being	-0.56	-0.27**	1

**<0.001

Table 3. Path analysis model fit indices

	Chi-Square	CFI	NFI	IFI	CFI	RMSEA
The obtained values	2/77	0/98	93/0	93/0	93/0	0/05
acceptable values	<3	>0/90	>0/90	>0/90	>0/90	< 0/08

Table 3 shows the fit indices of the measurement model. A subset of general fit indices, including chi-square, Normed-fit index (NFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA), was reported as the most essential fit indices. The results of model fit indices showed that the research model has a good fit. According to the fit of the data with the proposed model, Figure 1 and Table 3 show the path coefficients of the final model. It should be noted that, according to Figure 1, all the measured variables had a relatively strong correlation with their factors.

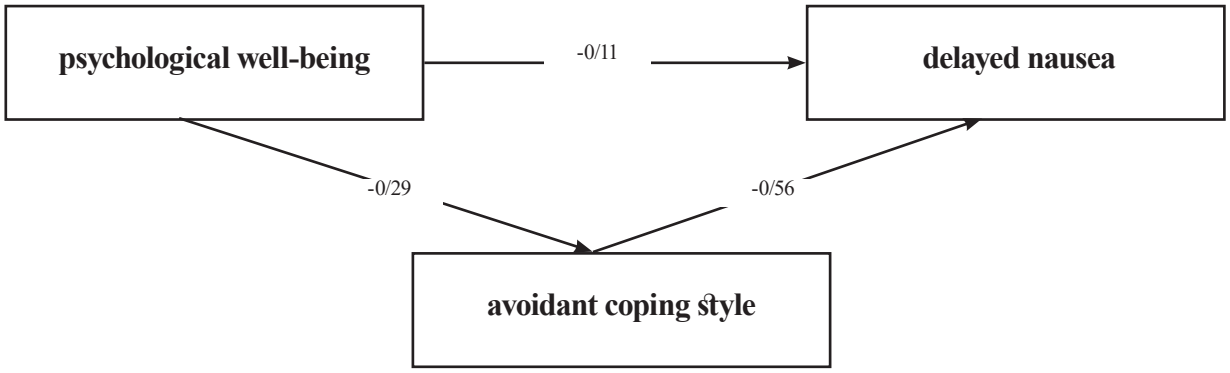

Figure 1. The tested model of the mediating role of avoidant coping style in the relationship between psychological well-being and delayed nausea

Tables 4 and 5 show the direct and indirect effects of research variables. According to the results of Table 4, the psychological well-being variable has no direct and significant effect on delayed nausea (p<0.001, β=0.11). However, the psychological well-being variable has a negative and significant effect on avoidant coping style (p<0.001, β=0.56), and avoidant coping style has a positive effect on delayed nausea (β=0.29, p<0.001).

Table 4: Structural model of direct paths in the final model

path	Direct effects	Critical ratio	Significance level	Test result
Psychological well-being---> delayed nausea	-0.11	-1.41	0.16	Rejection
Psychological well-being---> avoidant style	-0.56	-9.86	*0.0001	approval (negative effect)
Avoidant style ---> delayed nausea.	0.29	3.73	*0.0001	approval (positive effect)

To check the significance of the indirect effect, the bootstrap method was used. As shown in Table 5, the indirect effect of psychological well-being on delayed nausea with the mediation of avoidant coping style is significant. This finding indicates that the avoidant coping style has a mediating role in the relationship between psychological well-being and delayed nausea. The inferential analysis of the research hypothesis is that there is a relationship between psychological well-being and delayed nausea, with the mediation of avoidant coping style. Table 4 shows that psychological well-being has a negative and significant effect on avoidant coping style, and avoidant coping style has a positive and significant impact on delayed nausea.

Table 5: Structural model of indirect paths in the final model

way	Indirect effect	Critical ratio	Significance level	Test result
Psychological well-being---> avoidant style---> delayed nausea	-0.16	-4.43	*0.0001	Confirmation (negative effect)

According to Table 5, the mediating role of avoidant coping style in the relationship between psychological well-being and nausea Latency was confirmed using the Sobel test. Therefore, psychological well-being has an effect on delayed nausea through the mediation of avoidant coping style. The indirect effect of psychological well-being on delayed nausea was -0.16.

Discussion and conclusion

The present study was conducted to provide a causal model of chemotherapy-induced delayed nausea based on psychological well-being, with the mediation of avoidant coping styles in women with breast cancer in Shiraz. The results of the conceptual model test showed that the fit indices of the research model are in a favorable condition. The research findings showed that psychological well-being has a significant effect on delayed nausea, directly and indirectly through avoidant coping styles. The results of the present study are consistent with the studies of Cohee et al. (2021) and Montgomery and Bovbjerg (2003). In this research, there is a significant negative relationship between psychological well-being and avoidant coping style, and a significant positive relationship between avoidant coping style and chemotherapy-induced delayed nausea. Psychological well-being was associated with avoidant coping. Previous studies have found significant relationships between heightened fear of recurrence, poor body image, greater fatigue, lack of social support, high social constraints, and avoidant coping. These relationships are cyclical, with some studies showing reciprocal relationships (Mohsenipouya et al., 2024).

To reduce the risk of tumor recurrence, postoperative adjuvant chemotherapy, radiotherapy, or endocrine therapy is often administered. While these treatments effectively combat cancer, they entail a range of adverse side effects, including fatigue, pain, nausea, hair loss, and more. These effects can lead to work challenges,

reduced social engagement, altered sexual activity, and more. This process presents physical and emotional challenges, demanding significant strength and support. Cancer patients use coping strategies to adapt to these adverse side effects. Coping strategies help individuals handle internal and external stressors (Marquez-Arrico et al., 2015). Two common coping strategies are avoidance coping and approach coping. Avoidance coping is defined as avoiding stressful events and not wanting to face them, whereas approach one is about facing the situation. An avoidance strategy might be associated with decreased well-being (Arble & Arnetz, 2017).

Efficient and optimal coping with problems is one of the signs of psychological well-being. However, having an upbeat coping style would mean facing the situation even if it is stressful, and trying to overcome it or modify it, either by using problem-solving techniques or seeking help (Doron et al., 2013; Kotze et al., 2013). This coping style specifically would eventually enhance the General Well-being of individuals (Gustems-Carnicer & Calderón, 2013). Avoidant coping, trying not to think about cancer, may be a brief opportunity to escape from anxious thoughts, but over time, these thoughts may become more distressing and intrusive. Cancer patients who have less psychological well-being avoid facing problems due to having fewer factors, such as hope, resilience, efficacy, and optimism.

Hope embodies the ability to persist toward goals and adjust pathways to achieve them. Resilience reflects the capacity to withstand adversity and rebound. Optimism involves attributing positive outcomes to goal attainment, while self-efficacy signifies the confidence to undertake and succeed in challenging tasks. By developing and enhancing these constructs, cancer patients can better manage their emotional and psychological well-being throughout the treatment process and use more coping styles effectively and vice versa (Mohsenipouya et al., 2024; Rafiepoor, Safarinia, & Hosseini, 2023).

Various studies have shown that avoidant coping has a significant positive relationship with delayed nausea. Cohee et al. (2021) showed the important role of an avoidant coping style in delayed nausea. The studies of (Hajian et al., 2017) showed that the avoidance strategy is one of the determining factors in cancer-related nausea and ultimately unpleasant emotional problems of breast cancer patients. Hajian et al. (2017) found that newly diagnosed patients who had more physical complaints and unpleasant feelings of nausea used more avoidance strategies. Avoidance strategies, such as distraction, are among the strategies women with breast cancer use to deal with disturbing thoughts (Akbari, 2019). Avoidant coping strategies often occur in the days after infusion in women with breast cancer. The side effects of chemotherapy drugs in the days after infusion have caused side effects related to long-term treatment, such as fatigue, lymphedema, and cognitive impairment in patients, which itself is the cause of avoidant coping and then distress in women with cancer (Miller et al., 2019). As a result, anxiety often occurs in the days after the infusion, which has a closer relationship with chemotherapy-induced delayed nausea, which occurs 24 hours after receiving chemotherapy and lasts 2 to 7 days. Therefore, efforts to reduce anxiety and worry in women with breast cancer can help reduce their nausea.

The use of avoidant coping may result in attempts to limit discussions of cancer. When breast cancer survivors feel unable to disclose their cancer-related thoughts and feelings, mental health outcomes in breast cancer survivors decrease, including more significant depressive symptoms, anxiety, and symptoms of post-traumatic stress disorder. A socially constraining environment impedes psychological adjustment by preventing successful cognitive and emotional processing of new information regarding a stressor. Limited evidence suggests that avoidant coping may also negatively affect breast and other cancer survivors' physical health outcomes. Specifically, among cancer survivors, greater avoidant coping has been related to poorer physical quality of life and greater self-reported physical impairment, such as nausea (Adams et al., 2017).

Finally, based on Senkpeil's (2022) research, one of the factors that reduces anxiety in people with breast cancer is psychological well-being. Psychological well-being, with a positive effect on reducing depression and anxiety in women with breast cancer, can play a positive role in reducing nausea caused by chemotherapy. However, caution should be taken to draw general conclusions from this research. Also, since a questionnaire

was used to collect data, some people may have refused to provide accurate answers and gave unrealistic responses. This research was cross-sectional, so it is difficult to conclude causality, and it is considered one of the limitations of this research.

This research was conducted explicitly on breast cancer patients, so it is suggested that other researchers select the statistical population from other types of cancer. This research should be combined with other variables effective in nausea caused by chemotherapy, such as cultural and religious factors, economic status of these people, personality traits, having children, job, and education, etc. Interested researchers are suggested to conduct research in a broader sample; for example, in different cities, and not to limit themselves to one location to study the effect of cultural differences on the quality of life of cancer patients. Since the current research is descriptive, it is suggested to benefit from the intervention method.

Considering the importance of strategies to deal with cancer and reduce symptoms caused by chemotherapy, such as nausea and vomiting, it is suggested to improve the depression and anxiety of these people by teaching them an upbeat coping style. Therefore, it is suggested to have psychotherapists and counselors along with the medical and treatment team to help improve the mental states of these patients and increase their hope in their lives so that they can complete the treatment.

References

Adams, R. N., Mosher, C. E., Cohee, A. A., Stump, T. E., Monahan, P. O., Sledge Jr, G. W., ... & Champion, V. L. (2017). Avoidant coping and self-efficacy mediate relationships between perceived social constraints and symptoms among long-term breast cancer survivors. *Psycho-oncology*, 26(7), 982-990. DOI: 10.1002/pon.4119

Akbari, M. (2019). How dreams help us to accept death: A case study. *International Journal of Dream Research*, 72-76. URL: https://www.researchgate.net/publication/336197125_How_dreams_help_us_to_accept_death#fullTextFileContent

Akbari, M., Alipour, A., & Zare, H. (2015). The Effect of Coping Skills Training Program on Pain and Quality of Life in Breast Cancer Patient. *Health Psychology*, 4(2), 21-36. DOR: 20.1001.1.23221283.1394.4.15.2.8

Arble, E., & Arnetz, B., B. (2017). A model of frst-responder coping: An approach/avoidance bifurcation. *Stress and Health*, 33(3), 223–232. https://doi.org/10.1002/smi.2692

Cohee, A., Johns, S. A., Alwine, J. S., Talib, T., Monahan, P. O., Stump, T. E., ... & Champion, V. L. (2021). The mediating role of avoidant coping in the relationships between physical, psychological, and social wellbeing and distress in breast cancer survivors. *Psycho-Oncology*, *30*(7), 1129-1136. https://doi.org/10.1002/pon.5663

Corner, J., & Bailey, C. D. (Eds.). (2009). *Cancer nursing: care in context*. John Wiley & Sons.

Cui, C. Y., Wang, Y., Zhang, Y., Chen, S., Jiang, N., & Wang, L. (2021). The development and validation of the psychological capital questionnaire for patients with Cancer the psychological capital questionnaire. *BMC cancer*, 21, 1-8. https://doi.org/10.1186/s12885-021-08960-9

Doron, J., Thomas-Ollivier, V., Vachon, H., & Fortes-Bourbousson, M. (2013). Relationships between cognitive coping, self-esteem, anxiety and depression: A cluster-analysis approach. *Personality and Individual Differences*, 55(5), 515–520. https://doi.org/10.1016/j.paid.2013.04.017.

Endler, N. S., & Parker, J. D. (1990). Multidimensional assessment of coping: a critical evaluation. *Journal of personality and social psychology*, *58*(5), 844. DOI: 10.1037/0022-3514.58.5.844

Feyer, P., & Jordan, K. (2011). Update and new trends in antiemetic therapy: the continuing need for novel therapies. *Annals of Oncology*, *22*(1), 30-38. DOI: 10.1093/annonc/mdq600

Grassi, L., Berardi, M. A., Ruffilli, F., Meggiolaro, E., Andritsch, E., Sirgo, A., ... & IOR-IRST Psycho-Oncology and UniFE Psychiatry Co-Authors. (2015). Role of psychosocial variables on chemotherapy-induced nausea and vomiting and health-related quality of life among cancer patients: a European study. *Psychotherapy and psychosomatics*, *84*(6),

339-347. DOI: 10.1159/000431256

Gustems-Carnicer, J., & Calderón, C. (2013). Coping strategies and psychological well-being among teacher education students: Coping and well-being in students. *European journal of psychology of education*, *28*, 1127-1140. DOI: 10.1007/s10212-012-0158-x

Hajian, S., Mehrabi, E., Simbar, M., & Houshyari, M. (2017). Coping strategies and experiences in women with a primary breast cancer diagnosis. *Asian Pacific journal of cancer prevention: APJCP*, *18*(1), 215. DOI: 10.22034/APJCP.2017.18.1.215

Higgins, S. C., Montgomery, G. H., & Bovbjerg, D. H. (2007). Distress before chemotherapy predicts delayed but not acute nausea. *Supportive care in cancer*, *15*, 171-177. DOI: 10.1007/s00520-006-0113-y

Jordan, K., Gralla, R., Jahn, F., & Molassiotis, A. (2014). International antiemetic guidelines on chemotherapy induced nausea and vomiting (CINV): content and implementation in daily routine practice. *European journal of pharmacology*, *722*, 197-202. DOI: 10.1016/j.ejphar.2013.09.073

Kotze, M., Visser, M., Makin, J., Sikkema, K., & Forsyth, B. (2013). Psychosocial variables associated with coping of HIV-positive women diagnosed during pregnancy. AIDS and Behavior, 17(2), 498–507. DOI: 10.1007/s10461-012-0379-7

Li, K., Cai, Y., Xie, S., Zhou, Y., Dong, J., Zhu, Q., ... & Qiu, X. (2022). Evidence Summary for Nonpharmacological Management of Chemotherapy-Induced Nausea and Vomiting. *BioMed Research International*, *2022*(1), 4741193. DOI: 10.1155/2022/4741193

Marquez-Arrico, J. E., Benaiges, I., & Adan, A. (2015). Strategies to cope with treatment in substance use disorder male patients with and without schizophrenia. *Psychiatry Research*, 228(3), 752–759. DOI: 10.1016/j.psychres.2015.05.028

Miller, K. D., Nogueira, L., Mariotto, A. B., Rowland, J. H., Yabroff, K. R., Alfano, C. M., ... & Siegel, R. L. (2019). Cancer treatment and survivorship statistics. *CA: a cancer journal for clinicians*, *69*(5), 363-385. DOI: 10.3322/caac.21731

Mohsenipouya, H., Motallebi, Z., Mousavinasab, N., Sangani, A., Roy, N., & Mamun, M. A. (2024). Subjective well-being among Iranian breast cancer patients: Exploring the influential role of psychological capital. *Journal of Psychosocial Oncology*, 1–17. https://doi.org/10.1080/07347332.2024.2381546

Molassiotis, A., Stamataki, Z., & Kontopantelis, E. (2013). Development and preliminary validation of a risk prediction model for chemotherapy-related nausea and vomiting. *Supportive Care in Cancer*, *21*, 2759-2767. DOI: 10.1007/s00520-013-1843-2

Montgomery, G. H., & Bovbjerg, D. H. (2003). Expectations of chemotherapy-related nausea: emotional and experiential predictors. *Annals of Behavioral Medicine*, *25*(1), 48-54. DOI: 10.1207/S15324796ABM2501_07

Naito, Y., Kai, Y., Ishikawa, T., Fujita, T., Uehara, K., Doihara, H., ... & Saeki, T. (2020). Chemotherapy-induced nausea and vomiting in patients with breast cancer: a prospective cohort study. *Breast Cancer*, 1-7. DOI: 10.1007/s12282-019-01001-1

Nicholson, W. K., Silverstein, M., Wong, J. B., Barry, M. J., Chelmow, D., Coker, T. R., ... & US Preventive Services Task Force. (2024). Screening for Breast Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA*. DOI:10.1001/jama.2024.5534

Noorani Saaduddin, Sh. (2004). investigating factors related to nausea and vomiting in the first trimester of pregnancy. Iranian Nursing Journal, 17 (37), 8-11. URL: http://ijn.iums.ac.ir/article-1-55-fa.html

Patel, P., Robinson, P. D., Cohen, M., Devine, K., Gibson, P., Holdsworth, M. T., ... & Dupuis, L. L. (2022). Prevention of acute and delayed chemotherapy-induced nausea and vomiting in pediatric cancer patients: a clinical practice guideline. *Pediatric Blood & Cancer*, *69*(12), e30001. DOI: 10.1002/pbc.30001

Pirri, C., Katris, P., Trotter, J., Bayliss, E., Bennett, R., & Drummond, P. (2011). Risk factors at pretreatment predicting treatment-induced nausea and vomiting in Australian cancer patients: a prospective, longitudinal, observational study. *Supportive Care in Cancer*, *19*, 1549-1563. DOI: 10.1007/s00520-010-0982-y

Rafiepoor, A., Safarinia, M., and Hosseini, N. (2023). Model of Hope in Breast Cancer Patients after Surgery. *Iranian Journal of Health Psychology,* 6, 1, 55-68. URL: https://ijohp.journals.pnu.ac.ir/article_9852_8a87d751066b75fa741e8ab3143ed26c.pdf?lang=fa

Rhodes, V. A., & McDaniel, R. W. (1999). Rhodes Index of Nausea, Vomiting and Retching Scale. In *Oncology Nursing Forum*; 26:889-93. https://doi.org/10.1037/t61245-000

Roila, F., Herrstedt, J., Aapro, M. E. S. M. O., Gralla, R. J., Einhorn, L. H., Ballatori, E., ... & Warr, D. E. S. M. O. (2010). Guideline update for MASCC and ESMO in the prevention of chemotherapy-and radiotherapy-induced nausea and vomiting: results of the Perugia consensus conference. *Annals of Oncology*, *21*, v232-v243. **DOI:** 10.1093/annonc/mdq194

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57,* 1069-1081. **URL:** https://metalibsfx.aguia.usp.br:3443/sfxlcl41?ctx_ver=Z39.88-2004

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology*, *69*(4), 719. DOI: 10.1037/0022-3514.69.4.719

Sefidi, F., & Farzad, V. (2012). Validated measure of Ryff psychological well-being among students of Qazvin University of Medical Sciences (2009). *Journal of Qazvin University of Medical Sciences,* 1, 16, 65-71. (Persian). URL: https://brieflands.com/articles/jid-155683

Senkpeil, R. R., Olson, J. S., Fortune, E. E., & Zaleta, A. K. (2022). Pain and Nausea Intensity, Social Function, and Psychological Well-Being among Women with Metastatic Breast Cancer. *Journal of Patient Experience*, *9*, 23743735221134733.

Shokri O, Taghilou S, Geravand F, Paezi M, Molaei M, abd Elahpour M et al . (2009). Factor Structure and Psychometric Properties of The Farsi Version of The Coping Inventory for Stressful Situations (CISS). Advances in Cognitive Sciences, 10 (3) :22-33. URL: http://icssjournal.ir/article-1-484-en.html

Vahidi, Z., & Jafari Harandi, R. (2017). Predicting of psychological well-being from components of psychological capital and spiritual attitude. Positive Psychology Research, 3(2), 51-64. https://sid.ir/paper/257693/en

World Health Organization. Breast cancer. 2021. https://www.who.int/news-room/fact-sheets/detail/breast-cancer. Accessed January 17, 2023.

Yap, K. Y. L., Low, X. H., Chui, W. K., & Chan, A. (2012). Computational prediction of state anxiety in Asian patients with cancer susceptible to chemotherapy-induced nausea and vomiting. *Journal of clinical psychopharmacology*, *32*(2), 207-217. DOI: 10.1097/JCP.0b013e31824888a1

Zhang, C. M., Gu, Y. F., Shen, S. P., Wang, Y. C., Qi, A., Su, L. Z., ... & Xu, L. (2023). Characteristics and correlation analysis of negative emotions, quality of life, and Chinese medicine syndromes in patients with lung cancer after surgery: a cross-sectional study. *World Journal of Traditional Chinese Medicine*, *9*(3), 307-313. DOI: 10.4103/2311-8571.385512

Zhou, Q., O'Brien, B., & Soeken, K. (2001). Rhodes Index of Nausea and Vomiting—Form 2 in pregnant women: a confirmatory factor analysis. *Nursing research*, *50*(4), 251-257. DOI: 10.1097/00006199-200107000-00009